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# Romania and the Challenges of Economic and Monetary Union: An Overview

*Andreea Avadanei\**

## 1 Introduction

Romania's integration in the European Union (EU) was undoubtedly a significant step, but reducing the existing gaps in relation to the developed countries will still continue for a long time. Joining the euro area is a second major step in this process.

Moreover, if the phenomenon of Economic and Monetary Union (EMU) accession is a key objective, the time of implementing this decision will be weighed carefully in order to see what are the advantages and limitations that this approach entails.

According to the European Commission Report published in May 2010, Romania currently meets only one of the four nominal convergence criteria (public debt), with fiscal stability being the main obstacle towards the single currency adoption.

Although accession to the third stage of EMU involves as mandatory only the fulfilment of nominal convergence criteria, the sustainability of the process depends very much on real convergence degree, as the essence of integration.

Because of the problems affecting the implementation of structural reforms (especially privatization and price liberalization) in Romania, real convergence has had a delayed start.

## 2 Literature review

In the case of Romania, the euro adoption should mark the end point of a complex macroeconomic convergence process and not its debut; in essence, the single currency does not eliminate the Member States imbalances, but rather may worsen them. Unilateral adoption is neither feasible, nor constitutes a viable solution (Popa, 2009a).

The recent national discussions of the business arena and not only, are considering the possibility of early euro adoption against the original schedule. According to governor Isarescu (2007, 2009) and Andreescu (2010) early euro adoption, before a strong convergence with the EU, is problematic and cannot replace the policy adjustment efforts.

To accelerate the single currency introduction means giving up the monetary policy prior to ensuring a sustainable convergence (before the elimination of the national economy imbalances). Popa (2009b) argues that the application of a policy designed by the ECB can possibly be inadequate to country-specific problems.

In terms of real convergence, the low correlation between the national and the Euro zone economic cycle and the differences regarding the economic structures represent strong arguments against accelerated euro introduction (Ionescu, 2007, Dumitru, 2009). This background leads to an increased probability of asymmetric shocks occurrence, the rigidity of domestic labour market making it impossible to accommodate to such events.

A comparative analysis of the pros (Toma and Nicula, 2007) and cons (Hurduzeu and Constantin, 2007; Daianu, 2010) of accelerating single currency adoption shows that maintaining the current timetable for euro area entry (January 2015) is the optimal solution, while speeding up the accession to Economic and Monetary Union involves major

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disadvantages.

### 3 The trade-off between nominal and real convergence

Convergence process calibration relates to two essential elements:

- Nominal convergence;
- Real convergence or the catching-up process.

The analysis of these aspects opens up a new perspective to practical actions in the areas of economic reform, the *acquis communautaire* and the integration process.

*Nominal convergence criteria* have a strong economic motivation, related to financial stability and anchoring the performances to those recorded in the states with the best indicators, considered as benchmarks in the evaluation process.

Since the Maastricht criteria imply a lower temporal perspective, we believe that in relation to the phenomenon of real convergence, nominal convergence is a privileged process.

Obtaining EMU membership is strictly subject to compliance benchmarks imposed on *inflation, long-term interest rates, deficit and public debt, and nominal exchange rate stability*.

Unlike the nominal convergence criteria stipulated in the Treaty of European Union, *the real convergence criteria* are not provided in any international treaty, although they represent an essential precondition for a country to fully benefit from the advantages of a common currency.

Moreover, there are no formal criteria and no full agreement regarding the variables that should be taken into account (the Maastricht Treaty states only the need for social cohesion and reducing economic disparities between countries and regions).

Academic literature offers many opinions that consider real convergence criteria synonymous with the properties of *optimal currency areas-OCAs* (degree of openness of the economy, the synchronization of business cycles, labour mobility, wage and price flexibility, the level of financial development). Developments driven by nominal criteria have influenced the real economic variables, highlighting the complementary nature of both phenomena.

Although it is possible for nominal convergence to initially draw a performance dilution, the complete fulfilment of the Maastricht criteria ensures greater macroeconomic stability, resulting in significantly higher growth rates. The more flexible is the national economy, the easier it is to adapt to a new scheme, reducing the intensity of the initial impact.

For the Central and Eastern Europe (CEE) states, and hence to Romania, the priority is *beta convergence* or, reformulating, catching-up to the most powerful EU countries. Successful completion of this effort primarily involves high rates of saving and investment, refining educational standards and labour force, as well as improving competitiveness.

In order to highlight the speed of convergence, we divided the analyzed interval into two sub-periods, as shown in Table 1.

Obviously, integration positively influences the process of real convergence. *Ex ante* EU accession, Estonia, Latvia and Lithuania recorded the best results in terms of reducing the gap with the EU 27 average. Slovenia and Hungary form the next cluster, managing a lag decrease by 12% and 11%, followed by Slovakia and Romania (8%). *Ex post* EU accession, our country ranks second, performing a gap decrease from the average by 11%.

**Tab. 1: Average One-Year N.R.-Removed<sup>1</sup> Transition Rates, 1981 to 2005 (%)**

Country	GDP per capita in EU-27 (PPP, EU-27=100)				Speed of convergence*	
	1995	2000	2004	2009	1995-2004	2004-2009
Bulgaria	32	28	35	n/a	3	n/a
Czech Rep.	73	68	75	80	2	5
Estonia	36	45	57	63	21	6
Lithuania	36	39	50	53	14	3
Latvia	31	37	46	49	15	3
Poland	43	48	51	61	8	10
<b>Romania</b>	<b>n.a.</b>	<b>26</b>	<b>34</b>	<b>45</b>	<b>8<sup>1</sup></b>	<b>11</b>
Slovenia	74	80	86	87	12	1
Slovakia	48	50	57	71	9	14
Hungary	52	55	63	63	11	0

Source: Eurostat (2010) and authorial calculations

Note: \* Speed of convergence expressed as % of reducing the gap to EU-27 average;

1: Range is between 2000 and 2004

Achieving nominal convergence criteria is a double-faceted phenomenon, involving both *positive* (as a consequence of reducing the inflation rate) and *negative effects* (in the area of public finances) on the real convergence process. In turn, real convergence also affects nominal variables, both *favourable and unfavourable*:

- structural reforms support GDP *per capita* convergence with non-inflationary effects;
- inflation will maintain a high level, generated by productivity differences between tradable and non tradable goods, and by uniform wage increases in the two sectors (*the Balassa-Samuelson (B-S) effect*).

Academic literature examines the relationship between nominal and real convergence based on *B-S effect*. Achieving a rapid real convergence based on inflationary pressures automatically generates the adoption of restrictive monetary policies. As a result, one of the most common negative implications in this direction is the emergence of the above-mentioned effect. Considering some hypotheses similar to those studied by Balassa and Samuelson, the associated model is fully applicable in the case of CEE States, and implicitly in Romania:

- the existence of disparities between countries related to the level of economic development expressed by GDP per capita calculated at purchasing power parity;
- the effects of the catching-up process;
- the impact of trade integration on the exchange rates evolution.

As a result of interdependencies involved by the B-S effect and the fact that the essential aim it is not the adoption of the euro itself, but reducing the gaps in the real economy, ensuring sustainable growth and a high degree of economic stability, immediately after EU accession the National Bank of Romania (NBR) has recommended the observance of a set of rules aimed at macroeconomic conduct so that it supports effective collaboration with the legislative and executive power.

<sup>1</sup> N.R.-Removed (Not Rated Removed), i.e. companies, which are not rated at the end of investigated horizon are removed from the transition analysis.

Sustaining the catching-up process of an economy lies in the compatibility of the two types of phenomena, the nominal and real convergence. In comparison with the values of Maastricht criteria, Romania presents a *slow convergence of monetary variables* (inflation and interest rate). The evolution of public finances meets the standard required, but betrays a low level of economic modernization. Choosing an appropriate mix of economic policies could support the development of real convergence, in spite of the negative effects of disinflation caused by the absence of flexible offerings.

The existence of a modern, developed financial system is another prerequisite that facilitates this process. From OCA theory perspective, financial integration represents an extremely important factor, as it improves the transmission of single monetary policy, the resources allocation to areas with high investment potential, stimulates the economic growth and has the potential to mitigate idiosyncratic shocks.

Since the EU accession, the national financial market has become increasingly integrated in European structures. Romania has transposed the Financial Services Action Plan (FSAP) directives, recording considerable progress in the post-FSAP provisions adoption too. As recently EU integrated state, Romania has a good score in implementing the Internal Market directives, the transposition deficit hovering well below the 1% set value.

So far, the financial system faced well the international crisis pressures, with the central government not interfering in the banking sector through the implementation of supportive measures. The ninth largest foreign banks with branches in Romania, member of the European Bank Coordination Initiative Group (EBCIG) have fulfilled their recapitalization obligations, in line with the stress test performed by the NBR.

The *integration index*<sup>2</sup> developed and applied for the first time by Marelli and Signorelli (2010), emphasizes the positive effects of real convergence on nominal and institutional convergence phenomena.

Analyzing the structural parameters of *institutional convergence*, Romania has to recover a significant gap, given that the polls conducted and centralized by the World Bank indicate an unfavourable EU placement for most of the addressed criteria (political stability and absence of violence, government effectiveness, regulatory quality, confidence in the legal system, corruption control).

We believe that there isn't and that it will never be a situation of perfect alignment of all states in relation to an absolute convergence process. Economic and social reality verifies and confirms a dynamic group convergence based on the influencing factors acting in the economic system.

#### **4 An analysis of convergence criteria fulfillment: the actual stage**

The global financial crisis has highlighted the significant benefits of a monetary union membership with a strong single currency. The exchange rates of non-EZ countries have recorded a very high volatility, with particular emphasis on this trend in the case of a superior euroisation level of the national economy and a potential effect of financial instability (Dumitru, 2009, p. 3).

It is essential that major reforms (restructuring, privatization, wage policy, labour mobility, fiscal policy, the review without delay of the pension system and health insurance) to be addressed before, and not after the exchange rate mechanism 2 (ERM2) participation or the euro

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<sup>2</sup> *The integration index* provides a quantitative synthesis of the progressive stages of institutional integration, which includes the nominal convergence criteria stipulated in the Maastricht Treaty and eventually the euro adoption.

area entry. In a monetary union, the necessary structural reforms are carried out with a considerably higher support, but the costs of any potential failure are exponentially multiplied.

Slovakia's experience (the first state with a floating rate regime from the five ones that adopted euro after May 2007) indicates that subsequently to koruna's participation in the ERM2 (November 25, 2005 to December 31, 2008) wage growth was slower than labour productivity, which generated an inflation reduction. Applying this fundamental connection at the national level will encourage the inflow of foreign investment; moreover, the Slovak government and the central bank adopted a sound strategy with clearly outlined responsibilities six years before the euro introduction.

#### **4.1 Nominal convergence: price stability criterion**

Since the EU accession date, the average annual inflation rate used to assess the convergence degree always stood above the reference value. Considering the period April 2009-March 2010, the harmonized consumer price index registered a value of 5%, far exceeding the standard of 1% associated with price stability criterion (average figures in Portugal, Estonia and Belgium, plus 1.5 percentage points).

The risks of higher inflation are quite diluted, related mainly to external factors, following the recent recovery in international energy prices and future growth of administered prices. For the subsequent periods there are not expected fluctuations in indirect taxes, although we cannot exclude the adjustments applied in the context of fiscal consolidation efforts.

#### **4.2 Nominal convergence: public finances criteria**

The widening of the national budget deficit in 2005-2008, when the real GDP growth rate recorded a value of 6.4% was caused by the structural deficit deterioration (to 7.7% of GDP in 2008).

Analyzing the figures of 2009, there is a deficit of 8.3% of GDP, well above the reference value (3%), public debt criterion being the only one fulfilled (23.75 percentage hovering well below the 60% standard). The worsening of the account deficit reflects the international crisis consequences on the national public finances.

The global economic stress hit Romania hard, so that in March 2009 the authorities requested multilateral financial assistance. Signing the agreement was conditioned by the implementation of fiscal consolidation measures aimed at reducing the 2009 deficit at 5.1%. This observation is also true for Latvia and Hungary, countries that have benefited by similar financial assistance, offered, *inter alia*, by the EU and the IMF.

Therefore, the supportive measures of the business sector have been extremely limited, totalling only 0.2% of GDP. They cover reinvested profits tax exemption, temporary waiver to pay social contributions for technical unemployed and the extension of "Rabla" program in order to withdraw from circulation any obsolete vehicles. The worsening of the economic climate beyond forecasts in the first half of 2009 accelerated the fiscal positions deterioration. To some extent, this trend is explained by the setting of the budget deficit target to 7.8%, allowing the partial operation of automatic stabilizers. Despite all efforts, the goal was not achieved.

#### **4.3 Nominal convergence: exchange rate criterion**

In the 2000s, the Romanian leu exchange rate had experienced large fluctuations. Between 2004 and 2007, the currency strongly appreciated under the impact of capital inflows triggered by the economic catching-up process and the prospects of EU accession (facilitated by the capital account liberalization in the fall of 2006). After registering in 2007 of the highest value in the past five years, the exchange rate fell sharply, consequence of the global crisis emergence. Country-specific factors have also an important role in increasing investor uncertainties with

regard to the worsening of the national economy imbalances.

Romania has been downgraded by most rating agencies, credit default swaps spreads have increased dramatically, and money market rates have registered abnormal developments. Financial assistance programs run by the EU and the International Monetary Fund (IMF) contributed, in March 2009 to an ease of the national currency pressures. In the past two years, the exchange rate volatility gradually reduced, but the short-term interest rate differentials against the three-month EURIBOR maintained a high level. In March 2010, the real exchange rate rose above the RON past ten years average, both in bilateral and effective terms.

The fluctuations of the exchange rates have reflected the effectiveness of banking sector liquidity management, government foreign exchange operations and the changes in the investor's perspective. In the two-year reference period, the currency did not participate in the ERM 2 (estimated entry date is 2012), being traded under a flexible regime. According to the "impossible trinity" dilemma, (Romanian case) there cannot simultaneously exist an *independent monetary policy, a fixed rate and a free movement of capital flows*. Currently, national monetary policy has an independent character, the liberalization of capital flows is fully completed, and the exchange rate is flexible. Based on the increase of monetary policy effectiveness, this last feature allows the central bank to ensure domestic price stability.

We believe that both the period before ERM 2, and the effective participation in this mechanism are important milestones for the national economy convergence, which will resume once the end of economic contraction.

#### **4.4 Nominal convergence: long-term interest rate criteria**

The importance of long-term interest rate levels is underlined by the explicit reference to "the convergence sustainability", included in the Maastricht Treaty. Since Romania's accession to the EU, average interest rates have always exceeded the long-term reference. Differences against the euro area increased in the second half of 2007 and in 2008, following the global financial crisis and domestic economic difficulties. Considering March 2009- March 2010 period, the recorded value was 9.4%, with 6% above the EU reference. Given that the long-term interest is linked to inflation, it is clear that the success of Romania's euro adoption depends essentially on a single factor, namely the inflation reduction.

#### **4.5 Real convergence: gross domestic product per capita**

From 2001 to 2008, real GDP growth rate has surpassed the Euro zone associated pointer, as evidence of the national economy catching-up process. However, considering the GDP *per capita* level of the eight EMU candidates, in 2008 Romania placed on the penultimate position (before Bulgaria) with a value of 48% of EU 27 average. The gap of 32 percent against the Czech Republic on the top is significant.

The differences between Romania and the other CEE countries are driven by the significant foreign investment that they have enjoyed since the early '90s. Our country had a late start on this chapter, recording higher flows only in the recent years, after a series of important events, such as joining NATO (2004), full capital account liberalization (2006) and the EU accession (2007). However, Romania has a significant advantage: compared to 1999, the year of euro introduction, it has achieved the fastest recovery pace in relation to the EU average.

#### **4.6 Real convergence: Degree of openness**

Trade integration is one of the main business cycles linking mechanisms (Frankel and Rose, 1998). Analyzing recent years, the openness degree of national economy was relatively stable; although, compared with other countries of similar size, this indicator (measured by the share of import and export of goods and services in GDP) is lower. It is also unfavourable that Romania's economic openness relies on a smaller proportion on exports than in other CEE

countries, which display almost balanced weights of the two components.

The evolution of trade has been strongly influenced by the prospects of European integration. In 2004-2008, the rate of intra-EU trade in goods was more than double compared to the value recorded in services. Three quarters of Romania's trade flows are directed towards the EU 27, Germany, France and Italy accounting for almost 40% of total imports and exports of goods. Outside Europe, the biggest counterparties of export are Turkey and Russia (10%).

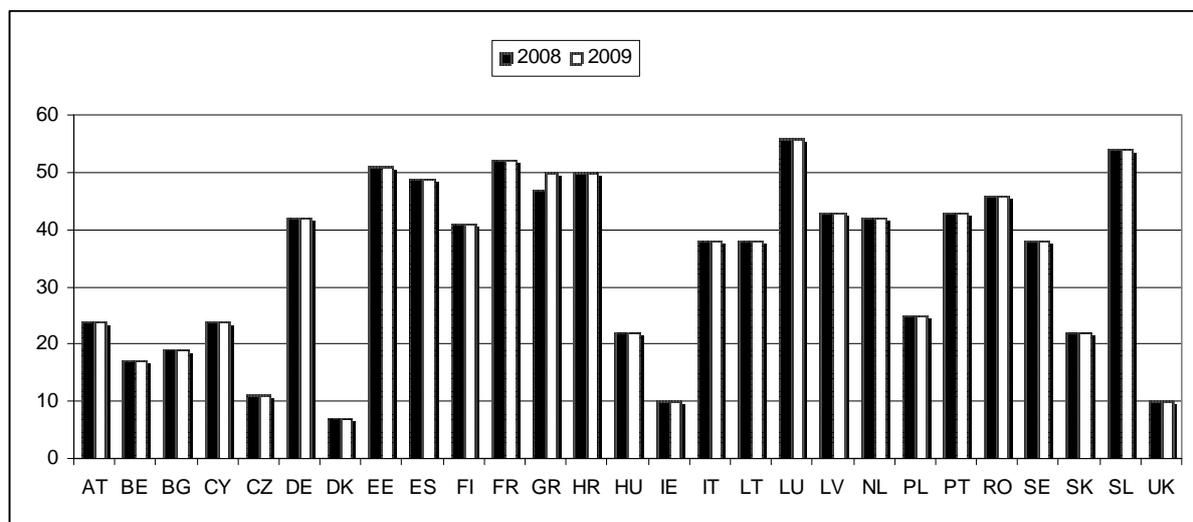
Although the EU is Romania's main counterparty, the opening of the latter is far below the New Member States (NMS).

#### 4.7 Real convergence: economic structure by sector

Although currently there is a growing trend in the share of services and a reducing one in the share of agriculture in gross value added towards the EZ figures, the differences in terms of economic structure and labour force between Romania and the euro area remain large. In addition, to streamline the very low agriculture productivity (only 10% of GDP, given that 30% of the workforce is trained in this area) considerable investments are needed. Similarly, a convergence phenomenon is visible in the share of industry.

National labour market displays a low degree of flexibility; if that is evident at the regional level, the mobility across borders is very high. Generally, NMS present low labour force mobility, due to a very high percentage of households that own the property on which they live (Egert, 2004, p. 19).

**Fig. 1: Rigidity of employment index**



Source: World Bank 2011, <http://data.worldbank.org/indicator/IC.LGL.EMPL.XQ>

Note: Average of three indicators: Difficulty of hiring index, Rigidity of hours index, Difficulty of firing index; unavailable data for Malta. 0=less rigid to 100=more rigid.

Efforts undertaken to adopt the single currency require continuity; in order to improve performance and overall national competitiveness, reforms in various fields are essential.

## 5 Possible scenarios for the Romanian post-euro economy

Ex post euro adoption, two fundamental questions raise, related to the national economy behaviour under the new framework and the single currency evolution and with it, the one of the entire financial and monetary system. If the adoption strategy was a solid one, accompanied by

the necessary reforms aimed at strengthening markets, increase prices and wages flexibility, harmonize the increase of revenues with the productivity dynamic and at adequate fiscal and budgetary policies, and the conversion rate was set correctly, the domestic economy will reap the single currency' benefits, such as the reduction of transactions costs and the administrative burden, removal of the currency risk, lowering the exchange rate volatility and funding costs and increasing competition.

The membership of a monetary union also involves certain risks. EMU Member States experience shows some adaptation variations against euro discipline. Thus, the Netherlands and Germany have seen reductions in labour costs by applying a large number of reforms to enhance national competitiveness. At the other pole, as a result of insufficient measures, Spain, France and especially Italy are more affected by the euro appreciation and by the global financial and economic stress.

Overall, the first decade of euro shows the success of the new currency and of the economic, political and social experiment that it defines. Symbol of Europe, considered by the public as one of the best results of European integration, together with freedom of movement, its adoption has enabled progress in various fields related to the improvement of price stability and fiscal policies, strengthening the ECB monetary policy credibility, the reduction of nominal and real interest rates, stimulation of economic exchanges and market integration, improving the reaction to external shocks, creating a record number of jobs in the EZ and bringing unemployment to its lowest level of the last 20 years.

From another perspective, there are some areas where euro did not rise up to the expectations (potential growth, labour productivity, differences between countries related to inflation and unit labour costs). One possible explanation is that sometimes the ECB's monetary policy is not appropriate for the country specific, so that the euro often ends up being blamed for the failures of national economic policies (or the lack of them). The Czech President Vaclav Klaus is the most vocal critic, not hesitating to argue that the common currency has interfered with Europe's interests, forcing very different economies to apply a common monetary policy (Financial Times, 2008).

We believe that the present global financial crisis constitutes a huge opportunity for euro in order to consolidate its statute as international currency, highlighting the advantages of states that benefit from the protective umbrella of one of the strongest currencies in the world.

There is no prospect of appearance in the near time horizon (several decades) of another currency with global claims, although it is certain that the European initiative has supported plans for achieving economic and monetary unions in other places too. The only project that could lead to the emergence of entities comparable in size with the EU and the U.S. is the ASEAN-Association of South-East Asia, mainly due to similar optimal size of Europe before the Maastricht Treaty. Similar initiatives are carried out in areas such as South America and the Community of Independent States.

With the collapse of communism, Romanian banking system has begun a new stage; the last twenty years have been marked by a series of mergers, acquisitions and bankruptcies that finally reshaped and strengthened the entire banking sector. Based on previous analysis of the EZ banking sector, we conclude that the national system has experienced a similar evolution. The European mergers and acquisitions brought together powerful entities creating large international groups present in most EU countries.

In this context, the question arising is whether the achievement of these groups is affected by activation in several states. We believe that in order to reveal patterns and trends in the EMU banking systems, the most relevant way is to apply a cluster analysis technique. The main research on this subject is attributed to Sorensen and Gutierrez (2006); following the division of

foreign capital (Tab. 2), their conclusions are not entirely applicable in the case of Romanian banking system.

**Tab. 2: Foreign capital classified by country of origin (September 2009)**

	Foreign capital	
	% in total foreign capital	% in total capital
Greece	35.3	26.8
Austria	22.5	17.1
Netherlands	11.9	9.0
Hungary	5.5	4.2
France	5.2	4.0
Italy	3.6	2.7
Portugal	3.5	2.7
Cyprus	2.7	2.1
Germany	1.5	1.1
Other EU Member States	1.9	1.8
<b>Total EU</b>	<b>93.6</b>	<b>71.5</b>
Israel	2.3	1.7
USA	0.8	0.6
Other countries	0.7	0.3
EBRD	2.6	2.0
Total	100	76.1

Source: National Bank of Romania 2010

Analyzing Tab. 2, the three clusters (Germany, France, Belgium, Austria and Ireland, Spain and Portugal and Finland and Greece) are unevenly distributed. The first cluster with the German leader holding a percentage of 50.3% is advanced by the most active country-Austria. In light of the fact that in 2000 Austria became increasingly present in Eastern Europe, participating in the largest national procurement (Petrom and BCR), this is not a surprising situation.

The cluster represented by Spain and Portugal is not included in the Romanian banking system, accounting only 2.4% of total foreign capital. This is explained by the geographical position of the two countries and the lack of tradition in respect to relative economic cooperation with Romania.

In the case of the third cluster, we note the 35.3% share of Greece, associated with its leadership placement on this segment. Because of the economic crisis affecting it, its position was seen somewhat disadvantageous, in terms of the possibility of capital withdrawing in order to use it for national lending. Despite unresolved domestic issues, Greece maintained its role, though not as active as in previous periods.

Because Romania is not yet part of the Eurosystem, we cannot include the domestic banking sector in any cluster; we can only guess that it will be part of the Central and Western Europe associated cluster, strengthening the positions of the participating countries.

From the domestic banking industry, the introduction of the euro will be characterized by a number of peculiarities.

In addition to associated costs, supported by all entities, as a result of the specific activity carried out, commercial banks are located on a separate tier that covers in particular two areas related to their role as financial intermediaries.

The first one ensures the conversion of the national currency used by the cash payments system in the shortest possible time horizon, resulting in a temporary increase of operational costs (denomination of contracts, updating POS terminals and ATMs). Considering non-cash payment systems, the bank position-as borrowers or lenders, is reflected in higher requirements related to information systems adjustments.

The second one involves balance sheet changes, especially of the banking revenue and expenditure structure, related to foreign operations.

The third aspect that does not directly affect commercial banks, but influence them, is the new currency offering.

Another aspect that commercial banks will face is the potential interest rate lowering which will affect the entire population. On the Romanian market, the average interest rates of euro deposits with a one-year maturity is 3.5%; analyzing EZ figures, we observe a 1.35% value for Austria, 1.5% for Germany and 2.5% for the UK. These reductions may adversely influence the national public used to high interest rates, resulting in a decrease of commercial banks financial flows.

EMU membership also means changing the role of central bank, involving major modifications of the banking system. Ex post euro adoption, the National Bank will become a member of the Eurosystem, with consequent loss of monetary independence, which can sometimes generate major drawbacks.

Undoubtedly, the Economic and Monetary Union is the final step in achieving free and transparent markets. Introduction of single currency offers the possibility of comparing prices, wages and living standards in general, resulting in enhanced competitiveness.

Banks are among the entities most affected by this transition, but considering the current situation, the impact will be favourable. Analyzing long-term implications, we note the possibility of transforming into a strong and dynamic, able to easily attract foreign capital banking system.

What is extremely important for Romania is the certainty that by single currency adoption we will count on one of the most influential and powerful world currencies.

## **6 Conclusions**

To summarize, in terms of nominal convergence, the budget deficit (which adjustment below 3% will be quite difficult), poses the biggest problems. The comparison with Central and Eastern European countries shows a higher convergence of public finances and a diluted phenomenon in monetary plan (in 2010, Romania displayed the highest inflation rate in the region (5.0%).

Joining EMU involves finding the most favourable compromise between nominal and real convergence, given that after two years of ERM 2 Romania must fulfil all the Maastricht criteria.

At the national level, a monetary policy aimed at maintaining price stability and adopting rigorous program of fiscal consolidation is a precondition for the existence of an adequate environment that ensures sustainable convergence. Choosing the right mix of economic policies is another major challenge that Romania is facing.

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## ***Romania and the Challenges of Economic and Monetary Union: An Overview***

### **Summary**

The scope of this paper is to highlight the Romanian strategy towards the euro adoption. We structured our article on sections that cover four main research directions. The first one illustrates some general academic remarks about the implications of Romania's accession to European and Monetary Union; the second underlines the interdependence between nominal and real convergence; the third one offers an analysis of the Maastricht criteria fulfilment present stage and the fourth points out the possible scenarios ex post single currency' s introduction. We conclude by saying that the decision to join the Euro zone should not be taken only in terms of the ability to achieve the nominal convergence criteria, but also in relation to the progress of real convergence phenomenon. In their absence, the economy will become peripheral, less flexible and unable to manage and eliminate the shocks affecting it.

**Key words:** Economic and monetary union; Convergence criteria; Optimum currency area; Catching-up process; Structural reforms; Financial system.

**JEL classification:** E42, E44, F15, F36, F44.

# Should Banks Be Diversified Geographically? Evidence from Interstate Diversification of American Banks

*Andreja Bandelj\**

## 1 Introduction

Interstate diversification of American banks was initially constrained by severe regulation. However over the years this regulation was weakened and the barriers, which disable banks to expand geographically, were reduced. So, since the passage of Riegle-Neal Interstate Banking and Branching Efficiency Act in 1994, which gave the states the option to permit interstate branching, we have witnessed increasing trend in geographic diversification of American banks. Banks have been spreading their operations across many markets within US. In relation to this fact, the question of whether interstate geographic diversification has a statistically significant effect on banks' cost of equity capital has been left unanswered. So, I decided to address this issue and by linking the topic of banks' geographic diversification and their cost of equity capital I will try to find some further evidence for answering the question of whether banks should diversify or stay focused to achieve lower cost of equity capital.

The reason why the issue of diversification is a relevant one is because it relates to the optimum degree of diversification. There are theories supporting two opposite views concerning what is the optimal degree of diversification. On one hand the traditional banking theory (Diamond 1984, Boyd & Prescott 1986) suggests that the optimum organization is a well diversified one, while on the other hand corporate finance theory (Jensen 1986, Denis et al. 1997, Rajan et al. 2000) suggests that a firm should be focused in order to reduce agency problems and to maximize management's human capital. The cost of equity capital is an important variable, because it is the determinant of shareholders value. It is important to stress that geographic diversification may leads to higher sales and earnings, but for shareholders it is crucial whether return on invested capital exceeds the firm's cost of capital, because in case when this does not hold the firm market value will decline and cost of capital will increase.

This paper contributes to the existing literature in several ways. It is the first paper that addresses the link between banks' interstate diversification and their cost of equity capital. Another characteristic of this paper in relation to other studies on bank diversification is that it jointly takes into account geographic and business diversification, while most of the previous researchers focus only on one type of diversification. Let me also add that both theoretical views and empirical findings, about the effects of interstate geographical diversification on various measures of banks' performance and risk, are mixed and inconclusive. So with this analysis I will try to contribute to this debate by examining the relation between the banks' geographic diversification and their cost of equity capital and I will try to determine if positive or negative net effects prevail.

This analysis can be interesting for policymakers and regulators, because they affect banks by imposing regulations which create incentives either to diversify or to focus their portfolios. I can give as an example the imposition of capital requirements tied to banks' assets, and also because banks' cost of equity capital affects the cost of raising new capital which is important because of capital requirements. The results have important implications also for financial investors and managers of financial institutions, since potential diversification effect on cost of equity capital has important implications for valuation and capital budgeting. I begin this paper by describing

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the theory, which can give us some intuition why there should be a link between the variables I am interested in. I continue by describing the methodology, empirical sample used and results.

## **2 Theory and literature review**

A theoretical basis for the expected existence of a link between the geographical diversification of banks and their cost of equity capital can be found in theories related to the information asymmetry, risk reduction and internal capital market. First it can be said that, when companies operate globally, monitoring the firm management becomes more difficult and costly (this is due to a higher degree of information asymmetries), which results in higher cost of capital and less strict monitoring (the agency conflict between managers and shareholders becomes more severe) (Burgman, 1996; Lee & Kwok, 1988). And it can also be added that managers might decide for diversification to pursue their own interest at the expense of stockholders (Amihud & Lev, 1981; Jensen, 1986, 1993). Empirical studies which confirm the existence of the agency problem in banking are for example Bliss and Rosen (2001), Berger and Hannan (1998). I can also add that because of certain features, which are specific to banks, it can be expected that the agency conflict is particularly severe in banking. Firstly, for potential investors banks are more opaque than firms in other sectors (Morgan, 2002). Secondly, given the importance of banks for the overall economy and for maintaining the financial stability of the economy, it is reasonable that banks are under the watchful supervision of governments and financial market regulators. But this also means that hostile takeovers are a rarity in the banking industry, since the approval of the regulator is usually required before the takeover can take place. And this results in the absence of a mechanism for disciplining an inefficient management - market for corporate control - in the banking industry (Adams & Mehran, 2003, pp. 126). And lastly, it can be said that in most countries banks are subject to government guarantees on deposits; regulators also supervise banks' capital adequacy, their liquidity risk ... And also, the current crisis has again revealed that, particularly for large banks, it holds that the governments will rescue them, if they get into troubles. All these factors can significantly reduce the shareholders' incentives to monitor banks' management (Adams & Mehran, 2003, pp. 135).

Second, Lewellen's (1971) financial theory of corporate diversification is based on the coinsurance effect. Lewellen argues that by combining businesses whose cash flows are less than perfectly correlated it can be obtained the reduction in firms default risk, which also serves to increase the diversified firm's debt capacity. Third, internal capital markets might work imperfectly so firms pursuing geographically diversifying strategies might incur additional costs. So, on one hand diversification can lead to inefficient cross-subsidization of less profitable business units (Rajan et al., 2000; Scharfstein & Stein, 2000). While on the other hand these firms might also internalize the capital market transactions, which help them reduce their cost of capital (Caves, 1971; Kogut, 1983; Stein, 1997). The existence of internal capital markets in multinational bank holding companies was confirmed by De Hass and Van Lelyveld (2008), who demonstrate that the parent companies trade off between lending in foreign or domestic country, and that they support weak branches abroad.

Based on the discussion above it can be concluded that from a theoretical point of view the effects of geographical diversification on cost of equity capital are controversial. So, I will try to contribute to this debate by examining the relation between the banks' geographic diversification and their cost of equity capital. I will try to determine if positive or negative net effects prevail.

With respect to the topic of banks' cost of equity capital it can be said that it did not receive much attention from researchers. So far only three empirical papers have been published on this issue (King, 2009; Maccario et al., 2002, Zimmer & McCauley, 1991). The topic of banks' geographic diversification received much more attention. Most of the studies were conducted on

US data and provide mixed results (see ie: Akhigbe & Whyte, 2003; Berger & DeYoung, 2001; Chong, 1991; DeLong, 2001; Hughes et al., 1999). Acharya et al., 2006 and Hayden et al., 2007 are the most important studies on this topic which analyze European banks.

### 3 Research design, data and methodology

#### 3.1 Research design

**Testable hypothesis:** Geographic diversification has a statistically significant effect on banks' cost of equity capital.

**Sample:** This study uses data for large (with total assets larger than 10 billion USD in at least one year of the investigation period) American listed banks over the period 1995-2010. In the sample are included: commercial banks, and bank holding companies. I exclude banks which are not included into the SOD database, which have missing balance sheet data in Bankscope, while for the purposes of calculating the cost of equity I need to place the following conditions: book value must be positive and median earnings forecasts for at least the first and second year ahead must be available in I/B/E/S.

**Variables:** The cost of equity capital can be defined as the rate of return that investors expect to make when they invest in a firm's equity. In this analysis I estimate it by implied cost of equity capital. While earlier research in finance has generally used ex post realized returns to measure the cost of equity capital, recent research has demonstrated problems related to ex post realized returns (Elton, 1999). This is the reason why recent empirical studies have started to suggest using an ex ante rate of return (see ie Pástor et al., 2008) - the implied cost of equity capital, which is the discount rate that equates the present value of expected future cash flows to the current stock price. So, my decision to rely on implied cost of equity capital in this analysis is based on finding of researchers, which argue that implied cost of equity capital is a better measure for cost of equity capital than CAPM, and also because this approach (measuring cost of equity capital by implied cost of equity capital) is common practice in recent corporate finance literature.

I estimate the implied cost of equity capital by implying four commonly used models: Claus & Thomas (2001), Gebhardt, Lee & Swaminathan (2001), Ohlson & Juettner-Nauroth (2005) as implemented in Gode & Mohanram (2003), and Easton (2004). As the estimated cost of equity capital, I use the arithmetic average of these four estimates, by doing so I mitigate the effects of measurement errors that are associated with one particular model. Another reason for not using one particular model is that there is no consensus reached yet about which model is the best one (Botosan and Plumlee, 2005; Easton and Monahan, 2005). Given that there is no consensus among researchers also about on which date to calculate cost of equity capital, I decided to calculate it in June (this approach is also used in Gebhardt et al., 2001). The reason for this choice is that by that date market participants already receive the balance sheets financial information for the previous fiscal year, and most probably also update their expectations accordingly. While to get the inflation-adjusted cost of equity capital I subtract inflation expectations (June issue of Consensus Forecasts) from the nominal cost of equity estimates of each of these four estimates before calculating the average (this approach is also used in King, 2009). Similarly to other studies I exclude observations for which the cost of equity estimates were undefined (OJ model), did not converge (ES, CT, and GLS models) and had earnings growth forecasts over 200%. I calculate the cost of equity capital by employing the Newton method. I set the initial value of the cost of equity capital to 9%.

$$\begin{aligned}
CT: P_t &= B_t + \sum_{i=1}^5 \frac{FEPS_{t+i} - k_{CT} B_{t+i-1}}{(1+k_{CT})^i} + \frac{(FEPS_{t+5} - k_{CT} B_{t+4})(1+g_{LT})}{(k_{CT} - g_{LT})(1+k_{CT})^5} \\
GLS: P_t &= B_t + \sum_{i=1}^{12} \frac{FEPS_{t+i} - k_{GLS} B_{t+i-1}}{(1+k_{GLS})^i} + \frac{FEPS_{t+12} - k_{GLS} B_{t+11}}{(1+k_{GLS})^{12} k_{GLS}} \\
OJ: P_t &= \frac{FEPS_{t+1}}{k_{OJ}} + \frac{FEPS_{t+2} - FEPS_{t+1} - k_{OJ} FEPS_{t+1}(1-POUT)}{k_{OJ}(k_{OJ} - g_{LT})} \\
E: P_t &= \frac{FEPS_{t+2} - FEPS_{t+1} + k_E FEPS_{t+1} POUT}{k_E^2},
\end{aligned} \tag{1}$$

where

- $CT$  = Claus and Thomas implied cost of equity capital model,
- $GLS$  = Gebhardt, Lee and Swaminathan implied cost of equity capital model,
- $OJ$  = Ohlson and Juettner-Nauroth implied cost of equity capital model,
- $E$  = Easton (2004) implied cost of equity capital model,
- $P_t$  = market price of a bank's common stock at time t
- $B_t$  = value of equity per share taken from the most recent available financial statement at time t (WC03501-Common equity/ WC05301-Common shares outstanding) or calculated as  $B_{t+1} = B_{t+i-1} + FEPS_{t+1} - Dt+1$
- $FEPS_{t+i}$  = median I/B/E/S consensus earnings per share forecast for the next i-th year at time t
- $POUT$  = banks dividends payout ratio is calculated as a bank's historical five-year average dividends payout ratio or as current payout ratio if the former is not available (WC08260 Dividend payout (% earnings)5 yr avg, WC08256 Dividend payout (% earnings)).
- $g_{LT}$  = expected long-term earnings growth rate defined as the long-term forecast of annual inflation rate for a particular country as reported in April issue of Consensus Forecasts
- $K$  = cost of equity capital estimated by using the model identified in subscript.

**Geographic focus (diversification):** To measure diversification between major geographic areas in which the bank operates, I construct a deposit based Herfindahl-Hirschman Index (HHIS) for each bank. The index is the sum of squared deposit shares in each state that the bank operates. As HHIS rises, the bank becomes more concentrated and less diversified. I got the information on deposit distribution across various states from the Federal Deposit Insurance Corporation (FDIC) the summary of deposits (SOD) database. SOD reports geographic segment data as annual items in its database. Data contains information about branch office deposits for all FDIC-insured institutions as of June 30. Data is available on line from 1994 after words. The information is given for all federal countries in which the bank has its branches. The reporting is standardized. I standardize the ratio to make geographic and business focus variables comparable and regression results easier to interpret.

$$Geog\_focus = \frac{HHI_{GD} - 1/50}{1 - 1/50} \tag{2}$$

where  $Geog\_focus$  = geographic focus,  
 $HHI_{GD}$  = a deposit based Herfindahl-Hirschman Index for each bank.

**Business focus (diversification):** I followed other researchers (Acharya et al. (2006), Stiroh (2004)) and calculate banks' business focus (diversification) as Herfindahl-Hirschman index:

$$Geog\_focus = \frac{HHI_{GD} - 1/50}{1 - 1/50} \quad (3)$$

where  $HHI_{BD}$  = a revenue based Herfindahl-Hirschman Index for each bank,  
 $INT$  = net interest revenue,  
 $COM$  = net commission and fee revenue,  
 $TRAD$  = net trading revenue,  
 $OTI$  = all other revenue,  
 $TOR$  = total operating revenue, equal to the sum of the absolute values of  $INT$ ,  $COM$ ,  $TRAD$  and  $OTI$ .

As these authors suggest I use absolute vales in the equation above. This is so, because negative net revenue values would lead to negative shares for some revenue streams, while shares greater than one for other revenue streams. Herfindahl-Hirschman index increases with bank concentration. Similarly as above I standardize the ratio to make geographic and business focus variables comparable and regression results easier to interpret:

$$Bus\_focus = \frac{HHI_{BD} - 1/4}{1 - 1/4} \quad (4)$$

where  $Bus\_focus$  = business focus,  
 $HHI_{BD}$  = a revenue based Herfindahl-Hirschman Index for each bank.

The reason for including business diversification as a control variable into the regression is because Bodnar et al. (1998) show that by not including both types of diversification together into the model there emerges an omitted variable problem.

I use control variables as other similar studies. I control for banks' risk: *book leverage* (calculated as the ratio of book value of total liabilities to the sum of book value of equity and total liabilities) and *loan portfolio risk* (calculated as loan loss provisions over total loans); *information asymmetry*: the dispersion of analysts' earnings forecasts (measured as a natural logarithm of the coefficient of variation of analysts' one-year-ahead earnings per share forecasts as reported by I/B/E/S); market anomaly variables: *book to market* (measured as a ratio of book value of equity capital to market value of equity capital) and price momentum (measured as a buy and hold return on the bank's stock over the period: beginning of June (t-1) until the end of May (t)), *year dummies*.

### 3.2 Estimation methodology

**Ordinary least squares:** I begin investigating the impact of geographic diversification on banks' cost of equity capital by using OLS estimator. More specifically, I estimate the following model:

$$k_{average\ it} = \alpha_0 + \alpha_1 Geog\_div_{it-1} + \sum_{n=2}^N \alpha_n X_{it} + \varepsilon_{it}, \quad (5)$$

where  $k_{average\ it}$  = the average cost of equity capital for bank  $i$  in year  $t$ ,  
 $Geog\_focus_{it-1}$  = geographic focus for bank  $i$  in year  $t-1$ ,  
 $X_{it}$  = control variables,  
 $\varepsilon_{it}$  = an error term.

To control for the problem of heteroskedasticity I use robust standard errors, which allow for intragroup correlation.

**Panel data regression (two way fixed effects estimator):** In order to further investigate the relation between bank diversification and cost of equity capital I use two-way fixed effects model (a panel data approach). The reason for using panel data is because it controls for unobservable firm specific effects, bank characteristics that I cannot capture in the model and that remain constant over the investigation period. I estimate the following model:

$$k_{average\ it} = \alpha_0 + \alpha_1 Geog\_focus_{it-1} + \sum_{n=2}^N \alpha_n X_{nit} + c_{it} + u_{it}, \quad (6)$$

where  $k_{average\ it}$  = the average cost of equity capital for bank  $i$  in year  $t$ ,  
 $Geog\_focus_{it-1}$  = geographic focus for bank  $i$  in year  $t-1$ ,  
 $X_{it}$  = control variables,  
 $c_{it}$  = individual-specific effects  
 $u_{it}$  = an error term.

I use robust standard errors, which relaxes the assumption that the errors are independent of each other, viewing each bank observations as a cluster.

**Dynamic panel data regression (Blundell-Bond dynamic panel estimator):**

Next I include into the fixed effects model one lag of the dependent variable as regressor and estimate the model by using generalized method of moments. The main theoretical reason for using dynamic panel data is because it is modeling a partial adjustment based approach. In this study I use Blundell-Bond model. I estimate the following model:

$$k_{average\ it} = \gamma_1 k_{average\ i,t-1} + \alpha_1 Geog\_focus_{it-1} + \sum_{n=2}^N \alpha_n X_{nit} + c_i + u_{it}, \quad (7)$$

$$\varepsilon_{it} = c_i + u_{it}$$

where  $k_{average\ it}$  = the average cost of equity capital for bank  $i$  in year  $t$ ,  
 $Geog\_focus_{it-1}$  = geographic focus for bank  $i$  in year  $t-1$ ,  
 $X_{it}$  = control variables,  
 $c_{it}$  = individual-specific effects  
 $u_{it}$  = an error term.

I use robust standard errors. For one-step estimation, robust specifies that the standard error are consistent in the presence of heteroskedasticity and autocorrelation within panels. While in two-step estimation, the Windmeijer's finite-sample correction for the two-step covariance matrix is calculated.

**Heckman two-stage estimation procedure:** The last estimation technique I use is the Heckman's (1979) two-stage procedure. This one allows us to control for self-selection of firms that diversify (for the endogeneity of the firms' diversification decision). I follow an approach similar to the one used in Campa and Kedia (2002). I estimate a probit regression with a dummy variable whether the bank is diversified as the dependent variable in the first-step, while the choice of explanatory variables is based on variables found to influence the firms' decision to diversify in Campa and Kedia (2002). These variables are:

**Industry instruments:** Market attractiveness = the fraction of all banks in the state, which have their operation diversified in other states. If the bank reports deposit diversification in at least one other state it is defined as diversified. Into the analysis are taken public and private banks

which have total assets larger than 5 bn USD in at least one year of the investigation period. (Industry\_div)

**Time trends:** Number of completed M&A transactions in a given year (financial sector only). (N\_deals). For bank holding companies I take the number of completed M&A transactions that occurred in holding and other investment offices (sic: 67) in a given year. While for commercial banks I use the number of completed M&A transactions that occurred in depository institutions (sic: 60) a given year. I used database Zephyr to get this information. But given that this database does not report this data for the time period before 1996 the analysis is limited to the time period 1997 to 2010.

**Firm specific instruments:** a natural logarithm of total assets (Ln\_ta); a dummy variable whether the bank is listed on NYSE, AMEX or NASDAQ (Se); a dummy variable whether the firm belongs to the S&P 500 stock index (Sp500).

In the second stage, I regress the cost of equity capital on the standardized Herfindahl-Hirschman index of geographic focus, other independent variables, and the self-selection parameter (lambda). The system can be described as:

$$\begin{aligned}
 D_{it} &= 1 \quad \text{if } Z_i\gamma + \eta_i > 0 \\
 D_{it} &= 0 \quad \text{if } Z_i\gamma + \eta_i \leq 0 \\
 k_{average\ it} &= d_0 + d_1X_{it} + d_2Geog\_focus_{it-1} + \varepsilon_{it},
 \end{aligned} \tag{8}$$

where  $D_{it}$  = a diversification dummy equal to 1 if the firm operates in more than one geographic segment,  
 $Z_{it}$  = A set of explanatory variables described above.  
 $k_{average\ it}$  = the average cost of equity capital for bank  $i$  in year  $t$ ,  
 $X_{it}$  = control variables,  
 $Geog\_focus_{it-1}$  = geographic focus for bank  $i$  in year  $t-1$ ,  
 $\varepsilon_{it}$  = an error term.

Under the assumption that the error terms are bivariate normal, the system can be estimated as Heckman selection model.

**Tab. 1: Descriptive statistics for variables**

Variable	Median	Mean	Std. Dev.	1st quartile	3rd quartile	N
Average	0,078	0,085	0,029	0,069	0,092	1 021
Geog focus	0,597	0,621	0,311	0,339	0,971	1 021
Bus_focus	0,378	0,399	0,183	0,258	0,506	1 021
Leverage	0,914	0,910	0,025	0,900	0,926	1 021
Llprov tl	0,003	0,006	0,013	0,002	0,005	1 021
Ln_kv	0,654	0,856	0,980	0,248	1,221	1 021
Momentum	0,093	0,120	0,316	-0,062	0,287	1 021
Bm	0,494	0,747	1,500	0,367	0,646	1 021
Total_assets	16 800 000	89 000 000	250 000 000	9 096 500	52 100 000	1 021

**Tab. 2: The effect of geographic focus on banks' cost of equity capital**

Variables		OLS	FE	System GMM	Heckman
<b>L.Average</b>	<b>B</b>			<b>0,322***</b>	
	Se			0,102	
<b>Geog_focus</b>	<b>B</b>	<b>-0,006*</b>	<b>-0,011*</b>	<b>-0,006*</b>	<b>-0,006**</b>
	Se	0,004	0,007	0,004	0,003
<b>Bus_focus</b>	<b>B</b>	<b>0,006</b>	<b>-0,011</b>	<b>0,005</b>	<b>0,013**</b>
	Se	0,007	0,009	0,006	0,006
<b>Leverage</b>	<b>B</b>	<b>0,066</b>	<b>-0,026</b>	<b>0,084**</b>	<b>0,013</b>
	Se	0,044	0,055	0,043	0,046
<b>Llpro_tl</b>	<b>B</b>	<b>0,393***</b>	<b>0,600***</b>	<b>0,223***</b>	<b>0,841***</b>
	Se	0,062	0,092	0,058	0,228
<b>Ln_kv</b>	<b>B</b>	<b>0,011***</b>	<b>0,010***</b>	<b>0,010***</b>	<b>0,011***</b>
	Se	0,001	0,001	0,002	0,002
<b>Momentum</b>	<b>B</b>	<b>-0,026***</b>	<b>-0,029***</b>	<b>-0,035***</b>	<b>-0,028***</b>
	Se	0,003	0,004	0,004	0,006
<b>Bm</b>	<b>B</b>	<b>0,001***</b>	<b>0,002</b>	<b>0,001</b>	<b>0,001*</b>
	Se	0,001	0,001	0,001	0,001
	<b>constant</b>	<b>0,015</b>	<b>0,113**</b>	<b>-0,012</b>	<b>0,060</b>
	Se	0,041	0,050	0,034	0,043
	F	45,385	42,530		
	N	1 021	1 021	1 002	987
	Censored N				265
	r2	0,553			
	r2_o		0,521		
	r2_b		0,113		
	r2_w		0,643		
	Wald chi2			855,76***	
	z(AR1)			-3,57***	
	z(AR2)			-1,47	
	Lambda				-0,005**
	No of groups		93	92	
	No of instruments			92	
	Hansen J test			79,42	
	Hausmanov test		65,47***		

**Notes:** Variables are defined above. b refers to the regression coefficient, se to robust standard error. N is number of observations. OLS refers to OLS regression with time dummies. FE is

fixed effects with time dummies. System GMM is a two step Blundell-Bond dynamic panel data estimator. Heckman is a two step Heckman selection model.

\*\*\*/\*\*/\* denotes statistical significance at the 1%/5%/10% level.

## 4 Conclusions

Interstate diversification of American banks was initially constrained by severe regulation, however over the years this regulation was weakened and the barriers, which disable banks to expand geographically, were reduced. As a result we have witnessed increasing trend in geographic diversification of American banks in the past decade. In relation to this fact, the question of whether interstate geographic diversification has a statistically significant effect on banks' cost of equity capital has been left unanswered. So, in this study I address this issue and I investigate the link between the banks' interstate diversification and their cost of equity capital. By doing so I try to find some further evidence for answering the question of whether banks should diversify geographic or should they stay focused to achieve lower cost of equity capital. Let me also add that the reason why the issue of diversification is an important one is because it relates to the optimum degree of diversification, while the cost of equity capital is an important variable, because it is the determinant of shareholders value.

Given that from a theoretical point of view the effects of geographical diversification on cost of equity capital are controversial, I try to contribute to this debate by examining the relation between the banks' geographic diversification and their cost of equity capital. I try to determine if positive or negative net effects prevail. So, my central research question addressed is: has geographic diversification a statistically significant effect on banks' cost of equity capital? In the empirical analysis I used various estimation techniques. The sample consisted of the largest public banks over the period between 1995 and 2010. I estimate the implied cost of equity capital by implying four commonly used models. To measure diversification between major geographic areas in which the bank operates, I construct a deposit based Herfindahl-Hirschman Index.

The main finding of this analysis is that geographic diversification has a positive effect on banks cost of equity capital. This finding is consistent with the agency theory, internal capital market, investors' negative reaction to this banks' business strategy, and some empirical studies that argument their findings about the negative net effect of geographic diversification with the fact that banks develop more risky credit portfolios, the revenue sources and business practices in these markets.

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## ***Should Banks Be Diversified Geographically? Evidence from Interstate Diversification of American Banks***

### **Summary**

Interstate diversification of American banks was initially constrained by severe regulation. However over the years this regulation was weakened and the barriers, which disable banks to expand geographically, were reduced. So, in past decade we have witnessed an increasing trend in geographic diversification of American banks. In relation to this fact, the question of whether interstate geographic diversification has a statistically significant effect on banks' cost of equity capital has been left unanswered. This is the reason why in this study I address this issue. I try to find some further evidence for answering the question of whether banks should diversify or should they stay focused to achieve lower cost of equity capital. The sample consists of large public banks over the period 1995 - 2010. Study uses data on each individual bank deposit diversification and four commonly used models of the implied cost of equity capital. In the empirical analysis I use various estimation techniques (panel data, dynamic panel data, Heckman two-stage estimation procedure). The main finding of the analysis is that more diversified banks have higher cost of equity capital. This finding is consistent with the agency theory, internal capital market and investors' negative reaction to this banks' business strategy.

**Key words:** Banking, Interstate diversification; Cost of equity capital.

**JEL classification:** G21, G39.

# Survival Models as Credit Risk Modelling Techniques: Evidence from the Romanian Market

*Cimpoeru Smaranda\**

## 1 Introduction

Usually, models used for assessing credit risk are oriented towards the debtors' creditworthiness and its evaluation, mostly through a score. The resulted score is used in the credit decision, in rating the client and in establishing its position in the bank's portfolio.

However, none of the usual models (e.g.: discriminant analysis, logistic regression, neural networks, etc.) doesn't make predictions regarding the moment of the default in the future. This brought the idea of hazard models or survival analysis techniques to be used in modelling credit risk. As per Banasik, Crook (1999), survival analysis used in modelling credit risk tries to answer the question of "when" and not "if" a debtor will default. The same authors draw attention of the dynamics of the debtor's creditworthiness, which is a key element in this kind of analysis, as opposite to the other statistic classification models.

Survival analysis is a well known technique, especially used in medical studies, in order to determine the symptoms of a certain disease, but is also used in engineering – to model the durability of certain machines, components, etc. The interest of economist in these type of models is relatively recent, as hazard models were first used in economic related subjects in the 80s. From an econometric point of view, they are referred to as duration models (as per Greene).

Banasik, Crook (2009) mention multiple advantages of the hazard models as credit risk modelling techniques:

- The models can be later used in calculating the profit scoring – in order to know the time until default of a client which allows an easy calculation of the estimated profit on the respective client
- Predicting the moment of the default is very useful in establishing the provision budget
- It eases the inclusion of the variations from the general economic context.

The paper is organized as follows. In Section 2 we introduce the particularities of working with survival models and some basic definitions. In Section 3 we highlight the most important achievements in the specialty literature of using these type of models in credit risk management. In Section 4 we present the accelerated failure time model, the proportional hazard model and the Kaplan-Meier estimator. In the end, in Section 5, we apply a hazard model to a sample of Romanian medium-sized companies. We estimate the model and conclude that the Weibull distribution is the most suited to fit the data. From reviewing the literature, this is the first time survival analysis is applied on an emerging credit risk market.

## 2 Survival models and their particularities

Regardless of the field where is used, survival analysis assumes determining the time period until the event of default or failure for a certain borrower. This period of time is called the survival time. As per Cox, Oakes, in order to determine the survival time, one has to know three elements:

- The Origin – must be precisely determined for every individual. For example, in medical

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studies, the origin is considered to be the moment the patient was included in the studied group. In credit risk hazard models, one can consider the origin the beginning of the observation period or the moment the client was first credited by the financial institution.

- The measuring scale – is mostly real time. Other options would be the operating time of a system, the number of kilometers of a car (for engineering problems).
- Defining the event of failure – for engineering problems, this is usual the moment when a certain machine/component ceases to functions, whereas for medical studies the failure event is the patient's death. As for the credit risk problem, the failure event comes with the default of the client, with its impossibility to fulfill its credit obligations.

To resume, the interest variables in these problems are the survival times, defined as the time from the origin until the failure event. The observation are:  $t_1, t_2, \dots, t_n$  – for a portfolio with  $n$  debtors, where  $t_i$  is the survival time for a certain debtor.

A specific problem in working with hazard models is data censoring. This is mainly due to data observation during the analyzed process. Thus, is possible that at the present moment, after collecting the data, to find some clients to default after the end of the observation period. From a mathematical point of view, this can be transposed as: let the individual  $i$  with the survival time  $T_i$  and the observation period  $c_i$ . In this case, our sample will be made of:  $X_i = \min(T_i, c_i)$  . Moreover, we have the binary variable,  $V_i$ :

$V_i = 1$ , if  $T_i \leq c_i$  – then the corresponding data is not censored,

$V_i = 0$ , if  $T_i > c_i$  – then the data is censored,

where  $V_i$  = is the binary variable that indicates if the data is censored or not,

$c_i$  = the observation period,

$T_i$  = the survival time of individual  $i$ .

As mentioned by Banasik, Crook (1999), when applying hazard models to credit risk modelling, censored data are also considered the cases when the debtors reimburse the exposure, in advance or on time, but during the observing period. Defining the censored data differs from one problem to another, but in general, for credit risk modelling problems, the convention is that a data is censored if the failure event doesn't take place in the observed period or the client has no more exposure at the end of the observation period.

Another issue in dealing with duration or hazard models is the evolution of exogenous variables. What we are trying to do is writing the survival time as a regression of multiple input variables, as determinants of the dependent variable (survival time). The problem that arises is the dynamics of the exogenous variable through the on-going observation period. As a convention, one will take the value of the exogenous variable at the end of the observation period.

### 3 Survival analysis in credit risk modelling – literature review

Survival analysis and hazard models were first utilized as scoring methods only in 1992, by B. Narain. In his study, he applied the accelerated time failure model to a sample of 1.242 applicants (individuals) of a 24 months credit. Multiple exogenous variables were considered: marital status, history in bank relationship, time on current job position, etc. Default occurs if three consecutive installments are not reimbursed. Also, an individual that has reimbursed at least ten installments without registering delays of more than three months is considered a „good” debtor and included in the sample of censored observations. The solution proposed by Narain is a parametric one – he started from the exponential distribution of the survival function. The distribution was tested with a graphical method and the parameters were estimated with the

maximum likelihood function. The results estimates were used in computing the survival probability until time  $t$ . The results are satisfying, however the number of variables included in analysis is relatively small. Although the distribution function is simple, it fits well the chosen data.

The disadvantage of Narain's study is the lack of a comparative analysis between the proposed model and other credit risk modelling techniques. Banasik, Crook (1999) overcome this disadvantage and in their study, they apply multiple variants of the proportional hazard models, as well as logistic regression. The results are good, especially for predicting the debtors which will reimburse the credit in advance in 12 months from granting it. They have chosen a sample of 50.000 credits granted to personal individuals, on a period of three years. 70% of observation is represented by the training sample, which is used for estimating the parameters of the model, while the rest of 30% of observations are used for testing and validating the model. In the mentioned study, about a third of the observations are censored, that is the credit of the censored individuals has either been reimbursed in advance or on time in the observed period, or the credit is still active at the end of the observation period, but it hasn't registered overdue installments, nor the debtor has defaulted.

The analysis is completed by Stepanova, Thomas's study, which adds a behavioral score. This score is built using information regarding the client's activity, the payments made and it's recorded on a monthly basis. In their article, they apply Cox's proportional hazard model, at first only for the regressors, afterwards for the behavioral factors. The hazard function remains the same; the study only introduces new regressors which are grouped under a behavioral component.

The results are compared with the ones obtained by applying the logistic regression through the ROC function and it shows that the hazard models that include the behavioral score are competitive versus the logistic regression ones.

Stepanova and Thomas (2001) have added to their study, the calculation of the estimated profit based on the survival probabilities. When granting the credit, the profit is:

$$\pi_{at\_granting} = \sum_{i=3}^{T+2} S_i \frac{a}{(1+r)^{i-2}} - L, \quad (1)$$

- where
- $S_i$  = the survival probability of a certain individual until time  $i$ ,
  - $a$  = monthly principal to be reimbursed,
  - $L$  = initial amount of granted credit,
  - $T$  = credit's maturity,
  - $r$  = monthly interest rate.

This means that the estimated profit from a credit is the sum of the discounted monthly installments multiplied by the probability that the credit will be reimbursed. The authors also propose an adjusted formula for calculating the monthly estimated profit.

Andreeva (2006) brings a new dimension to the hazard models, by applying the survival analysis to multiple countries instead of a single one. The article studies the possibility of applying a generic model to a series of European countries and the analysis of the survival models' performances in the presence of heterogeneous populations (different countries). The study includes three countries: Belgium, Netherlands, Germany, and the models used are the accelerated time failure model with multiple distributions, the proportional hazard mode, parametric and non-parametric, as proposed by Cox. The results are similar and close to the ones obtained by the logistic regression technique (for comparing the methods, ROC functions was used). Another element introduced in this article is using the data for revolving credit cards, not

only for reimbursable credits, as seen in the studies mentioned before.

#### 4 The survival function and the hazard rate. Particular hazard models

Duration models can be seen as a particular type of regression. Indeed, the survival times,  $t_i$  can be seen as realizations of the random variable,  $T$ , a dependent variable that can be modeled as a function of multiple exogenous variables. The random variable  $T$ , can be expressed through three functions. The first of them is the probability distribution function,  $f(t)$ :

$$f(t) = \lim_{\Delta \rightarrow 0} \frac{\text{Prob}(t < T < t + \Delta)}{\Delta}. \quad (2)$$

As we know, the probability distribution function shows the probability for an entity to default during the time interval  $(t, t + \Delta)$ . Thus, the cumulative distribution function is:

$$F(t) = \int_0^t f(s) ds = \text{Prob}(T \leq t). \quad (3)$$

That is the probability that a certain entity does not default until time  $t$ . However, what we are really interested in is finding the chance that a borrower will survive after a specified moment, probability modeled through the survival function, denoted  $S(t)$ , that can be depicted from the cumulative distribution function as follows:

$$\text{Prob}(T \geq t) = 1 - F(t) = S(t). \quad (4)$$

where  $S(t)$  = the survival function,  
 $F(t)$  = the probability of default.

Knowing that the debtor hasn't defaulted until time  $t$ , it is interesting to find the probability that the event of default will not happen for a very short time interval  $\Delta$ . That is, the debtor that survived until time  $t$ , will also survive until  $t + \Delta$ :

$$l(t, \Delta) = \text{Prob}(t \leq T \leq t + \Delta | T \geq t). \quad (5)$$

We define now the hazard function or hazard rate:

$$\begin{aligned} \lambda(t) &= \lim_{\Delta \rightarrow 0} \frac{\text{Prob}(t \leq T \leq t + \Delta | T \geq t)}{\Delta} = \lim_{\Delta \rightarrow 0} \frac{F(t + \Delta) - F(t)}{\Delta S(t)} = \\ &= \frac{1}{S(t)} \lim_{\Delta \rightarrow 0} \frac{F(t + \Delta) - F(t)}{\Delta} = \frac{f(t)}{S(t)} \end{aligned} \quad (6)$$

The hazard function shows the probability that a debtor, who survived until moment  $t$ , defaults in the interval  $(t, t + \Delta)$ . In general, one will prefer using this function as it reflects the immediate risk of an individual. There are multiple functions for modelling the hazard rate, thus determining the distribution of the survival function. The most known and used in practice distributions are: exponential, Weibull, log-normal, log-logistic.

For an exponential distribution, we obtain a constant hazard rate, which signifies that the borrower has the same chance of default at every moment of time. On the other hand, for the Weibull, we have:

$$\lambda(t) = \lambda p (\lambda t)^{p-1} \text{ and } S(t) = e^{-(\lambda t)^p}. \quad (7)$$

and  $\lambda, p$  are the parameters of the functions. These parameters are estimated with the maximum likelihood function, which is defined as follows:

$$\ln L = \sum_{\text{censored observations}} \ln f(t, \lambda, p) + \sum_{\text{uncensored observations}} \ln S(t, \lambda, p). \quad (8)$$

where  $L$  = the maximum likelihood function

$f(t, \lambda, p)$  = hazard rate / makes sense to calculate it only for the censored observations

$S(t, \lambda, p)$  = survival function / makes sense to calculate it for uncensored observations

All functions defined until now (default, hazard, survival function) haven't had parameters exogenous variables. As mentioned by Narain (1992), if all we know about the individuals are the default time or the fact that the default took place or not in the observed time interval (for the censored data), then all the individuals will have the same probability of survival until a certain moment,  $t$ . But, if we have additional information regarding some input variables, then the probability of default will differ from one borrower to the other. Thus, we have to introduce some regressors in the duration model.

Thus, the hazard function has as input variables: time and one or more regressors. We can write the hazard function for the individual  $i$ :  $\lambda_i = e^{-\beta x_i}$ . We take the Weibull distribution (eq. 7) and we make the following variable substitution:

$$w_i = p \ln(\lambda_i t_i) = p(\ln(t_i) - \beta x_i). \quad (9)$$

thus we get:

$$f(w_i) = p e^{w_i - e^{w_i}} \quad \text{and} \quad S(w_i) = e^{-e^{w_i}}. \quad (10)$$

If we take the binary variable,  $\delta_i$  defined by:

$$\delta_i = \begin{cases} 1, & \text{if the observation is not censored} \\ 0, & \text{if the observation is censored} \end{cases}$$

Then we can rewrite the maximum likelihood function (eq. 8) as:

$$\ln L = \sum_i [\delta_i \ln f(w_i) + (1 - \delta_i) \ln S(w_i)]. \quad (11)$$

This is called the accelerated failure time model. Making  $\lambda$  a function of multiple regressors changes the scale of measuring on the time axis, thus the idea of acceleration. In this specific kind of model, one must choose a certain distribution for the hazard function, the usual one used are the ones also mentioned before.

Another model very often used in practice is the proportional hazard model:

$$\lambda(t_i) = e^{-\beta x_i \lambda_0(t_i)}. \quad (12)$$

where  $\lambda_0(\cdot)$  = the hazard function in standard conditions, when all regressors equal zero

$\beta$  = the parameters of the model

$x_i$  = the regressors

The hazard function in standard conditions is viewed as a parameter that has to be estimated for each observation. One can assume a certain distribution for  $\lambda_0$  and then estimate the parameters' distribution together with the parameters  $\beta$ . This is called a parametric solution. Weibull and the exponential distribution are the only distributions that can be used in the accelerated models, as well as in the proportional ones.

A nonparametric solution for the proportional hazard model is the method proposed by Cox that does not impose the estimation of  $\lambda_0$ . In this method, the partial likelihood function is used, starting from the conditional probability of an individual  $i$  to default at time  $t_i$ , given  $R(i)$ , the set of individual that survived until the moment  $t_i$ :

$$\frac{e^{-\beta' x_i \lambda_0(t_i)}}{\sum_{k \in R(i)} e^{-\beta' x_k \lambda_0(t_i)}} = \frac{e^{-\beta' x_i}}{\sum_{k \in R(i)} e^{-\beta' x_k}}. \quad (13)$$

where the notations are the same that we used above.

From the above equation, we can obtain the maximum likelihood function. Cox, Oakes, sustain this model for its ease of interpreting the linear relationship between the regressors and the hazard function. Thus, the influence of the regressors on the survival or default of the individuals is easy to explain when using this model.

The methods presented so far start from an assumption regarding the probability distribution of a hazard function. The proposed solution is parametric, that is the solution aims at estimating the functions' parameters. Their popularity is given especially by the simplicity, but in many cases the constraint of the observations in a fixed structure could affect the estimates.

A more close to reality representation could be made by imposing fewer restrictions. The Kaplan-Meier estimator is part of this simplified category of models – it assumes an empirical approach for the estimate of the hazard and survival function. The method starts with an ascending sort of the duration observations:

$$t_1 \leq t_2 \leq \dots \leq t_n$$

where  $t_i$  is the life duration for the individual  $i$ .

Another hypothesis of this model is the lack of censored observations. Also, we have  $K$  distinct times of survival, denoted  $T_K$ . If there are no identical life durations, than  $K = n$ . We denote by  $n_k$  the number of individual that survive the moment  $T_K$ , that is their life duration is at least  $T_K$ . This set of individuals represents the risk exposure at the moment  $T_K$ . Also, we denote by  $h_k$  the number of individuals that defaulted until  $T_K$ . Considering these notations, the Kaplan-Meier estimator introduces the following empirical estimation for the survival function:

$$\hat{S}(t) = \frac{n_k - h_k}{n_k}, \quad (14)$$

and the estimator for the hazard function is:

$$\hat{\lambda}(t) = \frac{h_k}{n_k}, \quad (15)$$

The Kaplan-Meier estimator has been developed to include the censored observations. More details about these methods can be found in Kiefer (1988).

## 5 An example of survival models on the Romanian credit risk market

In order to illustrate the use of hazard models in credit risk modelling, we choose a sample of 105 small companies in Romania, with a turnover between EUR 700.000 and EUR 3.755.000 at the end of 2009. 75 of the entities in the sample are non-defaulted companies and 30 are defaulted cases. A firm is considered defaulted if the insolvency procedure was started in 2010. Data are collected from the financial statement at the end of 2009 (public available data). So, the default is observed in the next 12 months from the ending of the input data observation period.

The chosen sample represents about 2% of the total population of companies with the turnover in the mentioned interval.

As regressors or input variables we have chosen 9 financial ratios. Our choice of financial ratios is based on the set of ratios usually used in the literature combined with data availability. The initial set of financial ratios is listed below:

- R1 – Debt to Equity Ratio
- R2 – Return on Assets
- R3 – Return on Equity
- R4 – Receivables rotation period
- R5 – Total Sales to Assets Ratio
- R7 – Indebtness ratio
- R8 – Inventory rotation period
- R9 – Age of the company

First of all, we computed a simple statistical analysis of the nine ratios. The results are found in the following table:

**Fig. 1: Descriptive statistics for the set of financial ratios**

Variable	N	Simple Statistics				
		Mean	Std Dev	Sum	Minimum	Maximum
R1	105	8.55811	42.43681	898.60149	-76.65754	402.44240
R2	105	5.12324	8.73065	537.93994	0	47.56819
R3	105	18.28825	31.55182	1920	-1.54407	201.42518
R4	105	115.33673	129.63184	12110	2.72093	828.66275
R5	105	2.37999	7.74515	249.89931	0.23894	79.76042
R6	105	14.90932	59.41520	1565	-58.63805	484.63895
R7	105	0.76852	0.39019	80.69435	0.03740	2.24070
R8	92	35.43330	64.15312	3260	0.51360	383.07658
R9	105	11.41905	5.23997	1199	1.00000	19.00000

We have 105 observations for eight of the ratios and only 82 for the ratio R8, as we eliminated the outliers for this variable (companies without inventories). We observe a relatively high value for the ratio R4, which can be explained by the heterogeneity of activity sectors of the entities forming the sample. We also note the relatively high indebtedness rate of the companies (the mean of ratio R7 is 0.76).

For the consistency of the analysis, we will conduct a correlation analysis. We calculate the Spearman and Pearson correlation coefficients between each two ratios. We obtain a high correlation between R6 and R1 (0.84), R3 (0.66), and R5 (0.51), as between R2 and R5 (0.35), R3 (0.63) and R7 (0.45). Thus, we decide to eliminate ratios R2 and R6 from the input set.

Now, we have the basis to start applying the hazard models. We want to find the distribution of the survival times for the entities in the sample and observe the relationship between the survival time and the financial ratio set chosen.

First, we have to define the life duration variable. We will take as origin point the beginning of the observation period - that is January 2009. The life duration will be defined as the number of months from the beginning of 2009 until the opening of the insolvency procedure. For example, if a company has been notified with the opening of the insolvency procedure in November 2010, then the life duration for this company would be 12 months from 2009 plus 10 months in 2010, thus 22 months. Considering that the defaulted cases were chosen to become insolvent during

2010, the life duration will vary between 12 and 24. The observation period ends at the end of 2010. Still, only 30 cases are defaulted, for the rest of 75 the event of default does not happen in the specified observed period, thus these observations are censored.

For evaluating the hazard models, we use the three procedures available in SAS: the lifereg procedure used for estimating an accelerated time failure model, phreg – for o proportional hazard model. Both procedures estimate parametric models and the choice of the distribution is permitted. The third procedure, lifetest assumes a non-parametric approach (Keplren-Meier estimator, etc.). All three procedures have options for adding independent variables in order to explain the life duration. In the below table we have the results for estimating an accelerated time failure model (lifereg procedure) with regressors the set of financial ratios; we use the Weibull distribution.

**Fig. 2: The results for estimating an accelerated time failure model (using SAS v 9.2)**

```

The LIFEREG Procedure
Model Information
Data Set          WORK.SURVIVAL
Dependent Variable Log(durata)
Censoring Variable Y
Censoring Value(s) 1
Number of Observations 105
Noncensored Values 30
Right Censored Values 75
Left Censored Values 0
Interval Censored Values 0
Name of Distribution Weibull
Log Likelihood -37.03750403

Algorithm converged.

Type III Analysis of Effects
Effect          DF      Wald Chi-Square    Pr > ChiSq
R1              1      8.4885      0.0036
R3              1      7.7897      0.0053
R4              1      0.0102      0.9194
R5              1      7.8472      0.0051
R7              1     17.0622     <.0001
R8              1      1.6756      0.1955
R9              1      3.8244      0.0505

Analysis of Parameter Estimates
Parameter      DF Estimate Standard Error 95% Confidence Limits Chi-Square Pr > ChiSq
Intercept      1  3.4964  0.1851  3.1335  3.8592  356.65  <.0001
R1             1 -0.0049  0.0017 -0.0082 -0.0016  8.49  0.0036
R3             1  0.0096  0.0035  0.0029  0.0164  7.79  0.0053
R4             1  0.0000  0.0002 -0.0005  0.0005  0.01  0.9194
R5             1 -0.0167  0.0060 -0.0283 -0.0050  7.85  0.0051
R7             1 -0.4089  0.0990 -0.6029 -0.2149  17.06  <.0001
R8             1  0.0016  0.0013 -0.0008  0.0041  1.68  0.1955
R9             1  0.0239  0.0122 -0.0001  0.0478  3.82  0.0505
Scale         1  0.2458  0.0412  0.1770  0.3415
Weibull Shape 1  4.0680  0.6822  2.9284  5.6510

```

In the first table we have information about the model. Y is the binary variable which takes the value 1 if the variable is censored. We have 70 censored observations – the cases of non-defaulted borrowers and 35 defaulted (non-censored) observations. The fact that the defaulted and censoring criteria are the same is a disadvantage as graphic representations are not suggestive for this specific model.

Also in the first table there are mentioned the distribution applied (Weibull) and the value of the maximum likelihood function which permits the comparison of the models.

In the second table we have information regarding the estimation of the parameters – regarding the significance test for each parameter. We notice that the parameters for the variables R4 and R8 are not significant. Also, the parameter of R9 is at the limit of significance. We also have the confidence interval for each estimate.

We have run the model for other types of distribution and we obtained the following values for the maximum likelihood function: -38.567 for the log-logistic distribution, -39.179 for the log-normal distribution, -126.564 for the logistic distribution, -126.94 for the normal distribution. So, lower values than the maximum likelihood function of the Weibull distribution, -37.037. We can thus conclude that the Weibull distribution model is the most appropriate one.

We can also visualize the estimated values for the survival duration, having in mind the influence of the explanatory variables. These predictions are values of the cumulative density function:

$$CFD = F(w_i), \tag{16}$$

$$w_i = \frac{y_i - x_i' b}{\hat{\sigma}}, \tag{17}$$

Where  $y_i$  = life duration

$x_i'$  = the vector of explanatory variables

$b$  = the vector of the estimates

$F$  = cumulative distribution function of the estimator

For our example, we have the following statistic description of the data set estimator:

**Fig. 3: The cumulative distribution function of the estimator**

Analysis Variable : predicted Estimated Cumulative Distribution Funct.						
Y	N	N	Mean	Std Dev	Minimum	Maximum
0	30	30	0,2895124	0,2732977	0,0038630	0,9149006
1	75	75	0,1745573	0,1549494	0,0047609	0,7216632

## 6 Conclusions

In this article, we wanted to make a review of using survival analysis as a credit risk modelling technique and apply it to an emerging credit risk market. We have introduced the particularities of working with survival models, the most important achievements in the specialty literature when using these types of models in credit risk management, and then we presented some particular models. We applied a hazard model to a sample of Romanian medium-sized companies, estimated the model and we have concluded that the Weibull distribution is the most suited to fit the chosen data. As exogenous variables we used seven financial ratios, which resulted after a correlation analysis. From reviewing the literature, this is the first time survival analysis is applied on an emerging credit risk market.

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## ***Survival Models as Credit Risk Modelling Techniques: Evidence from the Romanian Market***

### **Summary**

Survival models used as credit risk modelling techniques are a relatively new method of managing credit risk. We try to make a short but still apprehensive introduction to this class of models, starting from the basic definitions, continuing with particular models and specific methodology. We also note the most important achievements of using duration models in credit risk modelling, when reviewing the specialty literature. In the end, we estimate an accelerated failure model on a sample of Romanian companies. It's the first time such a model is used on an emerging economy for estimating firms' credit risk.

**Key words:** Hazard models; Credit risk modelling; Survival analysis.

**JEL classification:** G32, C51.

# Panel Cointegration Analysis of the Effects of Fiscal Policy on Current Account: New Evidence from MENA Countries

*Hany Eldemerdash, Sara Maioli, Hugh Metcalf\**

## 1 Introduction

Many empirical studies in the literature concerning the behaviour of aggregate imports have been carried out for many economies [see for example (Alias and Cheong 2000), (Abbott and Seddighi 1996), (Giovannetti 1989), (Dutta and Ahmed 1999), (Tang 2003), and (Tang 2003)] but few of them are relating fiscal policy to the aggregate imports and its effect on current account balance. These studies have been conducted using two specifications. First, they were conducted assuming that the import content of each macro component of final expenditure is the same, thus adopting a single demand variable in the import demand equation. But the use of a single demand variable in the aggregate import demand function would lead to aggregation bias, model misspecification, and poor forecasting performance. One possible explanation of these defects is that the different macro components of final expenditure have different import contents. Secondly, and to avoid the defects, other studies were conducted using a convenient functional form by decomposing that single demand variable into its different contents of private consumption, public expenditures, investment, and export demand. The second specification is very useful in investigating the relationship between fiscal policy and current account by analyzing the relationship between government expenditures and imports.

Despite the multitude of literature regarding aggregate import demand function, very few of studies are taking into account the effects of a lasting change in government expenditure on a country's aggregate imports and hence its current account balance. One strand of this literature, Nickel and Funke (2006) found that the increase in government expenditure has a significant positive impact on goods and services imports in the G-7 countries. An increase in government expenditures by 1 percent leads to an increase in goods imports of about 0.4 percent, and to an increase in service imports of almost 0.5 percent. There appears to be a unanimity that lower government spending and simultaneous enhancement in the fiscal balance lead to an improvement in the current account. Empirical studies until now, however, have led to confusing results. Some empirical research found that higher fiscal deficits lead to higher current account deficits; others provided evidence that the opposite is true or shown no significant impact at all. Furthermore, earlier studies experienced two shortcomings: (a) Poor econometric techniques that allow studying long-run equilibrium relationships between variables in time series and cross-sectional data. (b) Almost all of these studies took into account only the effect of different import contents of consumption, investment, and exports, but they do not distinguish between private and public consumption.

This paper employs the recently developed econometric estimations of panel data<sup>1</sup> to investigate empirically the relationship between fiscal policy and the current account by analyzing the relationship between government spending and imports. Inside the current account, we focus on imports demand because it's basically determined by domestic demand factors, whereas exports depend on external demand factors. In contrary to the conventional form of import equation

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<sup>1</sup> This estimation includes panel cointegration analyses, panel unit root tests, dynamic fixed-effects (DFE), pooled mean-group (PMG), and mean-group (MG) estimations

which takes total demand (measured by GDP) as an explanatory variable, we decompose GDP to private consumption, government spending, investment, and exports. To illustrate the effects of fiscal policy on current account, we estimate the elasticities of import demand to these disaggregated components of economic activity. We expect that the government consumption elasticity is generally lower than the import content of other demand components.

The empirical examination in this study is based on annual panel data of some MENA countries<sup>2</sup> for the years 1970 through 2008. We use Westerlund panel cointegration test, dynamic fixed-effects (DFE), pooled mean-group (PMG), and mean-group (MG) techniques to estimate the elasticities of each component of total demand to the import. The paper is organized as follows. Section two presents the model and data specification. Section three explains the econometric estimation techniques and empirical results. Section four gives the conclusion.

## 2 Model and data specification

Using the Marshallian demand function which relates the total quantity of imports demanded by a country to its real income -or another scale variable that captures domestic demand component- and to the price of imports and domestic substitutes measured in the same currency (Carone 1996). We employ the traditional specification (Murray and Ginman 1976) and (Gafar 1988), which relates the quantity of imports demanded by country to its real GDP and relative prices. Real GDP has been widely used in empirical studies as a proxy for real domestic activity (demand). Meanwhile, the relative prices term is the ratio of import prices to domestic prices (assuming a degree of substitutability between imports and domestic goods). The general function for import demand can be written as:

$$IM_t = f(Y_{it}, RP_{it}) \quad (1)$$

$IM$  denotes the volume of imports demanded,  $Y$  is the income which is delegated by real GDP, and  $RP$  is the relative price (the import price index measured by world consumer price index deflated by GDP deflator as an index of domestic prices). The logarithmic form model is specified as:

$$im_t = \gamma_0 + \gamma_1 y_{it} + \gamma_2 rp_{it} + \varepsilon_t \quad (2)$$

Where lowercase  $im, y$  &  $rp$  are the natural logarithmic forms and  $\varepsilon_t$  is the error term. Parameters  $\gamma_0, \gamma_1, \gamma_2$  denote the constant term, income and relative price elasticity of imports respectively. Theoretically, there are two reasons why equation two (and subsequently equation 4) is specified in logarithms: (1) it allows imports to react in proportion to a rise and fall in the explanatory variables; and (2) on the assumption of constant elasticities, it avoid the problem of drastic falls in the elasticity as imports rise (Khan 1974). Empirically, the data in use looks to be normally distributed in logs, whereas the unlogged data are skewed to the right. Moreover, when estimating the models in equations 2 and 4 using logged variables, the residual also appears to be distributed more normally than the residual of unlogged variables estimation despite the fact that both estimations (i.e. logged versus unlogged variables) provide the same signs and significances apart from the magnitudes. Furthermore, the log-log models of equations 2 and 4 have been supported by Box-Cox specification test proposed by Box and Cox (1964). Box-Cox test is based on Maximum Likelihood Estimation (MLE) to compare the linear and log specifications in order to obtain the best possible fit and choose between economically sensible specifications.<sup>3</sup>

<sup>2</sup> These countries are Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, and UAE

<sup>3</sup> The results and graphs supporting the current log-log specification are available from the author upon request.

Following the Keynesian view, we expect that a rise in domestic income will stimulate imports resulting in positive income elasticity ( $\gamma_1 > 0$ ), (Bahmani-Oskooee and Niroomand 1998) and (Bahmani-Oskooee 1998). An increase in relative prices will hurt import volume resulting in negative import price elasticity, thus ( $\gamma_2 < 0$ ). Previous work suggests that final consumption expenditure is an important factor affecting import demand if the different components have different import contents (see among others: Giovannetti (1989), Abbott and Seddighi (1996) and Alias and Cheong (2000)). The intuition behind this argument is that, if the composition of demand changes, the aggregate import propensity would change although the disaggregated marginal propensities are unchanged. If this intuition is valid, the use of a single demand variable will lead to an aggregation bias. Following this argument, decomposing GDP into four components is an alternative to the traditional approach. These components are household consumption expenditure (*HC*), government spending (*GS*), investment expenditure (*I*), and exports (*EX*). The disaggregate import demand function is specified as:

$$IM_t = f(HC_{it}, GS_{it}, I_{it}, EX_{it}, RP_{it}) \quad (3)$$

The logarithmic form of Eq. (3) can be written:

$$im_t = \phi_0 + \phi_1 hc_{it} + \phi_2 gs_{it} + \phi_3 i_{it} + \phi_4 ex_{it} + \phi_5 rp_{it} + \varepsilon_t \quad (4)$$

Parameters  $\phi_0, \phi_1, \phi_2, \phi_3, \phi_4, \phi_5$  denote the constant term, private consumption, government spending, investment, exports and price elasticities of imports respectively. To carry on with the analysis of data series for the MENA countries, variables covering the period from 1970 through 2008 are considered. The import equations (2) and (4) include the variables illustrated in table (1). All data are measured in annual base and obtained from International Financial Statistics (IFS) of the International Monetary Fund (IMF) and United Nations Common Database (UNCD).

**Tab. 1: Variables explanation and Data specification**

<i>Variable</i>	<i>Explanation</i>	<i>Data Transformation</i>
<i>IM</i>	Real Imports of goods and services	Imports of goods and services in US dollars at constant prices (1990 prices)
<i>Y</i>	Real GDP	GDP in US dollars at constant prices (1990 prices)
<i>HC</i>	Real Household consumption	Household consumption expenditure in US dollars at constant prices (1990 prices)
<i>I</i>	Real investment	Gross capital formation in US dollars at constant prices (1990 prices)
<i>GS</i>	Real government spending	General government final consumption expenditure in US dollars at constant prices (1990 prices)
<i>EX</i>	Real export of goods and services	Exports of goods and services in US dollars at constant prices (1990 prices)
<i>YDF</i>	GDP deflator	Calculated by dividing GDP Index at current prices by GDP Index at constant 1990 prices times 100
<i>WPI</i>	World price index	World consumer price index
<i>RP</i>	Relative price index	$\left( \frac{WPI}{YDF} * 100 \right)$

### 3 Econometric Estimation Techniques and Empirical Results

#### 3.1 Panel Unit Root Tests

When estimating equations (2) and (4), panel unit root tests are applied to test for stationarity of

the time series. We tested for stationarity using two types of panel unit root tests, first the Levin–Lin–Chu (LLC)<sup>4 5</sup> test proposed by Levin, Lin et al. (2002) in which the null hypothesis of nonstationarity is being tested against the alternative of stationary data using the following model:

$$\Delta y_{it} = \rho y_{i,t-1} + z'_{it} \gamma_i + \sum_{j=1}^p \theta_{ij} \Delta y_{i,t-j} + u_{it} \quad (5)$$

Where  $i=1, \dots, N$  indexes panels;  $t=1, \dots, T_i$  indexes time;  $y_{it}$  is the tested variable; and  $u_{it}$  is a stationary error term. The number of lags ( $p$ ) that minimizes Akaike Information Criterion (AIC) has been chosen. Because unit-root tests like (LLC) typically are not very powerful against alternative hypotheses of somewhat persistent or stationary processes, reversing roles and testing the null hypothesis of stationarity against the alternative of a unit root is appealing. For pure time series, the KPSS test of Kwiatkowski, Phillips et al. (1992) is one such test. The Hadri (2000) LM test uses panel data to test the null hypothesis that the data are stationary versus the alternative that at least one panel contains a unit root. The test is designed for cases with large  $T$  and moderate  $N$ . Using the following identity:

$$y_{it} = r_{it} + \beta_i t + \varepsilon_{it} \quad (6a)$$

Where  $r_{it}$  is a random walk,

$$r_{it} = r_{i,t-1} + u_{it} \quad (6b)$$

And  $\varepsilon_{it}$  &  $u_{it}$  are zero-mean *i.i.d.* normal errors, If the variance of  $u_{it}$  were zero, then  $r_{it}$  would collapse to a constant;  $y_{it}$  would therefore be trend stationary. Using this logic, the Hadri LM test tests the hypothesis

$$H_0 : \lambda = \sigma_u^2 / \sigma_\varepsilon^2 = 0 \quad \text{Against} \quad H_a : \lambda > 0$$

Almost all variables are integrated of order one as given in table (2) below.

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<sup>4</sup> Levin and Lin proposed their test first time in 1992. In 1993 they generalised the analysis allowing for autocorrelation and heteroscedasticity. Their paper in 2002 (Levin, Lin and Chu, 2002) collect major results of their researches.

<sup>5</sup> (LLC) test is recommend to be used with panels of “moderate” size, which have between 10 and 250 panels and 25 to 250 observations per panel. (Baltagi 2008) mentions that the requirement implies that  $N$  should be small relative to  $T$ , our case exactly.

**Tab. 2: The Panel unit root test for all variables in their log<sup>6</sup>**

Variable	Levin–Lin–Chu unit root test ( $H_0$ : Panels contain unit roots)				Hadri LM unit root test ( $H_0$ : All panels are stationary)			
	Lags	Cross-sectional means not removed	Lags	Cross-sectional means removed*	Lags	Cross-sectional means not removed	Lags	Cross-sectional means removed*
<i>im</i>	2	1.75 (0.959)	2	-0.95 (0.171)	2	8.34 (0.000)	2	10.09 (0.000)
$\Delta im$	1	-12.41 (0.000)	2	-12.38 (0.000)	1	2.05 (0.020)	2	1.16 (0.123)
<i>ex</i>	1	-1.33 (0.091)	2	-1.32 (0.093)	1	14.97 (0.000)	2	11.26 (0.000)
$\Delta ex$	0	-14.86 (0.000)	1	-15.34 (0.000)	0	0.19 (0.427)	1	0.51 (0.306)
<i>hc</i>	3	2.62 (0.996)	2	-0.86 (0.195)	3	8.69 (0.000)	2	10.72 (0.000)
$\Delta hc$	1	-16.20 (0.000)	2	-8.53 (0.000)	1	2.27 (0.012)	2	1.33 (0.092)
<i>gs</i>	4	1.44 (0.924)	3	1.08 (0.859)	4	8.42 (0.000)	3	7.95 (0.000)
$\Delta gs$	3	-6.22 (0.000)	2	-9.81 (0.000)	3	4.03 (0.000)	2	1.73 (0.042)
<i>i</i>	3	5.82 (1.000)	3	-0.51 (0.302)	3	6.85 (0.000)	3	10.38 (0.000)
$\Delta i$	2	-11.58 (0.000)	3	-9.02 (0.000)	2	2.10 (0.018)	3	2.97 (0.002)
<i>y</i>	3	2.36 (0.991)	4	3.66 (0.999)	3	8.85 (0.000)	4	8.19 (0.000)
$\Delta y$	2	-10.72 (0.000)	3	-7.99 (0.000)	2	4.59 (0.000)	3	4.26 (0.000)
<i>rp</i>	3	8.75 (1.000)	4	-3.25 (0.000)	3	6.12 (0.000)	4	5.60 (0.000)
$\Delta rp$	3	-4.25 (0.000)	1	-13.41 (0.000)	3	2.00 (0.023)	1	0.69 (0.246)

**Note:** \*The LLC test exhibits severe size distortions in the presence of cross-sectional correlation, and then LLC (2002) suggested removing cross-sectional averages from the data to help control for this correlation. For each time period panel unit root test computes the mean of the series across panels and subtracts this mean from the series. Levin, Lin, and Chu suggest this procedure to mitigate the impact of cross-sectional dependence.

P-values are in parentheses.

### 3.2 Panel Cointegration Test

Because of this result, panel cointegration test is appealing for the panel of MENA countries to estimate the elasticities of the import equation in its conventional form (i.e. equation 2) as well as in the decomposed form (i.e. equation 4). Because panel cointegration tests which do not allow for structural breaks are size distorted in the presence of such breaks; Westerlund (2006) extended the test of McCoskey and Kao (1998) and proposed a test which allows for multiple structural breaks in the deterministic terms. The test can be implemented if the number of breaks is unknown and their locations may be different for each cross-section. In addition, the test allows for endogenous regressors and serial correlation of the error terms. Furthermore, residual-based panel cointegration tests fail to reject the null of no cointegration because these tests require the long-run cointegrating vector for the variables in their levels being equal to the short-run adjustment process for the variables in their differences. Kremers, Ericsson et al. (1992) refer to this as a common factor restriction and show that its failure may result in a loss of power for residual-based cointegration tests.

In this paper, we use the panel error-correction-based (ECM) cointegration tests firstly proposed by Westerlund (2007) and developed by Persyn and Westerlund (2008) which are generalized versions of the tests proposed by Banerjee, Dolado et al. (1998). Westerlund (2007) proposes

<sup>6</sup> Almost all variables have time trend, so we include time trend in the estimation of panel unit root test. The graphs are available from the author upon request.

four new panel tests<sup>7</sup> of the null hypothesis of no cointegration that are based on structural rather than residual dynamics, and therefore do not impose any common factor restriction. The suggested tests are panel extensions of those proposed in the time series context by Banerjee, Dolado et al. (1998). Per se, they are designed to test the null by inferring whether the error correction term in a conditional error correction model is equal to zero. If the null hypothesis of no error correction is rejected, then the null hypothesis of no cointegration is also rejected. Each test is able to accommodate individual specific short-run dynamics, including serially correlated error terms and weakly exogenous regressors, individual specific intercept and trend terms, and individual specific slope parameters. Bootstrap tests are also proposed to handle applications with cross-sectional dependence. The tests are based on the following error correction model.

$$y_{it} = \delta_{0i} + \delta_{1i}t + z_{it} \quad (7a)$$

$$x_{it} = x_{i,t-1} + v_{it} \quad (7b)$$

Where  $i = 1, \dots, N$  &  $t = 1, \dots, T$  and the vector  $x_{it}$  is  $I(1)$ . Additionally,  $z_{it}$  modelled as

$$\alpha_i(L)\Delta z_{it} = \alpha_i(z_{i,t-1} - \beta_i'x_{i,t-1}) + \gamma_i(L)'v_{it} + e_{it} \quad (7c)$$

$\alpha_i$ , denotes the error correction term,  $\alpha_i(L) = 1 - \sum_{j=1}^{p_i} \alpha_{ij}L^j$  and  $\gamma_i(L) = \sum_{j=0}^{p_i} \gamma_{ij}L^j$  with  $L$  as the lag operator. In order to get the conditional error correction model (ECM) for  $y_{it}$ , Westerlund (2007) replaced  $z_{it}$  in (7c) using (7a) to obtain

$$\alpha_i(L)\Delta y_{it} = \varphi_{0i} + \varphi_{1i}t + \alpha_i(y_{i,t-1} - \beta_i'x_{i,t-1}) + \gamma_i(L)'v_{it} + e_{it} \quad (7d)$$

The deterministic terms are defined as  $\varphi_{0i} = \alpha_i(1)\delta_{1i} - \alpha_i\delta_{0i} + \alpha_i\delta_{1i}$  and  $\varphi_{1i} = -\alpha_i\delta_{1i}$ . Westerlund (2007) considered three different models with different deterministic specifications. In model one there are no deterministic terms, i.e.  $\delta_{0i} = \delta_{1i} = 0$ , in model two there is only an intercept, i.e.  $\delta_{0i} \neq 0$  &  $\delta_{1i} = 0$  and in model three there is an intercept and a linear time trend, i.e.  $\delta_{0i} \neq 0$  &  $\delta_{1i} \neq 0$ . Based on the conditional error correction model CECM (7d), the null hypothesis of no cointegration can be formulated as;  $H_0 : \alpha_i = 0$  (i.e. no cointegration) for all  $i$ , the alternative hypothesis for the two panel statistics is  $H_1 : \alpha_i = \alpha < 0$  (i.e. cointegration) for all  $i$ , in which a common error correction parameter is assumed for all cross-sections. Thus, the rejection of the null hypothesis emphasizes that the whole panel is cointegrated with the assumption that  $v_{it}$  and  $e_{it}$  are stationary. For the two group mean statistics the alternative hypothesis is  $H_1 : \alpha_i < 0$  for at least one  $i$  in which there is no common value for the error correction parameter, and the rejection of the null hypothesis means that for at least one cross-section  $y_{it}$  and  $x_{it}$  are cointegrated.

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<sup>7</sup> Two of these tests are testing the null hypothesis that the panel is not cointegrated as a whole, whereas the other two tests test the null that at least one panel is cointegrated.

**Tab. 3: Error Correction Based Panel Cointegration tests (Westerlund 2007)**

$H_0$ : No Cointegration						
Equation	Lags <sup>(1)</sup>	Test Statistics <sup>(2)</sup>	Value	Z-Value	P-Value	Robust P-value
EQ 2 $im_t$	1	$Gt$	-2.437	0.360	0.641	0.000
		$Ga$	-8.280	2.422	0.992	0.000
		$Pt$	-8.114	-0.584	0.280	0.000
		$Pa$	-9.822	0.327	0.628	0.000
EQ 4 $im_t$	1	$Gt$	-2.865	0.540	0.705	0.000
		$Ga$	-6.745	4.505	1.000	1.000
		$Pt$	-8.174	1.070	0.858	0.000
		$Pa$	-4.738	4.023	1.000	0.500

(1) Automatic Lag-selection based on the AIC, Robust P-Values are obtained on the bootstrapped distribution with 4&1 reps. Calculations based on the xtwest Stata routine by Persyn & Westerlund (2008).

(2) Two tests ( $Gt$  and  $Ga$ ) are to test the alternative hypothesis that the panel is cointegrated as a whole, while the other two ( $Pt$  and  $Pa$ ) test the alternative that at least data of one country is cointegrated.

### 3.3 Estimation of the Import Equations

We estimate the model using the dynamic Fixed Effects (DFE), Mean Group (MG), and Pooled Mean Group (PMG) techniques (see Pesaran, Shin et al. (1999) and Blackburne and Frank (2007)). The DFE estimators assume homogeneity of short and long-run parameters in the panel (i.e. constrains short and long-run elasticities as well as its adjustment speed to be equal across all countries), while the MG and PMG estimators allow for short-run heterogeneity (i.e. different elasticities across the countries) and restrict long-run elasticities and its speed of adjustment to be equal across all countries. The MG estimator relies on estimating  $N$  time-series regressions and averaging the coefficients (Pesaran and Smith 1995), whereas the PMG estimator relies on a combination of pooling and averaging of coefficients (Pesaran, Shin et al. 1999). The estimation is based on the following autoregressive distributed lag (ARDL) dynamic panel error correction model

$$\Delta y_{it} = \Phi_i (y_{i,t-1} - \Psi_i' x_{it}) + \sum_{j=1}^{p-1} \lambda_{ij}^* \Delta y_{i,t-1} + \sum_{j=0}^{q-1} \delta_{ij}^* \Delta x_{i,t-j} + \mu_i + \gamma_i t + \varepsilon_{it} \quad (8)$$

Where  $y_{it}$  and  $x_{it}$  are a vector of observations on the dependent variable (i.e., imports), and a vector of explanatory variables (i.e., GDP and relative price), for country  $i$ , respectively;  $\mu_i$  represents the country-specific fixed effect;  $\gamma_i$  is the individual time trend coefficient; and  $\varepsilon_{it}$  stands for the country-specific error term. The parameter  $\Phi_i$  is the error-correcting speed of adjustment term. If ( $\Phi_i = 0$ ), then there would be no evidence for a long-run relationship. This parameter is expected to be significantly negative under the prior assumption that the variables show a return to a long-run equilibrium. Of particular importance is the vector  $\Psi_i'$ , which contains the long-run relationships between the variables. The long-run relationship between  $y_{it}$  and  $x_{it}$  is given by

$$y_{it} = -(\Psi_i' / \Phi_i) x_{it} + \eta_{it} \quad (9)$$

Where  $-(\Psi_i' / \Phi_i)$  is the long-run coefficient (i.e. the respective elasticities),  $\eta_{it}$  is the error

term. Table 4 illustrates the estimations of dynamic fixed-effects (DFE), mean-group (MG), and pooled mean-group (PMG) models. PMG estimator constrains the long-run elasticities to be equal across all panels. This pooling across countries yields efficient and consistent estimates when the restrictions are true. If the true model is heterogeneous, the PMG estimates are inconsistent; the MG estimates are consistent in either case. The test of difference in these models is performed with the familiar Hausman test. If P-Value of Hausman test  $> 0.05$ ; the null of slope homogeneity is not rejected (there is no difference in the estimated coefficients by PMG and MG). Subsequently, PMG is efficient meaning that we have long run homogeneity in our model. The p-values of the Hausman test reveal that, for the countries included in the estimations, the null of slope homogeneity cannot be rejected at 5% and 1% for equations 2 and 4 respectively.

In estimating import equations, the long-run relative price elasticities are significant and properly signed for the models in equations 2 and 4.<sup>8</sup> But the magnitude of that relation is small (-0.16 and -0.11 respectively), comparing with other countries like UK, Malaysia, Italy, China, India, Sri Lanka and many others (see (Abbott and Seddighi (1996), Alias and Cheong (2000), Giovannetti (1989), Tang (2003), Hamori and Matsubayashi (2001), Narayan and Narayan (2005) and Emran and Shilpi (2010), which means low relative price elasticity of import in these countries. The explanation is that, given that consumption and government spending elasticities are significantly high and the most of imports by these countries are the necessities like food, medicines, and machinery goods ... etc; they do not react to higher import prices by reducing their imports but continue importing their needs of these goods regardless of its prices.

All demand components' respective short and long-run elasticities are significant and properly signed; they show positive effects on imports. The magnitude of the elasticities differs among the demand components. This confirms that the composition of demand matters for the import equation and therefore using a single aggregate demand variable might misrepresent the result. Unlike Nickel and Funke (2006), government spending reveals almost the same elasticity as the private consumption and investment. Our empirical results show that an increase in government spending has positive influence on the aggregate import demand. A lasting increase in government expenditure of 1 percent will lead to an increase of demand for goods and service imports of 0.32 percent. An increase in public spending will thus, *ceteris paribus*, lead to a deterioration of the current account simply because the government consumes more from abroad in line with its import content. Because of the large relative weight of the trade account in the current account, the current account would improve if government expenditure were reduced.<sup>9</sup>

$\Phi_i$ , is significantly negative, consequently the elasticities show a return to its long-run equilibrium. For the models in equations 2 and 4, the elasticities require almost six and four years to adjust to its long run equilibrium respectively. However, in our calibration, the *ceteris paribus* assumption, implies careful reading of the results, since an increase (decrease) in government expenditure is likely to crowd out (crowd in) the investment while private consumption is likely to increase as public expenditure rises (Blanchard and Perotti 2002). The effects on import become less expected if an increase in government expenditure crowds out investment but positively affect private consumption. If public expenditure crowds out investment, given that high elasticities of both private consumption and public expenditure, the reduction in import demand due to the decline in investment might or might not be compensated by the enhancement in import demand caused by the increase in public expenditure and private consumption. The overall effect of such a demand shift on imports depends on the relative size of the changes in public spending and private consumption (Nickel and Funke 2006). Generally, the impact of fiscal policy, measured by public spending, on import demand depends on the

<sup>8</sup> That relation in the short-run is insignificant because we are using annual data.

<sup>9</sup> This result comes in the same line with that result for the G7 countries by Nickel and Funke (2006).

interaction between the public and the private sector.

**Tab. 4: Dynamic panel error-correction estimates of import equations**

Equation	Specifications	Variables	Elasticities	DFE	PMG	MG
EQ 2 $im_t$	Long-run coefficient	$y_{it}$	$\gamma_1$	0.90*** (0.18)	1.21*** (0.10)	1.45*** (0.33)
		$rp_{it}$	$\gamma_2$	-0.07 (0.08)	-0.16*** (0.04)	-0.05 (0.09)
	Adjustment parameter	$EC \equiv \Phi_i$		-0.13*** (0.02)	-0.17*** (0.04)	-0.24*** (0.04)
	Short-run coefficient	Constant	$\gamma_0$	0.12 (0.22)	-0.37*** (0.10)	-0.87** (0.40)
		$\Delta y_{it}$	$\gamma_1$	0.06 (0.08)	0.28 (0.18)	0.30 (0.20)
		$\Delta rp_{it}$	$\gamma_2$	-0.11** (0.05)	-0.04 (0.08)	-0.01 (0.18)
P-Value of Hausman test = 0.1477						
EQ 4 $im_t$	Long-run coefficient	$hc_{it}$	$\phi_1$	0.46*** (0.12)	0.38*** (0.07)	0.40*** (0.13)
		$gs_{it}$	$\phi_2$	0.36*** (0.14)	0.32*** (0.08)	0.28*** (0.11)
		$i_{it}$	$\phi_3$	0.23** (0.10)	0.29*** (0.05)	0.17** (0.07)
		$ex_{it}$	$\phi_4$	0.06 (0.09)	0.25*** (0.04)	0.35*** (0.13)
		$rp_{it}$	$\phi_5$	-0.02 (0.05)	-0.11*** (0.07)	-0.12** (0.06)
	Adjustment parameter	$EC \equiv \Phi_i$		-0.17*** (0.02)	-0.25*** (0.05)	-0.50*** (0.06)
	Short-run coefficient	Constant	$\phi_0$	-0.15 (0.14)	-0.49*** (0.10)	-0.76** (0.33)
		$\Delta hc_{it}$	$\phi_1$	0.40*** (0.03)	0.43*** (0.07)	0.32*** (0.09)
		$\Delta gs_{it}$	$\phi_2$	0.32*** (0.05)	0.20*** (0.07)	0.15*** (0.09)
		$\Delta i_{it}$	$\phi_3$	0.30*** (0.03)	0.23*** (0.04)	0.22*** (0.04)
		$\Delta ex_{it}$	$\phi_4$	0.06** (0.03)	0.28*** (0.07)	0.16*** (0.06)
$\Delta rp_{it}$		$\phi_5$	-0.14*** (0.03)	-0.04 (0.29)	-0.03 (0.07)	
P-Value of Hausman test = 0.0167						

\*\*\*, \*\*, \* denote significance at 1%, 5% and 10% levels, respectively.

To sum up, our empirical results support the idea that the expansionary fiscal policy implemented by means of increasing government spending increases country's imports, given that country's exports are determined by external factors, leading to trade deficit, hence deteriorating current account position because trade account is the substantial part of current account. Then, in order to improve current account position through the imports, tight fiscal policy and low government spending is needed for these countries.

## 4 Conclusions

This paper investigates empirically the relationship between fiscal policy and the current account. It sheds some light on how fiscal policy affects current account, it is clearly seen that fiscal policy has a role to play in dealing with current account problems. Applying Westerlund (2007) panel cointegration test, dynamic fixed-effects (DFE), mean-group (MG) and pooled mean-group (PMG) estimations on some MENA countries in the period 1970-2008, we found that an increase in government expenditures has a significant positive impact on goods and services imports. A one percent increase in government spending increases goods and services imports of about 0.32 percent. Accordingly, an increase in government expenditure would also bring about a deterioration of the current account position. However, the ceteris paribus assumption in our perspective might lead to improper policy conclusions if an increase (decrease) in government expenditure crowds out (crowds in) the private demand components. If this crowding-out/in effect is strong enough, an increase in government expenditure could cause the opposite result (Nickel and Funke 2006).

This paper presents theoretically consistent and empirically implementable fiscal policy propositions for some of MENA countries which have a history of economic interventions, scarcity of such studies and lack of time series data. The estimates of the long run GDP, its components and price elasticities derived from the model satisfy the theoretical signs and are highly significant, both economically and statistically. Our empirical results expose that a difference between the import elasticities of private and public demand exists. Further research could determine the overall impact (i.e. the direct impact of a change in expenditure and the indirect impact through the reaction of private demand) that a change in government expenditure could have on the current account of a particular country.

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## ***Panel Cointegration Analysis of the Effects of Fiscal Policy on Current Account: New Evidence from MENA Countries***

### **Summary**

This paper characterizes the dynamic effects of fiscal policy on some MENA countries' import demand in the period 1970-2008 by using Westerlund panel cointegration test, dynamic fixed-effects (DFE), mean-group (MG) and pooled mean-group (PMG) estimations. Using the relationship between aggregate imports and the macroeconomic components of final expenditure (i.e. private and government consumption, investment, and export), we provide empirical evidence that these components of overall demand have an impact on the magnitude of the aggregate import. The conventional specification for the import demand function reveals that the volume of imports demanded responds to domestic activity and relative prices. Our empirical results indicate that the domestic activity and relative prices are elastic. A lasting increase in government expenditure of 1 percent will lead to an increase of demand for goods and service imports of 0.32 percent. This study also highlights some policy implications.

**Key words:** Fiscal policy; Import demand; Elasticities; Panel cointegration; Pooled mean group.

**JEL classification:** E62.

# Testing Balassa-Samuelson Model Hypotheses in Romania<sup>#</sup>

*Ghiba Nicolae\**

## 1 Introduction

During the catching-up process with the developed European economies, Romania witnessed a significant increase of productivity, especially in industry. A higher productivity rate of tradable sector against non-tradable sector influences the entire national economy. The phenomenon is known as Balassa-Samuelson Model (BSM) and it is specific to the emerging countries.

BSM reflects the impact of productivity differential between tradable and non-tradable sectors on inflation increase and real exchange rate appreciation. A higher productivity in industry means bigger wages for employees. Wages tend to be equal in the two sectors and, consequently, the prices increase in non-tradable sector without coverage in productivity. First of all, in order to create premises for model viability, we must test the necessary conditions.

## 2 A short presentation of model hypotheses

According to Egert, Drine, Lommatzsch and Raul (2002), Balassa-Samuelson Model is based on a series of hypotheses:

- a country's economy is divided in two large sectors: tradable (goods involved in international exchange, also used by the power purchasing parity theory) and non-tradable (consumed just within a country's territory);
- productivity is higher in the tradable sector than in the non-tradable area, especially in the emerging countries;
- the interest rate is exogenous and it is determined in the world market;
- the purchasing power parity is approachable only in tradable sector and the exchange rate is determined only using the tradable goods prices;
- between tradable and non-tradable sectors the labor is perfectly mobile;
- labor market is considered to be competitive: an increasing productivity in tradable area means higher wages and leads to emergence of trade union pressures from the non-tradable sector for higher incomes and, equalizing in the end, the wages between sectors.

## 3 Testing the model hypotheses in the Romanian economy

Before testing the existence of BSM in the Romanian economy, we analyze a series of hypotheses. The results are important in explaining the functionality of the model. For the labor market, we will use vector autoregression methodology, known as VAR.

### 3.1 Selecting proper benchmark according to Romanian economic features

Most adequate benchmark to test Balassa-Samuelson hypotheses and the model itself is Euro

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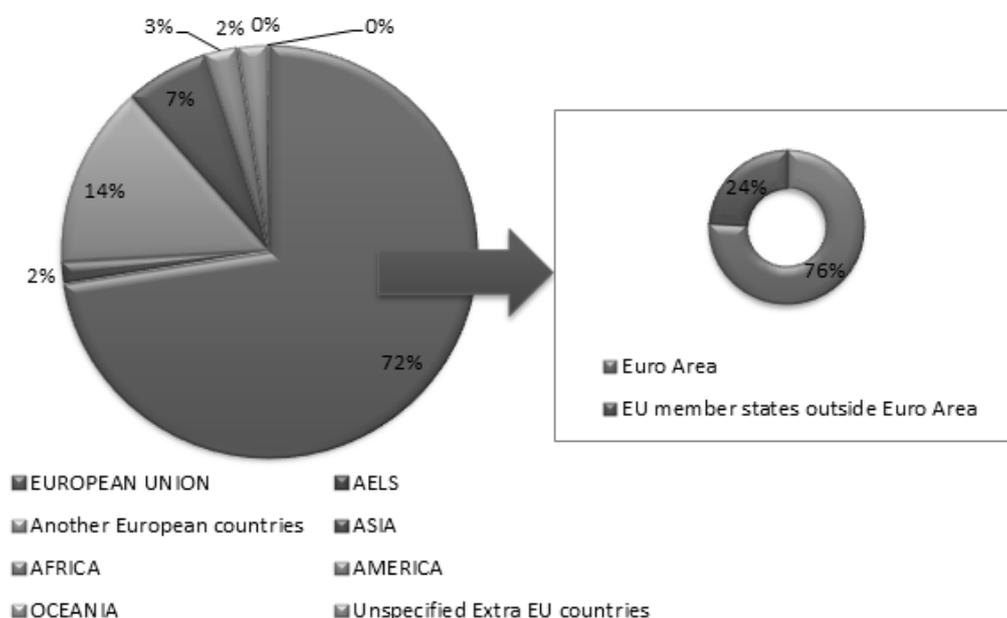
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Area.<sup>1</sup> The choice is based on the followings:

- euro is considered as reference currency since 2003;
- exports to Eurozone have an important share in total national export volumes;
- Romania intends to adopt the single currency in 2015;
- Romanian economy is characterized by a high degree of "euroisation" (a large proportion of domestic traders - car dealers, mobile operators, travel agents, hoteliers and property developers use euro-denominated prices, and two thirds of the credits are expressed in euro currency).

Considering the total export volumes of Romania, 72% is to the European Union countries, 14% to other European countries and 14% to countries from AELS and other continents (Asia, Africa, America and Oceania).

**Fig. 1: Volume structure of Romanian exports (January –September 2010)**



Source: International Trade Statistics Monthly Bulletin, no. 9/2010, [www.insse.ro](http://www.insse.ro)

From the total export volumes in the European Union, 76% were directed to the Euro Zone member states. Almost 55% of Romanian exports are directed towards Euro Zone, justifying the chosen benchmark.

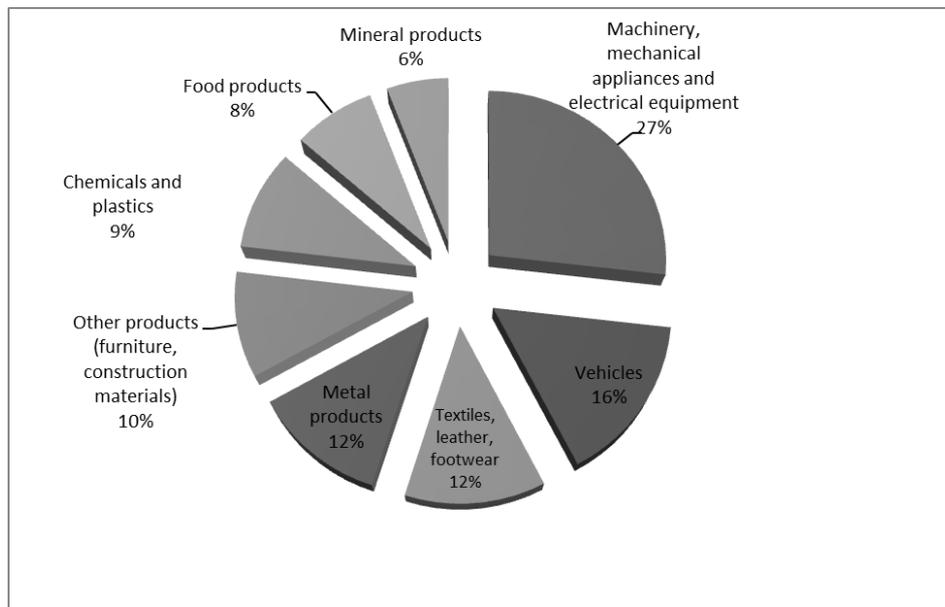
### 3.2 Romanian economy structure: tradable and non-tradable sectors

According to Halpern and Wyplosz (2001), if over 10% of economic sector output is oriented to exports, we say that the sector is tradable. A considerable number of studies on the separation of a country's economic activities refer to the tradable sector (industry) and the non-tradable sector (services). In Romania, the non-tradable sector includes transport and storage, post and telecommunications, trade, hotels, restaurants, financial activities, real estate transactions, renting, public administration, education, health and social assistance. Industrial sector includes machinery, mechanical appliances and electrical equipment (27%), vehicles (16%), textiles, leather, footwear (12%), metal products (12%), furniture, construction materials (10%),

<sup>1</sup> Euro Area includes 17 countries: Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland (from January 1999), Greece (1 January 2001), Slovenia (1 January 2007), Cyprus and Malta (1 January 2008), Slovakia (1 January 2009) and Estonia (1 January 2011).

chemicals and plastics (9%), food products (9%), mineral products (6%):

**Fig. 2: Volume structure of Romanian exports classified on the main group of goods criteria (January –September 2010)**



Source: International Trade Statistics Monthly Bulletin, no. 9/2010, www.insse.ro

Analyzing overall information for Romania case, we consider manufacturing as tradable sector and services sector as non-tradable.

### 3.3 Testing purchasing power parity (PPP)

The PPP theory was designed by Gustav Cassel in 1922 and it states that exchange rate tend to equalize relative price level between countries.

In absolute terms, the purchasing power parity presents exchange rate determination as a ratio between domestic price index and foreign price index. In relative terms PPP shows that exchange rate can be determined by purchasing power parity between two countries (Voinea, 2007):

$$ER^{PPP} = NER * \frac{DPI}{FPI}, \quad (1)$$

where  $ER^{PPP}$  = exchange rate determined by the purchasing power parity,

$NER$  = nominal exchange rate,

$DPI$  = domestic price index (tradable sector),

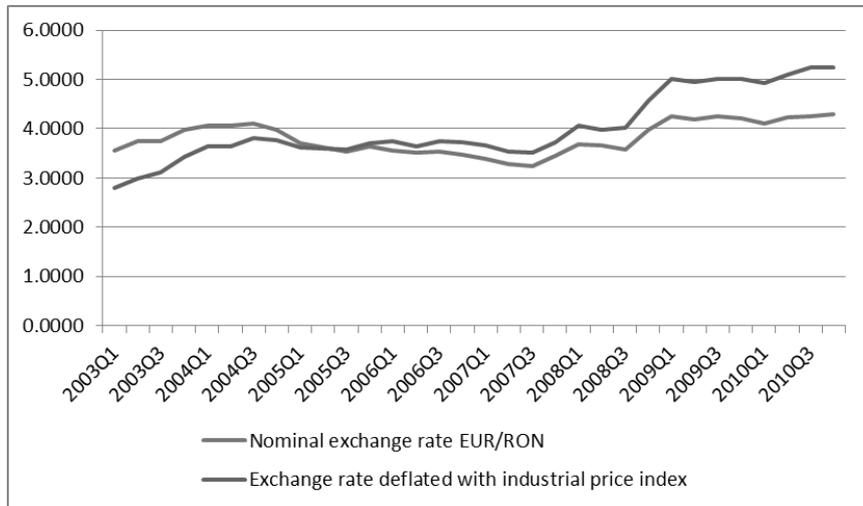
$FPI$  = foreign price index (tradable sector).

According to Hallwood (1994), there are a number of factors which can determine deviations from purchasing power parity like: international exchange restrictions, natural resources discovery, labor productivity, changes in consumer preferences and foreign assets accumulation. Also, PPP is influenced by consumer prices, production, imports and exports prices, income and international exchange elasticity.

Using equation (1) we calculated the exchange rate using PPP properties, comparing it with nominal exchange rate values. PPP implies only the tradable sector with marketable goods between countries. Under these conditions, exchange rate is determined using domestic and

foreign price indexes of the industrial economic sector.

**Fig. 3: Determined exchange rate using relative form of PPP and nominal exchange rate EUR/RON for 2003Q1-2010Q4 period (quarterly series)**



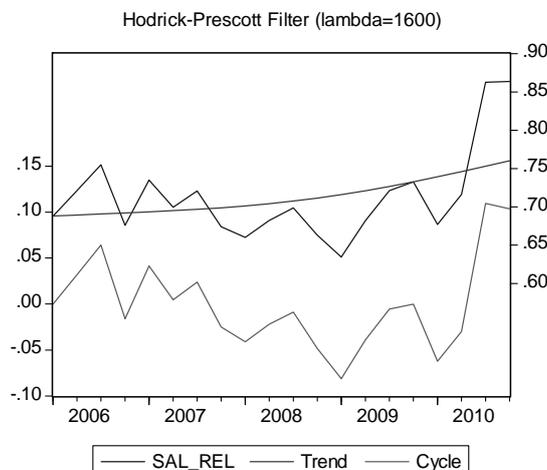
Source: authorial calculation

Figure 3 shows the difference between nominal exchange rate EUR/RON and its value determined by PPP, indicating some deviations from the PPP theory, so that exchange rate volatility is explained by other factors.

### 3.4 Testing labor market hypotheses

According to Halpern and Wyplosz (2001), there is a tendency of wages equalization between tradable and non-tradable sectors, their relative position (ratio between tradable and non-tradable wages) remaining constant. They argue that the ratios of central and eastern European countries, as well as the three Baltic States display no trend and where there is one, it is towards unity or full equalization. This is explained by market mechanism, insufficient developed in the case of Romania.

**Fig. 4: Trend, cycle and relative wages between tradable and non-tradable Romanian economic sectors in 2006-2010 period (quarterly series)**



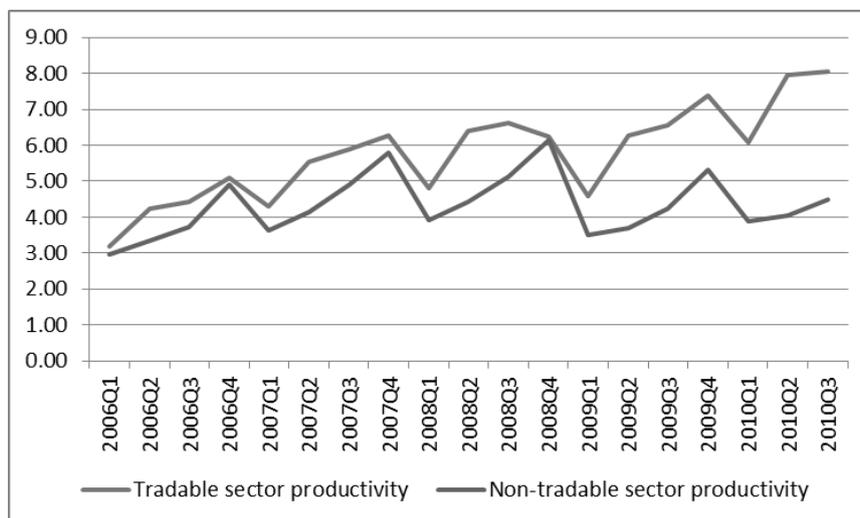
Source: authorial calculation

According to figure 4, the ratio between sector wages isn't stable in Romania, like in most of the

countries from the regions with economic similarities.

The second hypothesis on the labor market is whether productivity has been higher in the tradable sector than non-tradable economy. Dumitru (2009) shows that productivity can be calculated as a ratio between *gross value added (GVA)* and the *number of employees* for each sector, as follows:

**Fig. 5: Productivity in tradable and non-tradable sectors (GVA/number of employees)**



Source: authorial calculation

Using VAR Models, we have tried to highlight the impact of industrial increasing wages on non-tradable wages based on two variables: *gross wages in tradable sector* and in *non-tradable sector*, as quarterly series for the 2006-2010 period. The variables are stationary. Using Phillips-Peron test with a relevance value smaller than 1%, the null hypothesis of the presence of a unit root is rejected and the series is stationary. Augmented Dickey-Fuller test demonstrates that *gross wages in tradable sector* is a stationary variable if we accept a relevance value of 9% and the second variable (*gross wages in non-tradable sector*) is stationary with a relevance threshold smaller than the “classical” 5%. In our analysis we have used logarithmic values because the wages are positive so that the coefficients are interpreted as elasticity.

**Tab. 1: Stationarity test using Augmented Dickey-Fuller and Phillips-Peron tests with EViews**

	ADF (Augmented Dickey-Fuller test)		PP (Phillips-Peron test)	
	t-statistic	Prob.	t-statistic	Prob.
<b>Gross wages in tradable sector</b>	-2.783642	0.0827	-5.595068	0.0003
<b>Gross wages in non-tradable sector</b>	-3.378651	0.0293	-4.783412	0.0015

Source: authorial calculation

After obtaining these results, we apply a VAR analyze according to stationary variables characteristic. The choice of lag length is resumed to one-quarter the length of time series. In this case the time series has 20 quarterly observations, so we chose 5 lags. A model is stable if after AR Roots test we obtain subunit roots.

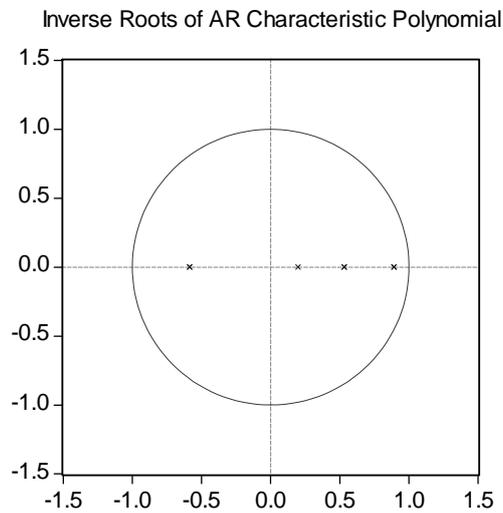
**Tab. 2: Stability model test using AR roots table**

Root	Modulus
0.891750	0.891750
-0.585382	0.585382
0.531051	0.531051
0.197209	0.197209

Source: authorial calculation

In our case, the AR Roots table confirms sub unitary values for Roots. The table presents four real roots with different modulus values. Also, the figure 6 on the AR roots shows none of the roots is outside the unit circle.

**Fig. 6: AR Roots**



Source: authorial calculation

This means that our model is stable (respects the stability condition) and we can analyze the response functions to shocks.

The next step of our study implies residuals testing. The analysis is important because an error can drive us to wrong conclusions, like standard error.

**Tab. 3: Stability model test using AR roots table**

<b>Dependent variable: L_SAL_NTRAD01 (non-tradable sector wages)</b>			
Excluded	Chi-sq	df	Prob.
L_SAL_TRAD01	0.219129	2	0.8962
All	0.219129	2	0.8962
<b>Dependent variable: L_SAL_TRAD01 (tradable sector wages)</b>			
Excluded	Chi-sq	df	Prob.
L_SAL_NTRAD01	5.846509	2	0.0538
All	5.846509	2	0.0538

Source: authorial calculation

The null hypothesis (tradable sector wages (L\_SAL\_TRAD01) are not a Granger causality of non-tradable sector wages (L\_SAL\_NTRAD01)), is accepted based on chi-squared test of 0.219129, with df=2 and a p-value=0.8962. On the other hand, if we accept a relevance value of 6%, the tradable sector wages are influenced by non-tradable sector wages. So, if we carry out the joint effects of previous values, the wages from the non-tradable are a Granger causality of the wages from tradable economy. Given all that, the hypothesis of increasing wages from tradable economy to non-tradable zone is rejected.

Lags number of the model is confirmed by the VAR Exclusion Wald Test. The joint effects and p-values reflect significant statistical values.

As next step we'll proceed to the VAR Residual Portmanteau Tests for Autocorrelations with H0 (null hypothesis): no residual autocorrelations up to lag h. If we choose a h value equal to 5, the results of p-value are 0.1962, 0.3843 and 0.0591, all of them bigger than 5%, the classical relevance value. In these circumstances, the null hypothesis (no residual autocorrelation up to lag 5) is accepted. Autocorrelation is verified using the multivariate LM test for serial correlation up to a specific lag. The results obtained are presented in the next table:

**Tab. 4: Multivariate LM test for serial correlation**

<b>Lags</b>	<b>LM-Stat</b>	<b>Prob</b>
1	5.337080	0.2544
2	1.938934	0.7470
3	1.167421	0.8834
4	2.870862	0.5797
5	16.01550	0.0030

Source: authorial calculation

According to table 4, we cannot find autocorrelation until fifth lag and the model is well specified.

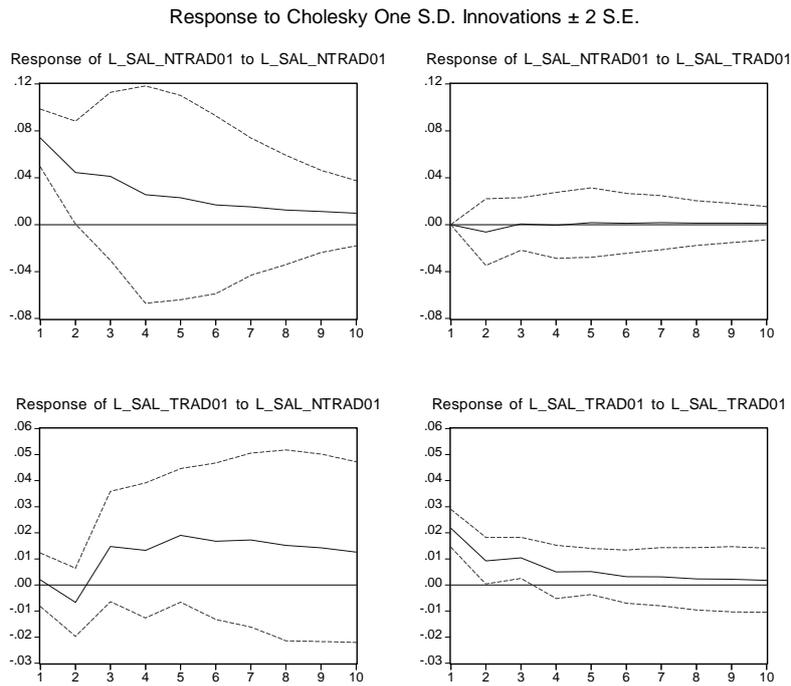
The normality test, a multivariate extension of Jarque-Bera test confirms that the null hypothesis (H0: residuals are multivariate normal) is accepted. In these conditions the normal distribution hypothesis of residuals is respected. Also, VAR residuals heteroskedasticity demonstrate that the variance of the error terms do not differ across observations. The entire test presented above confirms the stability and the stationarity of the VAR model that we have chosen.

Using VAR model we study the impact of a shock on endogenous variable evolution (Fig. 7).

Figure 7 identifies responses of non-tradable wages to tradable wages variability, and vice versa. The results are suspicious because a part of the lines include the null value, so the conclusion can be insignificant.

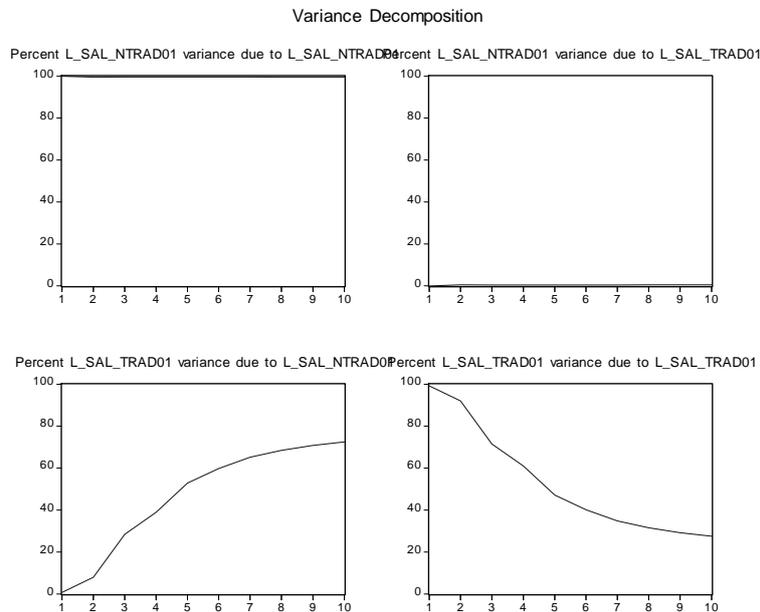
Variance decomposition shows how a variable explains the other. Using VAR bivariate model, we have tried to represent the variable volatility impact on the other, or itself.

**Fig. 7: Impulse responses**



Source: authorial calculation

**Fig. 8: Variance decomposition**



Source: authorial calculation

The Variance Decomposition graph shows that non-tradable sector wages explain the variance of tradable area wages. Inverse, in the tradable sector, wages variability has a smaller influence on the wages from the non-tradable Romanian economy.

### 3.5 The capital mobility

The capital account liberalization process started in 2001 and finished in 2006. From that moment, Romania opened its borders to international capital. Thus, capital inflows and outflows have a significant influence on exchange rate volatility.

## 4 Conclusions

The present research paper tries to test the most important hypotheses on Balassa-Samuelson effect in the Romanian economy. Our main conclusions are:

- the proper benchmark according to Romanian economic features is Eurozone due the connections between their economies (commercial, political, geographical etc.);
- Romanian economy can be divided in two large sectors: tradable (manufacturing sector) and non-tradable (services sector) using as criteria the main categories of exported goods;
- exchange rate determination based on purchasing power parity reflects the presence of other influence factors;
- relative position between sector wages presents a trend towards unity or full equalization;
- using as proxy for productivity the ratio between gross value added and the number of employees, our research found a higher productivity in the tradable than the non-tradable sector;
- using a VAR model (with its stationarity and stability tested) we pointed out a smaller influence of tradable wages in non-tradable wages variability;
- the capital mobility condition is satisfied since Romania have opened its borders to international capital.

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# *Testing Balassa-Samuelson Model Hypotheses in Romania*

## **Summary**

Balassa-Samuelson effect is considered to be a proper alternative to purchasing power parity theory, which explains long-term determination of exchange rate, due to the influence of non-tradable and tradable goods productivity. The aim of the present paper is to test the main hypotheses of Balassa-Samuelson Model in the Romanian case. After, we have studied the specific financial literature, the statistical databases and we have applied econometric models, reaching to the conclusion that model hypotheses are respected and that it can be tested.

**Key words:** Balassa-Samuelson Effect; Hypotheses; Tradable; Non-tradable; VAR model.

**JEL classification:** F31 ; C32; E31.

# Comparison of Fourier Models Applied to Yield Curve Modelling on the Czech Coupon Bond Market

*Hana Hladíková\**

## 1 Introduction

The zero coupon yield curve is one of the most fundamental tools in finance and is essential in the pricing of various fixed-income securities. Zero coupon rates are not observable in the market for a range of maturities. Therefore, an estimation methodology is required to derive the zero coupon yield curves from observable data. We use parametric Fourier model. The current mathematical apparatus employed for this kind of approximation is outlined. In order to find parameters of the model we employ the least squares minimization of computed and observed prices. This theoretical background is applied to an estimation of the zero-coupon yield curve derived from the Czech coupon bond market.

The term structure of interest rates is defined as the relationship between the yields of default-free pure discount (zero-coupon) bonds and their time to maturity. It provides a basis for pricing fixed-income securities and interest rate derivatives, as well as other capital assets. If we deal with approximations of empirical data to create yield curves it is necessary to choose suitable mathematical functions. Bolder and Gusba (2002), among other methods, use Fourier's functions.

The first class of term-structure estimation methods results from work by McCulloch (1971), Fisher, Nychka and Zervos (1994), Eiler, Marx (1996) and Waggoner (1997). This approach employs a B-spline basis for the space of cubic splines to fit observed coupon-bond prices. As a consequence, we call these spline-based models. This approach includes a penalty in the generalized least-squares objective function.

The second class of methods is called function-based and includes variations on the work of Li et al. (2001), which uses linear combinations of basis functions, defined over the entire term-to-maturity spectrum, to fit the discount function. This class of function-based models includes the model proposed by Svensson (1994).

Bolder and Gusba (2002), Marciniak (2006), Lin (2002) provide an extensive review and comparison of a number of estimation algorithms.

**Tab. 1: Estimation by different central banks**

Central bank	Model	Central bank	Model
Belgium	Svensson/Nelson–Siegel	Norway	Svensson
Canada	Exponential spline	Spain	Svensson
Finland	Nelson–Siegel	Sweden	Smoothing splines/Svensson
France	Svensson/Nelson–Siegel	Switzerland	Svensson
Germany	Svensson	UK	VRP
Italy	Nelson–Siegel	USA	Smoothing splines
Japan	Smoothing splines		

Source: BIS (2005)

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As to the Czech coupon bond market, the function-based construction of yield curve has not yet been satisfactorily explored. Construction of yield curves by the Svensson method is dealt with in Slavík (2001) and Radová, Málek and Štěrbá (2007).

In Section 2 we repeat three equivalent descriptions of the term structure of interest rates, namely, the discount function  $d$ , the spot yield curve  $z$  and forward yield curve  $f$ . In Section 3 we define the Fourier model and propose an iterative method to solve arising nonlinear least squares problem. In Section 4 the data sample from the Czech coupon bond market is described. In Section 5 numerical experiments on these data are performed.

## 2 Term structure

The spot interest rate  $z(t, T)$  of a given maturity  $T$  is defined as the yield on a pure discount bond of that maturity. The spot rates are the discount rates determining the present value of a unit payment at a given time in the future. Spot rates considered as a function of maturity are referred to as the term structure of interest rates.

Each coupon bond can be considered as a package of discount bonds, namely one for each of the coupon payments and one for the principal payment. The price of such component discount bonds is equal to the amount of the payment discounted by the spot rate of the maturity corresponding to this payment. The price of the coupon bond is then the sum of the prices (discount function)  $d(t, T)$  of these component discount bonds.

The implications of the current spot rates for future rates can be described in terms of the forward rates  $f(t, T)$ . The forward rates are one-period future reinvestment rates, implied by the current term structure of spot rates.

There are three equivalent descriptions of the term structure of interest rates the discount function  $d$ , the spot yield curve  $z$  and forward yield curve  $f$  (Málek, 2005).

The spot rates are related to the discount function by the equation:

$$d(t, T) = e^{-(T-t)z(t, T)} \quad (1)$$

$$z(t, T) = \frac{-\ln(d(t, T))}{T-t} \quad (2)$$

The forward rates are related to the spot rate by the equation:

$$f(t, T) = \frac{\partial}{\partial T} \ln(-d(t, T)) = z(t, T) + (T-t)z'(t, T). \quad (3)$$

The spot rates are related to the forward rate by the equation:

$$z(t, T) = \frac{\int_t^T f(t, u) du}{T-t}. \quad (4)$$

## 3 Fourier model

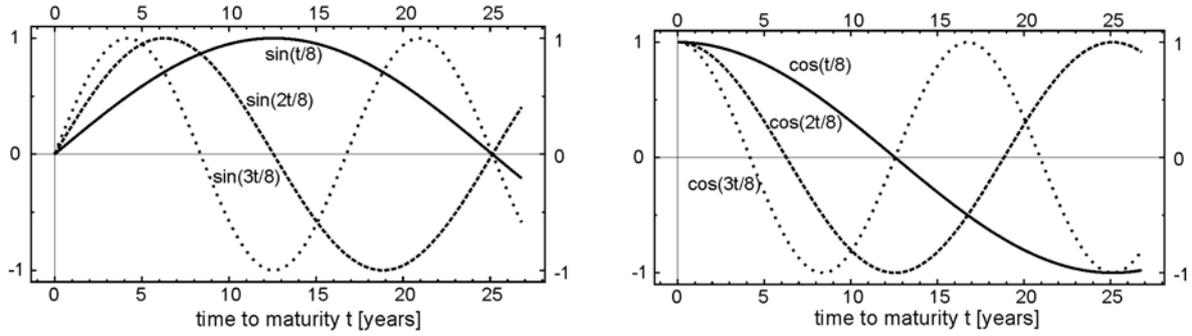
We examine the following Fourier-series basis:

$$B = \left\{ 1, \sin\left(\frac{n.t}{L}\right), \cos\left(\frac{n.t}{L}\right); \quad n = 1, 2, \dots, l \right\}. \quad (5)$$

The horizontal-stretch factor  $\frac{1}{L}$  was chosen by means of iterative method, and is meant to extend the wavelength of each basis function to avoid excessive oscillation. Fig. 1 shows the

first three terms for the Fourier basis; the sine and cosine terms are graphed individually.

**Fig. 1: Fourier series basis function**



The discount function  $d$  is given as:

$$d(t) = \sum_{k=1}^{2l+1} a_k f_k(t), \quad f_k(t) \in B, \quad d(0) = 1 \Rightarrow a_1 + \sum_{k=1}^l a_{2k+1} = 1 \quad (6)$$

The Fourier model employs a linear combination of Fourier's basis functions,  $2l+1$  is the number of basis functions. The  $a_k$ 's are unknown parameters for  $k=1, \dots, 2l+1$  that must be estimated. We choose the number of basis functions to be  $l=3$ . To get a more accurate fit, a higher number of basis functions is desirable. On the other hand, as  $l$  increases, the matrices used in the computations are more likely to become poorly conditioned.

$P_i$  - theoretical price of  $i$ -th bond,  $m_i$  number of the payments of the  $i$ -th bond

$t_{ij}$  - the time when the  $j$ -th payment of the  $i$ -th bond occurs;  $t_i = [t_{i1}, \dots, t_{im_i}]$

$c_{ij}$  - the  $j$ -th payment of the  $i$ -th bond.

$P = (P_1, P_2, \dots, P_N)$  is a vector of theoretical prices, and, (7)

$\bar{P} = (\bar{P}_1, \bar{P}_2, \dots, \bar{P}_N)$  be a vector of observed prices.

$$d(t_i) = [d(t_{i1}), \dots, d(t_{im_i})]^T$$

The theoretical price of bond number  $j$  is given by the sum of the discounted values of its cash flows. From Equation (6) it follows

$$P_i = \sum_{j=1}^{m_i} c_{ij} d(t_{ij}) = \sum_{j=1}^{m_i} c_{ij} \sum_{k=1}^{2l+1} a_k f_k(t_{ij}), \quad (8)$$

The next step is to form weights associated with each bond. Our choice for the weights was the reciprocal of the modified duration.

The final step is to actually estimate the parameters  $a_k$ . We wish to find the set of parameters  $a_k$  that minimizes the function given as,

$$H(P) := L^2(P) + \lambda(t)G(P) := \sum_{i=0}^N w_i (P_i - \bar{P}_i)^2 + \int_0^T \lambda(t) (P''(t))^2 dt \cdot$$

$P = (P_1, P_2, \dots, P_N)$  is vector of theoretical prices, (9)

$\bar{P} = (\bar{P}_1, \bar{P}_2, \dots, \bar{P}_N)$  is vector of observed prices.

Where  $\lambda(t)$  is penalty function that determines the relative importance of goodness versus smoothness of fit to the observed data and  $w_i$  is weight of  $i$ -th bond,  $N$  is number of bonds.

## 4 Data

The Czech market is small and not as liquid as other developed markets. The original life of Czech government bond is from 3 to 50 years. The government issued bonds with annual coupon payments. We consider here data for a selected day as given in Tab. 2.

**Tab. 2: Government coupon bonds (22.2.2010)**

	Coupon	Maturity	Duration	Price+AUV	Y-to-mat.
CZ0001000731	6,4	14.4.10	-	106,3589	0,139726
CZ0001001242	2,55	18.10.10	0,64	101,8496	0,652055
CZ0001002158	4,1	11.4.11	1,08	106,7261	1,131507
CZ0001000764	6,55	5.10.11	1,53	110,7972	1,616438
CZ0001001887	3,55	18.10.12	2,49	104,5524	2,654795
CZ0001000814	3,7	16.6.13	3,03	105,9092	3,315068
CZ0001001143	3,8	11.4.15	4,47	105,6644	5,134247
CZ0001000749	6,95	26.1.16	4,95	119,4099	5,928767
CZ0001001903	4	11.4.17	5,91	103,8389	7,136986
CZ0001000822	4,6	18.8.18	6,8	105,7394	8,490411
CZ0001002471	5	11.4.19	7	109,8111	9,136986
CZ0001001317	3,75	12.9.20	8,31	94,89792	10,56164
CZ0001001945	4,7	12.9.22	9,13	101,5281	12,56164
CZ0001001796	4,2	4.12.36	14,95	87,945	26,8
CZ0001002059	4,85	26.11.57	17,64	93,69903	47,79178

Source: www.patria.cz, authorial calculation

We exclude two bonds with less than three months to maturity, since the yields on these securities often seem to behave oddly and one bond with more than forty-seven years to maturity, since price of bond will evidently include also another risk premium.

## 5 Curve construction quality criteria

Measures of goodness of fit are used:

- $RMSE_p = \sqrt{\sum_{i=1}^N \frac{(\bar{P}_i - P_i)^2}{N}}$  squared error ,
- $L2_p = \sum_{i=1}^N (\bar{P}_i - P_i)^2$ ,  $L2W_p = \sum_{i=1}^N (\bar{P}_i - P_i)^2 w_i$ ,
- $MAE_p = \sum_{i=1}^N \frac{|\bar{P}_i - P_i|}{N}$  absolute error, (10)

$$\blacksquare \quad HR = \frac{\text{card}(P_i, \bar{P}_i^O \leq P_i \leq \bar{P}_i^B)}{N}$$

$\bar{P}_i^O$  and  $\bar{P}_i^B$  observed offer and bid price of the  $i$ -th bond.

$$\begin{aligned} \blacksquare \quad RMSE_{YTM} &= \sqrt{\sum_{i=1}^N \frac{(\overline{YTM}_i - YTM_i)^2}{N}} \quad \text{squared error,} \\ \blacksquare \quad MAE_{YTM} &= \sum_{i=1}^N \frac{|\overline{YTM}_i - YTM_i|}{N} \quad \text{absolute error,} \end{aligned} \tag{11}$$

In RMSE more weight is assigned to extraordinarily high error values. Large differences between RMSE and MAE indicate a large number of large errors of fit. HR is the number of theoretical bond prices, as a proportion of the overall number of bonds in the daily sample.

Two measures of maximum smoothness of a curve  $y = g(x)$  between  $a$  and  $b$  are used:

$$\begin{aligned} \blacksquare \quad z &= \int_a^b g'(x)^2 dx \quad \text{“smoothness”,} \\ \blacksquare \quad s &= \int_a^b \sqrt{1 + [g'(x)]^2} dx \quad \text{“minimum length”.} \end{aligned} \tag{12}$$

The smoothest possible function has the minimum  $z$  value. Since a second derivative of a straight line equals zero,  $z$  is zero in that case and a straight line is perfectly smooth.

In this case, the function  $g(x)$  stands for the discount, spot or forward rate curve. The two measures are once again very consistent. We have critiqued the results from some yield curve smoothing techniques because of the lack of smoothness in either discount function, spot rates or forward rates. In order to evaluate  $z$  over the full maturity spectrum of the rates curve, the rate segments must be at least twice differentiable at each point.

## 6 Comparison of the methods

We performed a series of numerical experiments to determine:

- the weights associated with each bond,
- the form of the penalty function,
- the horizontal-stretch factor  $\frac{1}{L}$ ,
- $d(0) = 1$  or  $d(0) \neq 1$ .

The methods considered are summarized in Tab. 3.

**Tab. 3: Basic characteristics of the methods considered for comparison**

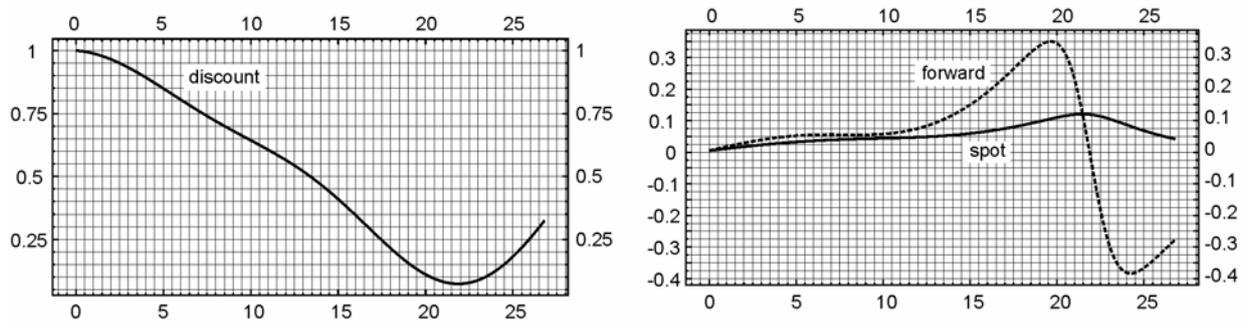
Method	Weight	No of basis functions	Penalty function	d(0)=1	L
Fo1	1	7	$\lambda(t) = 500 \ln(t+1)$	Yes	6
Fo1d	1/Duration	7	$\lambda(t) = 500 \ln(t+1)$	Yes	7
Fo2	1	7	$\lambda(t) = \frac{5000}{1+1000e^{-0.8t}}$	Yes	7
Fo2d	1/Duration	7	$\lambda(t) = \frac{5000}{1+1000e^{-0.8t}}$	Yes	7
Fo3	1	7	$\lambda(t) = 200 \ln(t+1)$	Yes	6
Fo3d	1/Duration	7	$\lambda(t) = 200 \ln(t+1)$	Yes	6
Fo4	1	7	$\lambda(t) = 500$	Yes	6
Fo4d	1/Duration	7	$\lambda(t) = 500$	Yes	11
Fo5	1	7	$\lambda(t) = 2000$	Yes	8
Fo5d	1/Duration	7	$\lambda(t) = 2000$	Yes	13
Fo6	1	5	$\lambda(t) = 0$	Yes	6
Fo6d	1/Duration	5	$\lambda(t) = 0$	Yes	6
Fo6d0	1/Duration	5	$\lambda(t) = 0$	No	6

**Tab. 4: Evaluation of the methods according to accuracy of price and YTM estimations**

PRICE				YTM (Yield To Maturity)		
Method	RMSE2	MAE	HR	Method	RMSE2	MAE
Fo3	0.27192935	0.13272486	53.85000000	Fo6d0	0.06749711	0.00007809
Fo6	0.28865293	0.14314460	53.85000000	Fo4	0.06866054	0.00008338
Fo1	0.28598610	0.14629803	53.85000000	Fo3d	0.06852828	0.00008343
Fo4	0.27619793	0.13388585	46.15000000	Fo6d	0.07015864	0.00008619
Fo6d	0.29047324	0.14612725	53.85000000	Fo3d	0.07157789	0.00008705
Fo6d0	0.28909157	0.14291112	46.15000000	Fo1d	0.07174486	0.00008773
Fo3d	0.30847406	0.16090889	53.85000000	Fo6	0.07217982	0.00008748
Fo2	0.30706043	0.16206625	53.85000000	Fo2d	0.07422857	0.00008811
Fo4d	0.30893505	0.16493524	53.85000000	Fo2	0.07290405	0.00008836
Fo1d	0.31176224	0.16655933	53.85000000	Fo4d	0.07234241	0.00009181
Fo2d	0.33268597	0.17301016	53.85000000	Fo5	0.07206426	0.00010070
Fo5	0.33005161	0.17372560	53.85000000	Fo1	0.07583926	0.00009206
Fo5d	0.44687653	0.28033175	38.46000000	Fo5d	0.10983964	0.00019249

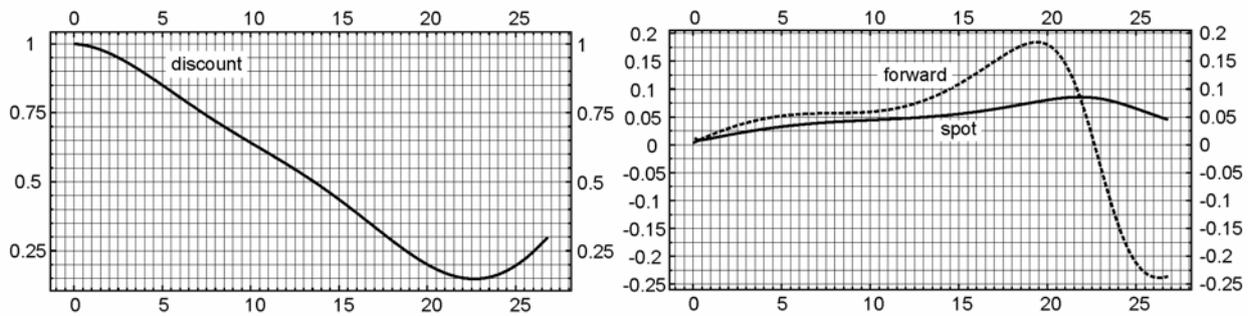
The computed yield curves for the selected methods are plotted in Fig. 2 to Fig. 6. The computations were performed using our own program.

**Fig. 2: Computed discount function, spot and forward rates vs. time [years], method Fo3**



Method Fo3 shows the best results if the criterion of the least error of the observed and theoretical (computed) prices is considered (see the left-hand side of Tab. 4).

**Fig. 3: Computed discount function, spot and forward rates vs. time [years], method F6d0**

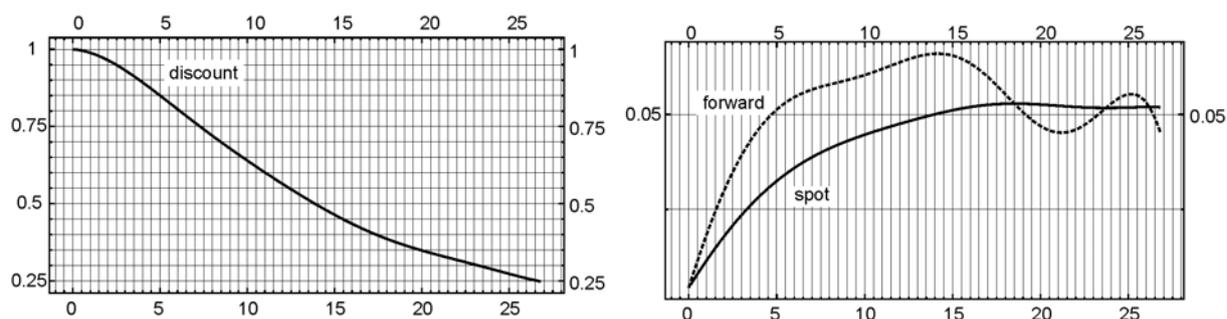


The least error in terms of YTM (Yield To Maturity) reaches method F6d0 (see the right-hand side of Tab. 4).

**Tab. 5: Evaluation of the methods according to the length of the curves and smoothness**

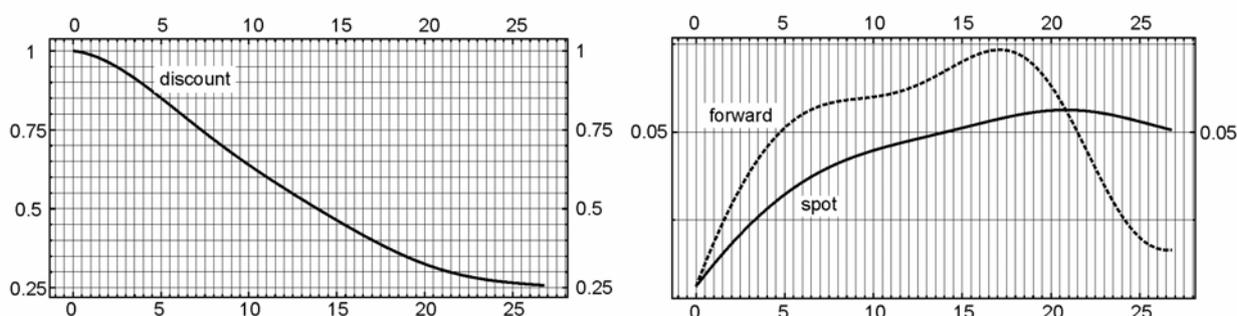
Length				Smoothness			
Method	Discount	Spot	Forward	Method	Discount	Spot	Forward
<b>Fo1d</b>	26.81220889	26.70009989	26.80035910	<b>Fo5</b>	0.43312474	0.00350772	0.07619988
<b>Fo2d</b>	26.81225201	26.70010000	26.80036473	<b>Fo2d</b>	0.45668332	0.00419468	0.16343622
<b>Fo2</b>	26.81233867	26.70010318	26.80038086	<b>Fo1d</b>	0.45636522	0.00432863	0.18619649
<b>Fo3d</b>	26.81246027	26.70010353	26.80043720	<b>Fo2</b>	0.47181855	0.00450921	0.14580278
<b>Fo5d</b>	26.81411180	26.70017934	26.80549154	<b>Fo5d</b>	1.38317741	0.03304330	4.06002620
<b>Fo6</b>	26.82139213	26.70039484	26.82000362	<b>Fo6</b>	2.25917895	0.06925700	9.64654441
<b>Fo6d0</b>	26.82103782	26.70041676	26.81910904	<b>Fo6d</b>	2.26842939	0.07171768	10.10546515
<b>Fo6d</b>	26.82165553	26.70040564	26.82063738	<b>Fo6d0</b>	2.23350291	7.58094291	8.99669078
<b>Fo4</b>	26.82735644	26.70076973	26.85321955	<b>Fo4</b>	3.01955087	0.20578952	43.37585676
<b>Fo1</b>	26.82999871	26.70103681	26.88048590	<b>Fo1</b>	3.25069540	0.32747514	81.43205111
<b>Fo3</b>	26.83027096	26.70107302	26.88998805	<b>Fo3</b>	3.39912199	0.36287409	97.99114841

**Fig. 4: Computed discount function, spot and forward rates vs. time [years], method Fo1d**



The minimum length of computed curves was obtained for method Fo1d (see the left-hand side of Tab. 5).

**Fig. 5: Computed discount function, spot and forward rates vs. time [years], method Fo5**



The minimum curvature has method Fo5 (see the right-hand side of Tab. 4).

The overall performance of the methods according to separate criteria is summarized in Tab. 6 where *Sum1* is the sum of rankings according to the considered criteria and *Sum2* is the weighted sum of these rankings. The accuracy of fit decreases with the use of both the weight and penalty functions.

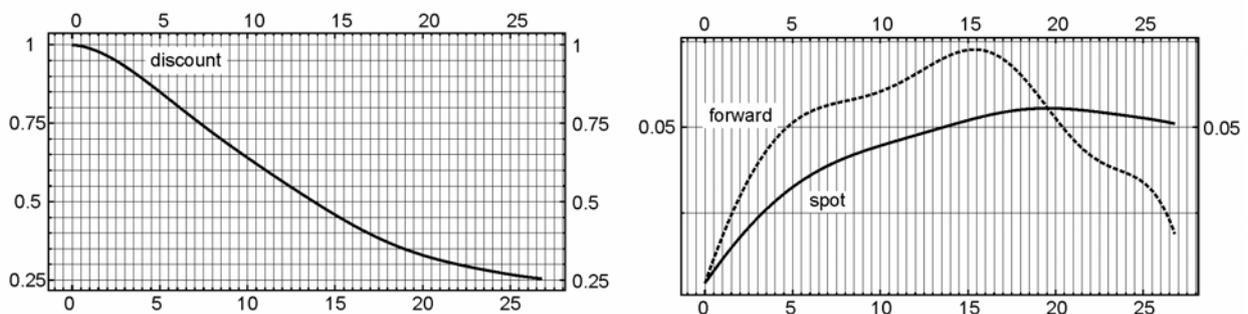
**Tab. 6: Evaluation of the methods according to the length of the curves and smoothness**

Method	PRICE			YTM		Length			Smoothnes			Sum1	Sum2
	RMSE	MAE	HR	RMSE	MAE	Disc.	Spot	Forward	Disc.	Spot	Forward		
Fo1d	10	10	1	6	7	1	2	1	2	3	5	48	82
Fo3d	8	7	1	5	5	5	5	4	5	4	2	51	77
Fo2	7	8	1	10	9	3	4	3	4	5	3	57	92
Fo5	11	12	1	7	12	6	1	5	1	1	1	58	101
Fo2d	12	11	1	11	8	2	3	2	3	2	4	59	102
Fo6d0	5	3	2	1	1	8	10	8	8	13	8	67	79
Fo4d	9	9	1	9	10	4	6	6	6	6	6	72	110
Fo6	4	4	1	8	6	9	8	9	9	8	9	75	98
Fo4	2	2	2	3	2	11	11	11	11	10	11	76	87
Fo6d	6	5	1	4	4	10	9	10	10	9	10	78	98
Fo3	1	1	1	2	3	13	13	13	13	12	13	85	93
Fo5d	13	13	3	13	13	7	7	7	7	7	7	97	152
Fo1	3	6	1	12	11	12	12	12	12	11	12	104	137

We aim to find criterion for the best approximation. As the best compromise between the goodness of fit of the observed prices and YTM on one hand and the smoothness of the computed yield curves on the other hand are methods Fo3d and Fo1d.

As far as the criterion *Sum1* is concerned method Fo1d shows the best overall performance. Method Fo1d produces the approximations with shortest curve lengths. It seems that too much weight is imposed here on the length and smoothness criteria. We have thus proposed weighted sum of rankings *Sum2*. In order to compute *Sum2* we set weights to value of 2 for the price and YTM criteria (more important) and to value of 0.75 for the length and smoothness criteria (less important). If we use these weights then method Fo3d shows the best performance.

**Fig. 6: Computed discount function, spot and forward rates vs. time [years], method Fo3d**



## 7 Conclusions

Results presented in this paper were based on interest rate estimates from the Czech coupon bond market, which is characterized by a relatively low number of bonds, by moderate liquidity and periodically reduced efficiency. We explored function-based models using the Fourier basis functions to create yield curves. We performed a series of numerical experiments to determine the weights associated with each bond, the form of the penalty function and the horizontal-stretch factor of the Fourier basis functions. We compared the methods according to diverse criteria. Finally, we selected Fo3d method as the best compromise between the goodness of fit of the observed prices and YTM's on one hand and the smoothness of the computed yield curves on the other hand. With respect to a limited number of bonds with time to maturity longer than 20 years we must restrict the validity of the obtained yield curves to time horizon of 25 years.

This approach produced a reasonably looking zero-coupon yield curve, although the forward rate curve was somewhat more oscillatory than the curve resulting from the standard B-spline or negative exponential basis. After substantial experimentation, however, we found the Fourier approach to be a stable and potentially useful. This will be clarified in our subsequent work when compared to other methods and on larger set of data than just one day.

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## ***Comparison of Fourier Models Applied to Yield Curve Modelling on the Czech Coupon Bond Market***

### **Summary**

The zero coupon yield curve is one of the most fundamental tools in finance and is essential in the pricing of various fixed-income securities. Zero coupon rates are not observable in the market for a range of maturities. Therefore, an estimation methodology is required to derive the zero coupon yield curves from observable data. We use parametric Fourier model. The current mathematical apparatus employed for this kind of approximation is outlined. In order to find parameters of the model we employ the least squares minimization of computed and observed prices. This theoretical background is applied to an estimation of the zero-coupon yield curve derived from the Czech coupon bond market.

**Key words:** Yield curve estimation; Curve smoothing; Fourier's basis functions.

**JEL classification:** 91G60, 91G30, 97M30.

# Multifractal Height Cross-Correlation Analysis<sup>#</sup>

*Ladislav Kriřtoufek\**

## 1 Introduction

Research of long-range dependence and multifractality in various time series has grown significantly during the last years, e.g. Di Matteo (2007); Matos et al. (2008); Czarnecki et al. (2008); Grech and Mazur (2004). An efficient detection of long-range dependence and estimation of Hurst exponent is crucial for financial analysts as its presence has important implications for a portfolio selection, an option pricing and a risk management. There are several methods for a long-range dependence detection, among the most popular are rescaled range analysis (Hurst, 1951), modified rescaled range analysis (Lo, 1991), rescaled variance analysis (Giraitis et al., 2003), detrended fluctuation analysis (Peng et al., 1994) and detrending moving average (Alessio et al., 2002). For a detection of multifractality, there are three popular methods – multifractal detrended fluctuation analysis (MF-DFA) of Kantelhardt et al. (2002), generalized Hurst exponent approach (GHE) of Di Matteo (2007), which is based on height-height correlation analysis of Barabasi et al. (1991), and wavelet transform modulus maxima (WTMM) of Muzy et al. (1991). The precision of various methods has been discussed as well (Couillard and Davison, 2005; Grech and Mazur, 2005; Weron, 2002; Barunik and Kristoufek, 2010; Kristoufek, 2009).

Recently, the examination of long-range cross-correlations has become of an interest as it provides more information about the process. Podobnik and Stanley (2008) generalized detrended fluctuation analysis for two time series and introduced detrended cross-correlation analysis (DCCA). Zhou (2008) further generalized the method and introduced multifractal detrended cross-correlation analysis. In this paper, we introduce two new methods, which are a generalization of height-height correlation analysis of Barabasi et al. (1991) – multifractal height cross-correlation analysis (MF-HXA) and its special case of height cross-correlation analysis (HXA).

The paper is structured as follows. In Section 2, we briefly discuss basic notions of long-range correlations and multifractality. Section 3 introduces the method of MF-HXA and discusses long-range cross-correlations and cross-multifractality in detail. In Section 4, we show the efficiency of the method on two simulated types of processes. Section 5 concludes.

## 2 Long-range correlations and multifractality

In this section, we present basic notions of multifractality, long-range correlations and long-range cross-correlations. As the subject is widely discussed in the recent literature, we present only brief description. For more detailed reviews, see Beran (1994); Kantelhardt (2009); Embrechts and Maejima (2002).

Stationary process is long-range dependent if the autocorrelation function  $\rho(k)$  of the said process decays as  $\rho(k) \sim Ck^{2H-2}$  for lag  $k \rightarrow \infty$ . Parameter  $0 < H < 1$  is called Hurst exponent after water engineer Harold Edwin Hurst who used the exponent for a description of river flows behavior of the Nile River (Hurst, 1951; Mandelbrot and van Ness, 1968).

A critical value of Hurst exponent is 0.5 and suggests two possible processes – either an

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independent process (Beran, 1994) or a short-term dependent process (Lillo and Farmer, 2004). If  $H > 0.5$ , auto-covariances decay hyperbolically and are positive at all lags, the process is then called long-range dependent with positive correlations (Embrechts and Maejima, 2002) or persistent (Mandelbrot and van Ness, 1968). On the other hand, if  $H < 0.5$ , auto-covariances again decay hyperbolically and are negative at all lags and the process is said to be long-range dependent with negative correlations (Embrechts and Maejima, 2002) or anti-persistent (Mandelbrot and van Ness, 1968). The persistent process implies that a positive movement is statistically more likely to be followed by another positive movement or vice versa. On the other hand, the anti-persistent process implies that a positive movement is more statistically probable to be followed by a negative movement and vice versa (Vandewalle et al., 1997).

If the process can be described by single Hurst exponent  $H$ , it is called monofractal. If different Hurst exponents are needed for various scales, the process exhibits crossovers and is called a multiscaling process. Further, there can be different Hurst exponents for parts of the series, which is solved by a use of time-dependent (or local) Hurst exponent (Grech and Mazur, 2004). The most complicated is the case when there is a whole spectrum of Hurst exponents which is needed for a full description of the process made of many complex fractal processes, i.e. a multifractal process (Kantelhardt et al., 2002).

The above described phenomena can be present in the relation between two separate series as well. A series may be long-range dependent but can also have a long memory of a different process so that it is long-range cross-dependent with Hurst exponent  $H_{xy}$ . Cross-correlation function  $\rho_{xy}(k)$  of processes  $x_t$  and  $y_t$  then decays as  $\rho_{xy} \approx Ck^{2H_{xy}-2}$ . Similarly to the standard case, if the whole spectrum of cross-correlation Hurst exponents  $H_{xy}$  is needed for description of cross-correlations between two processes, the relation is cross-multifractal. Further features of long-range cross-correlations and cross-multifractality are discussed in following sections.

### 3 Multifractal height cross-correlation analysis

We introduce the multifractal height cross-correlation analysis (MF-HXA) in this section. The connection to the generalized Hurst exponent approach (GHE) is discussed in detail as well as a crucial division of long-range cross-correlations.

#### 3.1 Method

The detection of long-range dependence and the estimation of generalized Hurst exponent  $H(q)$  of Barabasi et al. (1991) is based on  $q$ -th order height-height correlation functions of time series  $X(t)$ , with  $q > 0$ , as

$$K_q(\tau) = \frac{|X(t+\tau) - X(t)|^q}{T - \tau}. \quad (1)$$

which scales as

$$K_q(\tau) \propto \tau^{qH(q)}. \quad (2)$$

We generalize the method presented above and introduce the multifractal height cross-correlation analysis (MF-HXA) which can be used for the detection of long-range correlations and multifractality between two separate time series.

Generalizing Equation 1 for two demeaned and standardized time series, we obtain

$$K_q(\tau) = \frac{|(X(t+\tau) - X(t))(Y(t+\tau) - Y(t))|^{q/2}}{T - \tau}. \quad (3)$$

For  $q = 1$ , the generalized height correlation function represents a scaling of absolute deviations of covariates, and for  $q = 2$ , it corresponds to the standard cross-correlation function. We

propose multifractal height cross-correlation analysis (MF-HXA) based on the generalization of Equation 2. The scaling relationship between  $K_{xy,q}(\tau)$  and generalized cross-correlation Hurst exponent  $H_{xy}(q)$  is obtained as

$$K_{xy,q}(\tau) \propto \tau^{qH_{xy}(q)}. \quad (4)$$

For  $q = 2$ , the method can be used for the detection of long-range cross-correlations solely and we call it height cross-correlation analysis (HXA). Obviously, for  $x(t) = y(t)$ , MF-HXA turns into the generalized Hurst exponent approach of Di Matteo et al. (2003), which is equivalent to the height-height correlation analysis of Barabasi et al. (1991).

### 3.2 Two types of cross-corelations

Similarly to Hurst exponent  $H(2)$ , the cross-correlation Hurst exponent  $0 < H_{xy}(2) < 1$  has a critical value of 0.5 which indicates that the examined series are cross-independent (or short-range cross-dependent). For  $H_{xy}(2) > 0.5$ , the series are cross-persistent so that an increment (a decrement) in  $\Delta x(t)\Delta y(t)$  is more statistically probable to be followed by another increment (decrement) in  $\Delta x(t+1)\Delta y(t+1)$ . Reversely for  $H_{xy}(2) < 0.5$ , the series are cross-antipersistent so that an increment (a decrement) in  $\Delta x(t)\Delta y(t)$  is more statistically probable to be followed by a decrement (an increment) in  $\Delta x(t+1)\Delta y(t+1)$ .

It can be shown that for two independent processes, it generally holds that

$$H_{xy}(q) = \frac{H_{xx}(q) + H_{yy}(q)}{2}. \quad (5)$$

Therefore,  $H_{xy}(2) = 0.5$  can be caused by long-range dependence of the two processes even if the two are uncorrelated. Therefore, we need to distinguish between two types of long-range cross-correlations: (i) long-range cross-correlations caused by long-range interrelation between two series, and (ii) long-range cross-correlations which are caused by long-range dependence of the separate series. To distinguish between the two types of cross-correlations, we can use Equation 5.

### 3.3 Cross-multifractality

If a spectrum of Hurst exponents  $H_{xy}(q)$  is needed to describe the relationship between two time series, the series are cross-multifractal. The generalized cross-correlation Hurst exponent  $H_{xy}(q)$  is independent of  $q$  for monofractal series or it is dependent on  $q$  for multifractal series. An influence of joint distributional properties implies that multifractality can be due to the cross-correlations as well as the broadness of the joint-distribution (Kantelhardt, 2009). Again, the effect of correlations can be separated into two – auto-correlations and cross-correlations according to Equation 5.3.

To examine a scale of multifractality, there are two measures of multifractality usually used –  $\alpha$  and  $f(\alpha)$ . These are used as an additional tool to a simple examination of the behavior of  $H_{xy}(q)$  (usually a simple range of generalized Hurst exponents  $\Delta H_{xy} = \max[H_{xy}(q)] - \min[H_{xy}(q)]$ ) as the generalized exponents can vary significantly even for monofractal processes (Kantelhardt et al., 2002). Both measures are partially connected to a scaling exponent  $\tau(q)$ , which is defined as  $\tau(q) = qH(q)$  for a standard case and as  $\tau(q)_{xy} = qH_{xy}(q)$  from Equations 2 and 4. Singularity strength, or Hölder exponent,  $\alpha$  is a characteristic measure of a series whereas singularity spectrum  $f(\alpha)$  characterizes a dimension of a series characterized by  $\alpha$ . To obtain  $\alpha$  and  $f(\alpha)$ , we generalize the procedure of Barabasi et al. (1991) for two time series.

To characterize the relationship between the series  $X(t)$  and  $Y(t)$ , we construct a probability measure  $pt(\tau)$  connected to a hierarchy of changes of the two series. The measure is calculated as

$$p_{xy,t}(\tau) = \frac{\sqrt{[X(t+\tau) - X(t)][Y(t+\tau) - Y(t)]}}{\sum_{t=1}^{T-\tau} \sqrt{[X(t+\tau) - X(t)][Y(t+\tau) - Y(t)]}}. \quad (6)$$

As  $p_{xy,t}(\tau)$  is a standard probability measure, it holds that the measures sum to unity and  $p_{xy,t}(\tau) \geq 0$ . We further define a generating function for two time series  $\chi_{xy}(\tau)$ , which is associated with the probability measures  $p_{xy,t}(\tau)$ , and corresponding generalized dimensions  $D_{xy,q}$  as

$$\chi_{xy,q}(\tau) = \sum_{t=1}^{T-\tau} p_{xy,t}^q, \quad (7)$$

$$\chi_{xy,q}(\tau) \propto \tau^{(q-1)D_{xy,q}}. \quad (8)$$

Finally, we use the Legendre transformation and obtain the singularity strength  $\alpha$  through change of the generalized dimension  $D_{xy,q}$  with varying  $q$ . The singularity spectrum  $f(\alpha)$  is then obtained with a use of both  $\alpha$  and  $D_{xy,q}$ . The specific relationships hold as follows

$$\alpha_{xy} = \frac{\partial((q-1)D_{xy,q})}{\partial q}, \quad (9)$$

$$f(\alpha_{xy}) = q\alpha_{xy} - (q-1)D_{xy,q}. \quad (10)$$

The above described lengthy procedure can be alternatively replaced by the simpler one. If we assume that the probability measure  $p_{xy,t}(\tau)$  describes the hierarchy of both series  $X(t)$  and  $Y(t)$  uniformly, we can write  $p_{xy,t}(\tau) = 1/T$  for  $\tau \rightarrow 0$ . Such assumption allows to use only  $H_{xy}(q)$  for the construction of the singularity strength  $\alpha$  and the singularity spectrum  $f(\alpha)$ . It then holds that<sup>1</sup>

$$\alpha_{xy} = \frac{\partial(qH_{xy}(q))}{\partial q} - H_{xy}(1), \quad (11)$$

$$f(\alpha_{xy}) = q \frac{\partial[qH_{xy}(q)]}{\partial q} - qH_{xy}(q). \quad (12)$$

## 4 Two illustrative examples

To validate MF-HXA, we present the results for two randomly generated processes – two independent ARFIMA processes and two independent multifractal series based on Mandelbrot's Binomial Multifractal model. Note that both variants of the processes are independent so that the expected cross-correlation Hurst exponents  $H_{xy}(q)$  are equal to arithmetic means of  $H_{xx}(q)$  and  $H_{yy}(q)$  of the separate processes.

### 4.1 Two ARFIMA processes

The autoregressive fractionally integrated moving average models (ARFIMA) are generalization of the autoregressive moving average models (ARMA) of Box and Jenkins (1970), which allow for long-range dependence. In Figure 1a, we show the estimates of  $H_{xx}(q)$ ,  $H_{yy}(q)$  and  $H_{xy}(q)$  for two independent ARFIMA processes with  $H_{xx}(q) = 0.7$  and  $H_{yy}(q) = 0.9$  and parameters set as  $T = 1000$ ,  $\tau_{min} = 2$ ,  $\tau_{max} = 100$  and  $q = 0.1, 0.2, \dots, 9.9, 10$ . Even though the both series are monofractal, the generalized Hurst exponents range from  $H_{xx}(0.1) = 0.7442$  to  $H_{yy}(10) = 0.6579$  and from  $H_{yy}(0.1) = 0.9281$  to  $H_{yy}(10) = 0.8546$  which are due to finite sample size of the series. Importantly, the estimates of the generalized Hurst exponents characterizing the long-range dependence solely are close to the expected values –  $H_{xx}(2) = 0.7134$  and  $H_{yy}(2) = 0.9035$ .

<sup>1</sup> For a detailed derivation, see the Appendix of Barabasi et al. (1991).

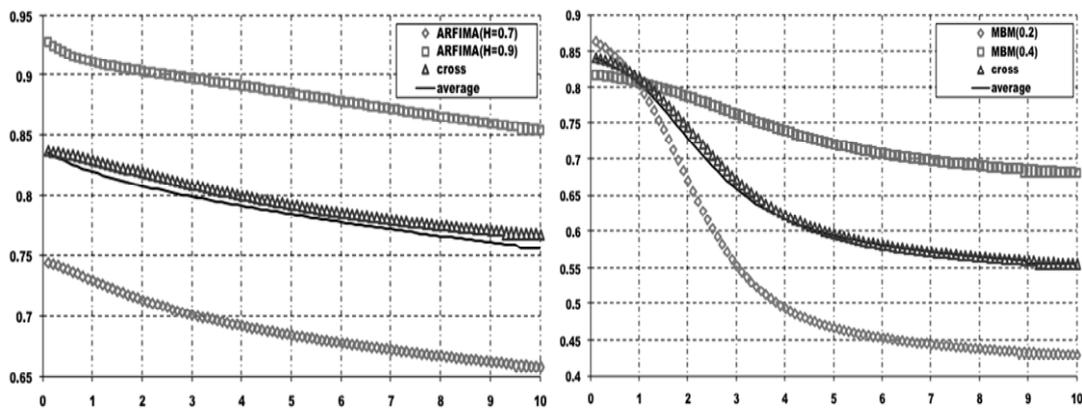
Further, the estimates of cross-correlation Hurst exponents  $H_{xy}(q)$  satisfy the relation of Equation 5 with only small deviations for all  $qs$ .

## 4.2 Mandelbrot's Binomial Multifractal series

Mandelbrot's Binomial Multifractal (MBM) is the simplest multifractal measure (Mandelbrot et al., 1997). Let  $m_0 > 0$ ,  $m_1 > 0$  and  $m_0 + m_1 = 1$  and let us work on interval  $[0,1]$ . In the first stage, the mass of 1 is divided into two subintervals  $[0, 0.5]$  and  $[0.5, 1]$ , when there is  $m_0$  in the first subinterval and  $m_1$  in the second one. In following stage, each subinterval is again halved and its mass is divided between the smaller subintervals in ratio  $m_0 : m_1$ . After  $k$  stages, we obtain a series of  $2^k$  values. Note that the values are deterministically given as there is no noise added in the simplest version of the method. For an interval  $[z, z + 2^{-k}]$ , the value  $\mu$  has a value of  $\mu[z, z + 2^{-k}] = m_0^{k\varphi_0} m_1^{k\varphi_1}$ , where  $\varphi_0$  and  $\varphi_1$  stand for relative frequencies of numbers 0 and 1 in a binary development of  $2^k z$ , respectively.

In Figure 1b, we show the estimates  $H_{xx}(q)$ ,  $H_{yy}(q)$  and  $H_{xy}(q)$  for two independent MBM models with  $m_0 = 0.2$  and  $m_0 = 0.4$ , respectively. We generated the series with 10 steps and obtained  $T = 1024$  observations and kept the other parameters the same so that MF-HXA is applied with  $\tau_{min} = 2$ ,  $\tau_{max} = 100$  and  $q = 0.1, 0.2, \dots, 9.9, 10$ . The variation of  $H_{xx}(q)$ ,  $H_{yy}(q)$  and  $H_{xy}(q)$  is much stronger than in the case of monofractal ARFIMA models. The values range from  $H_{xx}(0.1) = 0.8645$  to  $H_{xx}(10) = 0.4305$  and from  $H_{yy}(0.1) = 0.8175$  to  $H_{yy}(10) = 0.6819$  for the respective processes. Importantly, Equation 5 holds for all  $qs$ .

**Fig. 1: Estimates of exponents for AFRIMA processes and MBM series**



**Note:** (Figure 1a, left) Estimates of  $H_{xx}(q)$ ,  $H_{yy}(q)$  and  $H_{xy}(q)$  (y-axis) for two ARFIMA processes with  $H_{xx} = 0.7$  and  $H_{yy} = 0.9$  for different  $qs$  (x-axis). (Figure 1b, right) Estimates of  $H_{xx}(q)$ ,  $H_{yy}(q)$  and  $H_{xy}(q)$  (y-axis) for two MBM with  $m_0 = 0.2$  and  $m_0 = 0.4$ , respectively, for different  $qs$  (x-axis).

## 5 Conclusions

In the paper, we introduced the new method for the detection of long-range cross-correlations and cross-multifractality – multifractal height cross-correlation analysis (MF-HXA). We showed that long-range cross-correlations can be caused by long-range dependence of the separate processes and/or by the dependence between the two series. Similarly for cross-multifractality, the causes can be separated into three groups – multifractality due to joint-distributional properties and due to correlations, which can be further divided into auto-correlations and cross-correlations.

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## ***Multifractal Height Cross-Correlation Analysis***

### **Summary**

We introduce a new method for detection of long-range cross-correlations and cross-multifractality – multifractal height cross-correlation analysis (MF-HXA). We show that long-range cross-correlations can be caused by long-range dependence of separate processes and the correlations apart from them. Similar separation applies for cross-multifractality – standard separation between distributional properties and correlations is enriched by division of correlations between auto-correlations and cross-correlations. Efficiency of the method is showed on two types of simulated series – ARFIMA and Mandelbrot’s Binomial Multifractal model.

**Key words:** MF-HXA; Multifractality; Cross-correlations, ARFIMA; MBM; Long-range dependence.

**JEL classification:** G01, G17.



# Tendencies in the Development of International Trade in Financial Services

*Marija Lindemane, Didzis Rutitis\**

## 1 Introduction

Financial services trade as a part of international trade has appeared comparatively recently. The first intentions to develop the principles of international services trade arose at the end of the 1940-ies due to the preparation for the establishment of International Trade Organization (ITO). The ITO Draft Charter includes financial services singled out as an important element of international trade among such services as transportation, communication and insurance. Due to a rather small volume of world services trade (including financial services) at that time, the provisions on services trade were not included into the GATT (General Agreement on Tariff and Trade) text concluded instead of ITO Charter (Birukov 2007, p. 22). Besides, right up to the 1990-ies, on account of difficulties in their classification there was no multilateral inter-state agreement on services trade. Only industry inter-state agreements were signed (Mahmutov 2003). Hence, originally governments enjoyed almost complete sovereignty in the definition of regulation norms of financial services trade.

Only in the middle of the 90-ies financial services became an object of trading policy in many countries. In 1993-1994 financial services trade started to be regulated either by international organizations or inter-state agreements. At that time the main regulation mechanisms were developed in the frames of European Union (EU) (1992), North American Free Trade Agreement (NAFTA) (1994) and World Trade Organization (WTO) (1994/1999). There are great distinctions between these organizations: NAFTA includes 3 countries, EU – 27 (16 – eurozone), whereas WTO has 153 member states.

Nowadays one of the main document that regulates financial services in most countries is “General Agreement on Trade in Services” (GATS) signed by WTO member states in 1994 during the Uruguay round of GATT negotiations. With a view to revise national rules of regulation in the sphere of financial services and introduce liberalization principles for the admittance to these markets, in 1999 all members of WTO signed an amplifying GATS agreement on liberalization of financial services market (Annex on Financial Services). If earlier the policy in the sphere of financial services trade was regulated by administrative means by each of these countries and submitted to the impact of their individual monetary policy and exchange rate policy, at present it has acquired an independent meaning in the frames of EU, NAFTA and WTO.

At the present time liberalization of financial services sphere is not directly connected with the economic policy of member states but it is determined by the development of international trade (Werner 1997, p. 272-280). That factor served as an important turn in the development and growth of the volumes of financial services international trade (Figure 1).

## 2 The present-day export of financial services

Beginning with 1980, the volume of financial services export kept growing with a swift rate (Figure 1). The main grounds for the given upward trend proved to be progress in the

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development of information technologies and communication, the appearance of new kinds of financial instruments (derivatives), processes of globalization as well as arrangement of regulation mechanisms in the sphere of financial services on the global level. According to WTO data, at the present time the world export of financial services has reached 290 billion USD (WTO 2009), which exceeds 27-years' prescription indicator approximately 107 times greater and 7-years' prescription indicator - 2.6 times as much. In 2007 the proportion of financial services export in total exports of services made up almost 10% and in the sector "other commercial services" - 17% correspondingly<sup>1</sup>.

Judging by regional division, 85% of financial services export fall to two regions - Europe (61,5%) and North America (23,2%). The leading states in financial services, as well as separate destinations of financial services export are indicated below in Table 1.

**Tab. 1: Major exporters of financial services and export by destination (2007)**

Rank	Exporters	Value, million USD	Share in 15 economies, %	Main destinations
1	European Union (27)	160187	56.9	EU, US, Switzerland, Japan, Russian Federation
	Extra-EU (27) exports	70270	25.0	-
2	United States	58266	20.7	EU, Canada, Japan, Bermuda, Australia
3	Switzerland	20517	7.3	N/A
4	Hong Kong, China	12425	4.4	EU, US, Switzerland, Japan, Republic of Korea
5	Singapore	6547	2.3	EU, US, Hong Kong, Japan, India
6	Japan	6207	2.2	EU, US, Hong Kong, Cayman Islands, Singapore
7	Republic of Korea	4001	1.4	N/A
8	India	3886	1.4	N/A
9	Canada	3234	1.1	N/A
10	Taipei, Chinese	1302	0.5	N/A
11	Russian Federation	1174	0.4	EU, Bermuda, US, British Virgin Islands, Switzerland
12	Brazil	1090	0.4	N/A
13	Norway	1021	0.4	N/A
14	South Africa	876	0.3	N/A
15	Australia	856	0.3	EU, US, Singapore, Hong Kong, Japan

Source: WTO 2009 (authorial computation)

When making research of financial services export one can find out that its overall world volume considerably exceeds overall world volume of financial services import. For example, financial services import made up only 46% of financial services export in 2007 (WTO 2009). In theory world export and import of financial services expressed numerically are supposed to coincide with each other. In practice, this is never the case. General reasons for discrepancies are: incorrect distribution of export flows (misallocations), missing values, different kinds of evaluation and methods of data collection. An additional and specific for financial services reason consists in the fact that basing on information about export commissions one can reveal only exporters for finance and funds management services. Besides, statistical information on large exporters can be controlled easier than numerous importers of different scale. Thus, one can draw a conclusion that export statistics proves to be more reliable and correct than import statistics. Thereby, for the analysis of financial services trade the author has used data exactly on export.

<sup>1</sup> In WTO services are subdivided into: 1) services on transportation 2) tourism 3) other commercial services, including financial services. As per WTO methodology, financial and insurance services are recorded separately.

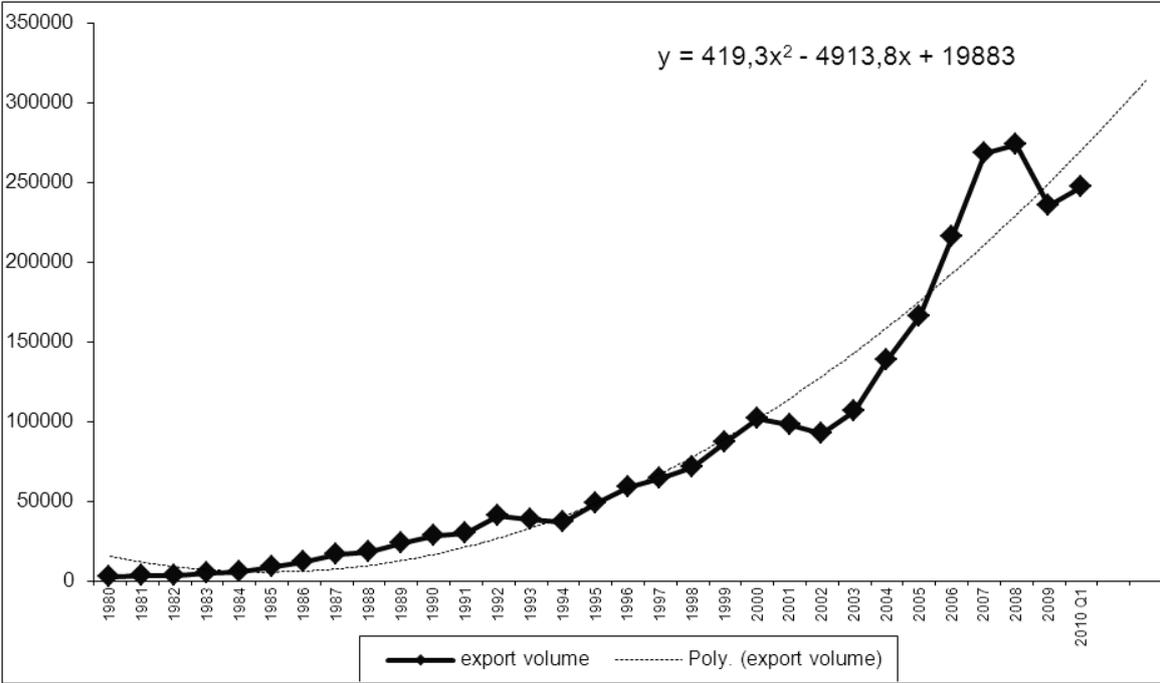
In addition to the above mentioned difficulties one can admit that the data on world financial services export by world organizations are published in a rather insufficient quantity. For instance, in its annual reports WTO started to mark out export of financial services separately only beginning with 2003. In United Nations Trade Statistics Branch (UN Services Trade data base) statistics on financial services export is available only on individual countries and not earlier than from the year 2000. The fact regarding scarcity and concealment of statistical data is pointed out by numerous specialists and organizations (for example, International Services Trade Information Agency). In connection with this, when analyzing financial services export, the author partly used statistical data of UNCTAD Handbook of Statistics, as well as partially data of WTO and OECD.

The research of financial services export over a period of 27 years from 1980 to 2007 shows that average growth rate of the given kind of export made up 20% (!) per annum. During the years 2003-2007 annual growth rate of financial services surpassed both increase in world export of all services and growth rate of world export of commodities (WTO 2009).

During the whole period of the financial services trade development the upward trend has been preserved. Separate short-term declines in the world volume of financial services export over a period of 30 years were connected with global economic cycles, but not with the life cycle of the service as such.

According to preliminary OECD data the decrease in growth rate of financial services export made up minus 14% in the course of 2009 (OECD International Trade Statistics 2010). Due to the measures on surmounting global economic crisis taken by the world governments during 2009 the volumes of financial services export started to restore already in the 3rd quarter of 2009 (Figure 1).

**Fig. 1: World export of financial services, in billions USD (1980 – 2010, 1Q)**



Source: UNCTAD Handbook of Statistics 2009, OECD International Trade Statistics 2010 (authorial computation)

Figure 1 contains a chart of financial services export volumes covering a 30-year period, as well as a forecast for the following periods proceeding from the technical analysis of the chart. Part 3 of the given article describes in greater detail the forecast of the development of financial services export in the future.

When researching financial services export and its connection with world economic cycles, the author found out their direct dependence both on the world level and the level of many countries.

This direct dependence is expressed in the correlation coefficient. In statistics the correlation coefficient is an index of stochastic interdependence of the change of two random variables. For metrical variables one uses Pearson's correlation coefficient (1), its exact formula was derived by Francis Galton:

$$R_{X,Y} = \frac{M[XY] - MX \cdot MY}{\sqrt{(M[X^2] - (MX)^2) \cdot (M[Y^2] - (MY)^2)}}, \quad (1)$$

where  $M$  = expected value,  
 $X$  = export of financial services (volume in currency or change of volume, %),  
 $Y$  = world economic cycles index (gross domestic product (GDP), foreign direct investment (FDI) – volume in currency or change of volume, %).

Correlation coefficient of world financial services export and world GDP as an indicator of world economic cycles calculated over a period of 28 years amounts to 0.97.

Such a close dependence between financial services export and world economic cycles, characterized through GDP, has a logical explanation. Financial services export in the country's Balance of payments mainly consists of incomes in the form of fees and commissions to financial institutions (WTO 2009) (banks, brokerage companies, fund management companies etc.) received from non-resident customers for transactions with financial instruments performed by their order or for managing their financial assets. When making investments the amount of commissions usually depends directly on the value of customers' assets.

Let us assume that a certain region (country) stirs to economical activity and becomes attractive to a foreign investor who, for that reason, allocates his funds in the amount of 1 million EUR to a financial institution of the given region for their placing. Let us suppose further that the commission fee for management makes up 1% from the cost of the assets and 10% of its increment to be calculated during a certain period. In the given example the commission income of the financial institution will initially amount to 10,000 EUR. In case cost of the assets for the mentioned period increases twice as much, then cost of the assets under management will reach 2 million EUR, and the commission will make up 100,000 EUR for the increment of the assets' cost plus 20,000 EUR correspondingly for the further management in the next period.

As a result, financial services incomes increase the country's GDP, and in case of rendering services to a non-resident investor they are reflected in the growth of country's export. Economically favorable environment attracts new investors from all over the world, and commission incomes of the financial institution grow in a geometrical progression. Thus export of financial services reaches its peak in a certain moment. What happens further?

During the inflow of investors to a growing market the cost of assets grows with increased speed. In due course the increment rate of prices gradually slows down, and investors start searching new quick-growing markets. Some investors begin to withdraw their resources from the financial institution. Commission rate of the financial institution falls a little, and so do export volume and GDP of the country correspondingly. Mass media supply information concerning slowdown in the growth rate of the country's economy. More and more investors redistribute their assets to other regions, and economical indicators of the country deteriorate even more. The «escape» of investors results in the sale of assets and decline in market prices. The financial institution loses not only additional commission for successful results but also part of commission earnings for assets management. Due to the fact that at best assets management

in recessionary economics does not bring any profit to the investor, and at worst the investments bear losses, the financial institution loses most of its non-resident customers within a relatively short period of time and experiences a hard financial standing. All this frightens off any new customers. Export of financial services declines sharply. Indicators of the sectors from which investments had been withdrawn fall down. Compression of economics takes place, which reflects in recession of GDP. The financial institution is not able to export financial services to foreign investors as long as the country's economics starts restoring and new investment objects appear.

Despite some simplicity that does not take into account a lot of minor factors, the present example indicates not only direct dependence of financial services export and economic cycles but also the fact that financial services export reacts more vividly on economic cycles than other sectors of national economy.

Another indicator that characterizes world economic cycles is FDI (foreign direct investments). The author calculated correlation between world financial services export and global FDI inflows (UNCTAD 2009) over the period of 28 years (from 1980 to 2008), is equal 0.99.

The explanation of correlation between financial services export and FDI inflows is analogous to the a.m. example regarding correlation of financial services export with GDP. When FDI flows into a country, the country's economics stirs up, becomes attractive for the investments of non-residents who use the services of local financial services' suppliers. The increase and decrease of financial services export, correspondingly, depends directly on inflow or outflow of FDI.

**Tab. 2: Correlation Coefficients between Financial Services Export and GDP, as well as between Financial Services Export and FDI**

Nr.	Country	Correlation		Nr.	Country	Correlation	
		GDP	FDI			GDP	FDI
1	Australia	0.93	0.90	15	Japan	0.16	0.94
2	Austria	0.66	0.72	16	Korea Republic	0.80	0.88
3	Belgium	-0.14	0.85	17	Luxembourg	0.96	0.83
4	Brazil	0.77	0.64	18	Netherlands	0.93	0.98
5	Bulgaria	0.42	0.41	19	Norway	0.95	0.96
6	Canada	0.97	0.92	20	Panama	0.88	0.91
7	Hong Kong	0.92	0.94	21	Poland	0.82	0.77
8	Cyprus	0.84	0.87	22	Portugal	0.83	0.72
9	Check Republic	0.44	0.46	23	Spain	0.94	0.94
10	France	0.02	-0.2	24	Sweden	0.93	0.95
11	Germany	0.88	0.93	25	Switzerland	0.87	0.96
12	Greece	-0.5	-0.48	26	Tunisia	0.98	0.95
13	Ireland	0.99	0.73	27	United Kingdom	0.97	0.99
14	Italy	0.38	0.18	28	USA	0.88	0.92

Source: UNCTAD Handbook of Statistics 2009, UNCTAD FDI flows 2009 (authorial computation)

The research carried out by the author shows that in separate countries, correlation between financial services export and FDI is higher than between financial services export and GDP (Table 2). It is mainly observed in the countries with a higher dependence from external economic relations. Rare cases of low correlation between financial services export and economic cycles of the country can also be caused by:

- substantial changes in regulation of financial sphere (for instance, transition to concessional taxation for foreign investors);
- re-export of capital when foreign investors' assets are allocated in foreign countries and not in the domestic market of the country (in Table 2 one can relate Belgium and Japan to the given criterion);
- errors in statistics (in Table 2 one can relate Greece to the given criterion).

The calculated coefficients on 28<sup>2</sup> chosen countries (Table 2) prove a high interdependence between financial services export and economic cycles in most countries.

### 3 Export of financial services of tomorrow

As it was already shown in Part 2 of the given article, financial services export vividly reacts on economic cycles both on the level of individual states and on the worldwide level. However, it is rather complicated to forecast the future of financial services export at the present moment. According to the opinion expressed by governments of many countries, the world economic recession that started in 2007 challenges functioning of the world economic system as such. Due to the possibility of decisive changes in global financial system, mathematical methods for forecasting financial services export can become ineffective at the present moment. For this reason the author did not use such a complicated mechanism for predicting as trend modeling<sup>3</sup> but used a standard polynormal curve that bears an exclusively informative character of the trend. In Figure 1 the polynormal curve indicates the growth of financial services export in future periods at the rate  $y = 419,3x^2 - 4913,8x + 19883$ . Thus, the estimated world volume of financial services export in 2011 will make up 270 503 billion USD, in 2012 – 292 005 billion USD, and in 2013 – 314 345 billion USD. However, as it was already mentioned, in modern conditions mathematical prognostication with a high probability cannot turn to be exact. The author thinks it expedient to use a **scenario analysis** in the given conditions.

The key element that describes the development of economic events in the world during the nearest one or two years is the choice between **deflation** and **(hyper)inflation** scenario of the development of world economics (Hazin 2010). It goes without saying that these two scenarios can have a substantial and different effect upon the volumes of financial services trade as implementation of this or that scenario will be defined by interaction of two main parameters: decline of aggregate demand and emission. Fundamental difference between these scenarios consists in the fact that deflation scenario raises money value, whereas the inflation scenario, on the contrary, decreases it.

The deflation scenario actually means bringing to naught all the efforts of world leaders on keeping up optimism among consumers and companies. And that implies a sharp increase in savings and curtailment of portfolio investments. The present scenario will lead to reduction of the volumes of financial services export.

Inflation scenario means money emission with a view to compensate decrease in demand. Emission can, even if partly, suspend decrease in demand. However it, as such, arouses inflation that also reduces volume demand in real (comparable) prices. For this reason emission rate for compensation of decline in demand ought to grow all the time. Under high emission rate inflation grows into hyperinflation, and that causes a feverish activity in search of the money investment place. Active allocation of funds and increase in assets cost will result in the increase of financial services export.

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<sup>2</sup> These countries were chosen proceeding from accessibility of statistical data on financial services export during a lengthy period of time.

<sup>3</sup> Trend modeling – extrapolation and interpolation of the tendencies the development of which is rather well-known.

However one should note that „net” deflation or (hyper)inflation scenarios are implemented rarely. It means that, most likely, they will replace each other. In case compensation of decline in demand with the help of emission does not work, then all companies, banks and other financial institutions will experience difficulties. Sooner or later they will start reducing prices for the cost of their services and cut down expenses. A sequence of bankruptcies (including financial institutions) will follow; for all this, the first one will stimulate a sequence of the following ones. On the one hand, the investors who had lost trust in local financial institutions due to their unstable financial position will be ready to turn to banking facilities in foreign financial institutions. It means the increase in financial services export. On the other hand, due to periodical change of deflation and (hyper)inflation, the investors will actually come across some difficulties in both attraction and placing of their investments. These factors, in their turn, will exert a negative influence on the world trade in financial services as a whole. Thus one can assume that the volumes of financial services export will fluctuate in a wide corridor in the nearest years.

As to the forecast for a longer period, it is possible that the 30-year-long upward trend (Figure 1) will not be disturbed. The factors that influence the growth of financial services export in a long-term prospect are the following:

- the appearance of new development projects in the sphere of information technology and communication which radically change and facilitate financial services export;
- processes of economic globalization, the main forces of which are free trade, free movement of capital and quick dissemination of financial information all over the world thanks to Internet technologies;
- the development of financial centers under the influence of competition and economical and political events.

Regarding competition of financial centers as a factor that influences the development of international trade in financial services one should note that individual researchers forecast gradual redistribution of the influence in the sphere of financial services in the direction of Asia and South America. For instance, Skinner (2007) already in 2005 predicted the formation of BRIC countries (Brazil, Russia, India and China) as new financial centers basing not only on volumes of financial operations, but also on their influence on the development of world financial system.

As to leadership of Brazil and Russia, it is still untimely to discuss the matter. According to WTO data for the year 2007, they take only 11-12 positions in the volume of financial services export in the world, and that makes up only 0.8% of the overall world volume (Table 1). According to GFCI (2010) data, although the cities of these states are among the top world financial centers, they take up the last positions.

With respect to China and India the situation is different. At the present moment India has become a world service center where three thirds of all suppliers of information technologies and numerous operational offices of well-known world brands are concentrated, as well as 40 million certificated specialists and 40% of the world outsourcing financial institutions. The growth of Indian services market is especially visible in financial sector. In Chris Skinner's opinion, India's potential lies in the sphere of usage of the acquired experience and innovation leadership in bank management and administration.

Thus, in case India becomes a supplier of managers of the next generation, the main factor of China's success in future will be new technologies in banking sphere. Besides, there exists an opinion that to avoid serious economic problems caused by reduction of export China can enter the world financial market with the securities nominated in yuan (Hazin 2010). By changing the exchange rate (revaluation of yuan) China will acquire a powerful source of profit that can

compensate the decline in export of goods. However that also means the formation of China as a leading world financial center and the increase of financial services export as the world financial market that feels surplus of money and the impossibility of investing them profitably will actively invest into these new securities.

In respect to EU, a stable leader in financial services trade (Table 1), the author is inclined toward a more pessimistic development of the events. During the last ten years the financial services market in EU is considered to be exemplary in respect its reliability that was achieved by the introduction of tight legislative standards for maintenance of stability of financial institutions. The introduction of these standards costs EU members rather much, however it is called forth by the urge of the member states toward the further advancement of the integration process. First of all, EU policy aimed at implementation of the measures on surpassing distinctions in the systems of regulation financial services markets of member states contemplated the formation of proper foundations for the transformation of Europe into a leading world economical center by 2010. With that purpose the European Council even has been adopted «Financial Sector Assessment Program» (FSAP) in Lisbon in 2000. Nowadays it includes several dozens regulation directives beginning with the directive on AML (anti-money laundering) and finishing with the directive on banking employees' salary. That is, for creating an exemplary financial center one required a complete reconstruction of regulations in practically all kinds of financial activities on the EU territory, from merging and acquisitions to operations with securities, from electronic money transfers between deposit accounts to signing credit agreements. It is natural that these reorganizations encounter a serious opposition on the part of financial institutions, mainly owing to substantial infra-structural changes which cost dearly. However, in spite of all these complexities, the EU persistently followed its goal, and in 2010 it gained the right to be called a leading world financial center. According to WTO data („International Trade Statistics 2009”), in 2007 the EU volume of financial services export amounted to 160 billion USD or 57% (!) of the world export of financial services.

On the other hand, under the influence of global economic crisis, in future the EU can encounter serious problems which may hinder the integration process and, at the same time, exert a negative influence on the development of the EU as the global financial center and the main supplier of financial services. According to Eurostat data, total volume of the EU export reduced 16 per cent in 2009. The main reasons were both the reduction of foreign demand on the background of the crisis and the increase in EUR exchange rate. Some countries are already not able to observe eurozone standards (Greece, Spain, Ireland) or experience a deep economical crisis (Baltic countries). Besides, the GFCI data prove to be the indicator that points out future deterioration of EU positions on the world financial market. On comparing the data for March 2007 (GFCI 2007) and March 2010 (GFCI 2010), the author found out that from 27 cities - financial centers of Europe - 23 (!) have lost their positions and only 4 of them have improved or preserved their rating positions. They were excluded by financial centers of Asia (9 out of 11 have raised their rating), North America (6 out of 8 have raised their rating), as well as some other regions – Australia and CCACPG countries (Council of Cooperation of Arab Countries of the Persian Gulf).

Moreover, London, the permanent GFCI rating leader that for a period of many years had been considered the main world financial center, has lost 15 points in 2010 and shared its first position in rating with New-York. To preserve leadership in financial services trade, the EU ought to continue creating an image of the most reliable financial partner. In its turn, it is possible only under stabilization of economical indices, continuation of the integration process and support of every member of the eurozone that had found itself in a crisis situation.

In the author's opinion, offshore centers which are so attractive to a great number of entrepreneurs worldwide will gradually lose their «advantages» and «popularity». The reason

lies in the struggle against money laundering and terrorist financing (Directive 2005/60/EC of the European Parliament and of the Council of 26 October 2005). Entrepreneurs started to encounter a great number of problems in case their business activity was registered in offshore zone. For instance, it is difficult for them to open an account in high-rating banks in the EU, the USA, etc. Offshore bank customers of this sort frequently encounter malfunction during money transfer, they are often asked the documents which confirm legality of their business and so on. It is quite often that some banks completely refuse to cooperate with such customers. There appear some problems with counterparts and business partners, taxation bodies, etc. Hence, imaginary advantages of evading tax payment in offshore zones turn into an exclusively expensive matter for numerous entrepreneurs to benefit from it. In confirmation of the author's opinion, seven GFCI issues indicate that during 3 years (from 2007 to 2010) all 8 offshore world financial centers lost their rating, including: Cayman Islands (-12), Hamilton (Bermuda) (-14), Gibraltar (-27), British Virgin Islands (-10), Bahamas (-23).

The author thinks that GFCI is a rather exact indicator with the help of which one can define in advance the future displacement in financial services trade leadership. At the present moment stable leaders, with a big breakaway from other centers, are London and New-York. However, they are gradually overtaken by Asian giants – Hong Kong, Singapore, Tokyo, Shenzhen and Shanghai. It is a signal to the effect that continuation of the present tendency will cause redistribution of leadership positions among the world exporters of financial services.

#### **4 Conclusions**

Trade in financial services has appeared as a part of international trade comparatively recently and developed at a rapid pace. The upward trend in trade volume has been preserved during the whole period of its development. For all this, average growth rate during the 27 years<sup>4</sup> under survey amounted to 20% per annum outstripping the increase in the world export of all services and the growth of the world export of goods. The reason for the given upward trend proved to be progress in the development of information technologies, the appearance of new kinds of financial instruments, processes of globalization and regulation of the financial services sphere on the global level.

The analysis of trade in financial services has also shown that separate short-term declines in the world volumes of financial services export during the last 30-year period are connected with global economic cycles but not with the life cycle of the service as such.

High correlation coefficients between financial services export and GDP, as well as between financial services export and FDI inflows both at the world level (0.97 и 0.99<sup>5</sup> correspondingly) and the level of individual states became an additional proof of direct dependence of financial services export and economical cycles.

Besides, it has been found out that financial services export reacts more vividly on economical cycles than any other sectors of national economy. The reason lies in the structure of profit from this kind of export in the Balance of payment that mainly consists in commissions and fees to financial institutions from non-resident customers for managing their financial assets or for transactions with financial instruments carried out by their orders. Due to the fact that commissions usually directly depend on the cost of customers' assets and its increments, considerable fluctuations in the cost of assets immediately reflects on financial services export in a geometrical progression.

Rare cases of low correlation of financial services export with economical cycles of the country can be caused by substantial changes in the regulation of financial sphere, reexport of capital

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<sup>4</sup> From 1980 to 2007.

<sup>5</sup> Over 28-year's period.

(when foreign investors' assets are invested in foreign countries and not in the domestic market of the country), as well as by errors in statistics.

The carried out research also shows that the upward tendency in the development of financial services export has remained in the long-term prospect. At the same time there is a possibility of redistribution of the regions of the development of financial services in a medium-term prospect in the direction from Europe to Asian countries, as well as deterioration of offshore financial centers.

Nevertheless, in the nearest time financial services trade will be influenced by the choice between two scenarios of the development of the world economy – either deflation or inflation one. In case of the deflation scenario there will be a sharp growth of savings and decrease in portfolio investments that will lead to the reduction in financial services export.

In its turn, the inflation scenario will give rise to a sharp activity on the part of investors in search of the place of money investments. As a result, the increase in assets' cost will be reflected in the growth of financial services export.

On the other hand, if the given two scenarios replace each other, most likely it will exert a negative influence on financial services trade.

It is recommended to take into consideration the above mentioned results of the research when making forecast of financial services export both on a world scale and on the scale of regions and individual countries.

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## ***Tendencies in the Development of International Trade in Financial Services***

### **Summary**

The paper deals with the analysis of the present-day state of international trade in financial services and forecast of its future development. The aim of the research described in the article is to define tendencies in the sphere of financial services export. Two main tasks have been set in order to achieve this aim: first, to bring to the light the factors which exert an influence on financial services export and its correlation with the main economic indicators; second, to define tendencies in the sphere of financial services export in a short-, medium- or long-term prospect. As the basis for achieving the given tasks such research methods as mathematic correlation, scenario analysis, the analysis of legislation, international agreements and advanced researches in the sphere of financial services trade were used. Database of the following international organizations - World Trade Organization, Organization for Economic Co-operation and Development and the United Nations - served as the sources of statistical information. The main problem examined in the article is complexity of forecasting the tendencies of financial services trade in connection with global economic crisis and possible fundamental changes in the world financial system. The results of the survey proved to be: the revealed correlation between financial services export and economical cycles, scenarios of the development of trade in financial services and forecasting the distribution of the leading positions in the given sphere of activities.

**Key words:** Financial services; International trade; Economic cycles.

**JEL classification:** G20.



# **The Impact of Tax Incentives on Tax Revenue and Net Income in Libya Companies: The Empirical Study in Libyan Companies**

*Tarek Mami\**

## **1 Introduction**

Many countries have recently been competing with one another in according to all kinds of tax privileges and immunities to newly established foreign and local enterprises in an attempt to attract foreign and local capital to their own territory, with adverse consequences on their ability to collect revenue. Although, several countries have expanded their use of tax incentives, this experience is not uniform, with some countries cutting back on such incentives, and some reintroducing them, after a period of reduced use.

Variety of tax incentives are selected to build a degree of projects that achieve the rates of target development, for this the state restores to provide policies of tax incentives as a tool of financial tools which operate on attraction, providing and directing capitals to those projects whether it is productivity, service or tourist, and others. The tax incentives are a double-edge sword result from general loss of the financial revenue at the state level consequently depreciation of financial resources. But on other hand, it may arise from it flow of investments and investment circulation that would reform the existing economic situations or development it. For that, the estate's economic bodies resort to tax incentives as a tool of financial tools which operate on attraction, providing and directing capitals to projects and activities that appropriate to estate, and there are in front of state's bodies several policies of tax incentives to choose among them, and the application of one of those policies stems from tax sacrifice from point of view of estate's tax revenues; at the same time ,these sacrifices represent a tax saving from the viewpoint of company, and the problem is to choose the best policy of tax incentives can be applied.

The paper is organized as follows. Next section briefly refers to tax incentives in Libya. Section 3 (theoretical) discusses how to select an appropriate policy in tax incentives. Section 4 processing data. Section 5 discusses the basis of the empirical analysis. Finally, section 6 makes some conclusions.

## **2 Tax incentives in Libya**

Incentives from income taxes for encouraging the foreign capitals investment: Article(10) of law NO.5 for 1997 concerning encouragement of foreign capitals investment provides for exemption of project from income taxes of its activity for five years from the date of starting in production or work according to the nature of project , and it may extend this period to an additional one which is three years , also the profits resulting from the project activity enjoy of such exemptions if they are reinvested. As well as, the investor has the right to carry forward the losses which are connected to his project during of the years of exemption to subsequent years.

## **3 Theoretical motivations**

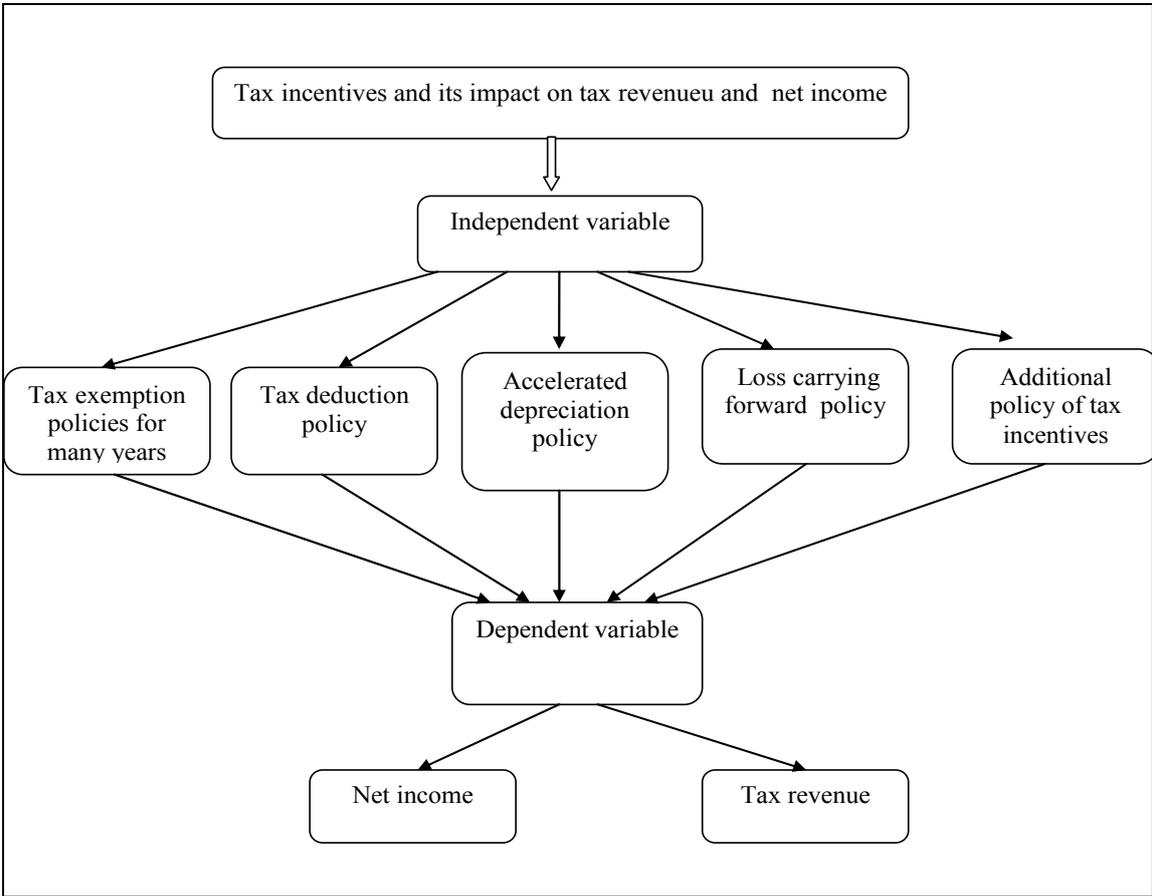
Before setting out the econometric specifications, in the first subsection, I'll give some detailed explanations of the key variables included in our analysis. The empirical studies of tax incentives in Libya are very scarce, and the comparisons between proposed five group used in thirty- three companies in Libya for ten years from 1999 to 2008. It is very important to give

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clear definitions of the variables, particularly the policy variables and comparing them to select the best policy in the Libyan field.

**Fig. 1: Factors influencing taxation**



**4 Inputting and processing data**

The researcher reviews in the following the key variables of the applied study in tax incentives area and how to apply, and the variables of proposed study embody in alternatives in the light of implementation of each alternative; these variables consider fundamental elements in determining the accessible results from study whereas the alternatives in the proposed study are different policies of tax incentives, and the study has been applied in accordance with the following steps:

4.1 The researcher collected all financial lists of the group of registered companies in Tripoli tax administration. The researcher extracted financial lists of companies that have sufficient information to prepare and complete the study. So that, the researcher collected needed data from effectual and available documents from Tripoli tax administration, which constitute the majority of companies in Libya. Also, he extracted a random sample of thirty-three companies operating in different areas; he has taken into consideration when choosing the sample difference between these companies in terms of activity, the size of capital and the size of capital origins, in a way that makes it representative of the community which took from it.

4.2 The researcher chose the tax incentives policies that enter empirical study, and he chose for this purpose twenty-seven policy of tax exemption policies can be classified in five major groups, the granting of each group links to certain factors of ones that are associated with existing companies, and these groups are:

### **The first group: The tax exemption policies for a certain number of years**

The researcher selected these policies because they are applied in Libya and in most tax legislations in different countries and in different forms, and these policies depend on the exemption of companies for a certain period, it usually begins at the beginning of giving work of company and then after that companies subject to tax. The research has identified policies of tax exemption for companies in the sample ten policies for tax exemption, starting from the policy of exemption for one year until the policy of exemption for ten years.

### **The second group: Tax deduction policy**

The researcher chose this policy as one of tax incentives policies that give companies in return for expansion, renewal, replacement, merger, encouraging a activity or a particular procedure the deduction in the case of holding regular books....etc. The researcher has divided these policies into five policies where each policy is associated with a certain deduction, so the first policy of tax deduction is at percentage of 10%, the second is 25%, the third is 50%, the fourth is 75% and the fifth is 100%.

### **The third group: Accelerated Depreciation policy**

This policy has been chosen because it is of policies that its granting linked to fixed origins of companies; this policy affects the companies that include fixed origins, especially when the construction or in the case of replacement, renewal and expansion. These policies are based on the consumption of expandable and fixed origins. And he has divided the accelerated depreciation policies for model setting up purposes into four policies, each policy links to particular consumption rate, so the first accelerated depreciation policy is at rate of 25%, the second is 50%, the third is 75% and the fourth is 100%.

### **The fourth group: Carrying Forward Losses policy**

The researcher chose these as they are applied in most laws and tax legislation including Libya, but its inclusion here to choose the best available policies. He has divided the policies for model setting up purposes into three policies, the first carrying forward losses policy depends on subsequent losses (tax reimbursement), the second carrying forward policy is the previous carrying forward policy for five years and the third is for ten years.

### **The fifth group: Additional policies for Tax incentives**

These policies combine more than a policy of tax incentives as combining between exemption policy for certain number of years as well as accelerated depreciation or combining between accelerated depreciation policy or carrying forward losses policy, for the possibility of choosing appropriate variety that suits Libyan environment. He has divided for model setting up purposes into five policies, so the first additional policy is tax exemption policy for five years in addition to accelerated depreciation at percentage of 50% , the second is the tax exemption policy for five years in addition to carrying forward policy for ten years, the third is tax deduction policy at percentage of 50% in addition to accelerated depreciation at 50%, the fourth is the accelerated depreciation policy at 50% in addition to carrying forward losses policy for five years and the fifth is the tax deduction at 50% in addition to carrying forward losses for five years.

And Table 1 shows the tax incentives policies from which the appropriate variety and its suitability for Libyan environment is chosen in accordance with both financier and the tax proceed, and the consort of each policy explains the code that is expressed in the study.

4.3 The income was calculated before and after tax in addition to the value of tax incentive for each company of the companies in sample in the light of the proposed tax incentive policies.

**Tab. 1: Tax incentives policies**

<b>Tax incentives of proposed policies</b>	<b>Symbol</b>
<b>Group one: tax exemption for many years</b>	
Tax exemption for one year	P1
Tax exemption for two years	P2
Tax exemption for three years	P3
Tax exemption for four years	P4
Tax exemption for five years	P5
Tax exemption for six years	P6
Tax exemption for seven years	P7
Tax exemption for eight years	P8
Tax exemption for nine years	P9
Tax exemption for ten years	P10
<b>Group two: tax deduction</b>	
Tax deduction for 10%	P11
Tax deduction for 25%	P12
Tax deduction for 50%	P13
Tax deduction for 75%	P14
Tax deduction for 100%	P15
<b>Group three: Accelerated depreciation policy</b>	
Accelerated depreciation in 25%	P16
Accelerated depreciation in 50%	P17
Accelerated depreciation in 75%	P18
Accelerated depreciation in 100%	P19
<b>Group four: loss carrying forward policy</b>	
Tax rebate two years	P20
Loss carrying forward five years	P21
Loss carrying forward ten years	P22
<b>Group five: Additional policy of tax incentives</b>	
Tax exemption for five years & accelerated depreciation in 50%	P23
Tax exemption for five years and loss carrying forward ten years	P24
Tax deduction for 50% and accelerated depreciation in 50%	P25
Accelerated depreciation in 50% and loss carrying forward five years	P26
Tax credit for 50% and loss carrying forward five years	P27

4.4 Through the collection of data from the department of taxation in Libya (tax administration in Tripoli) by taking the value of income for per company and according to calculation of tax administration and this according to applied laws in Libya law no.64 for 1973, which was valid until issuance of law no.11 for 2004, which entered into application with the beginning of

1/1/2005.

4.5 The researcher relied on the (Excel) system to calculate the value of tax incentives in companies under study by following these steps:

- Calculate the value of tax incentive according to each policy of available policies through data that is taken from the actual documents of listed companies in tax administrations in Libya.
- Calculating the value of accelerated depreciation according to the value of fixed origins for each company in addition to the value of consumption which is prepared by company.
- Calculating the value of losses and its carrying forward according to each positioned policy in case of presence actual losses of some companies.

## 5 Data and model

After doing the necessary steps to prepare the obtained data from tax administration in Tripoli and making it ready to the statistical analysis process, the researcher made presentation of analytical study data and descriptive analysis, and he took the averages of incentives during ten years and of all companies, and then the classification of data was done by the biggest exemption then the smaller, so I obtained the following results.

**Tab. 2: Mean for all companies tax incentives policies**

No.	Policies	Symbol	Mean
1	Tax deduction by 100% policy	P15	7852.095
2	Tax exemption for ten years	P10	7852.093
3	Tax exemption for nine years	P9	6635.952
4	Tax exemption for five years and loss carrying forward ten years	P24	6310.947
5	Tax deduction by 75%	P14	5889.071
6	Tax exemption for eight years	P8	4861.981
7	Tax exemption for seven years	P7	4581.109
8	Tax exemption for six years	P6	3998.965
9	Tax deduction by 50%	P13	3926.047
10	Tax exemption for five years & depreciation accelerated by 50%	P23	3840.094
11	Tax exemption for five years	P5	3468.357
12	Tax exemption for four years	P4	3181.927
13	Loss carrying forward for ten years	P22	2842.590
14	Loss carrying forward for five years	P21	2811.622
15	Accelerated depreciation by 75%	P18	2729.073
16	Tax rebate for two years	P20	2325.492
17	Accelerated depreciation by 100%	P19	2254.363
18	Accelerated depreciation by 50%	P17	2102.511
19	Tax exemption for three years	P3	1980.114
20	Tax deduction by 25%	P12	1963.024

21	Accelerated depreciation by 25%	P16	1480.566
22	Tax exemption for two years	P2	1267.175
23	Tax deduction by 50% and depreciation accelerated for 50%	P25	1003.511
24	Tax deduction by 10%	P11	785.209
25	Tax exemption for one year	P1	726.401
26	Tax deduction by 50% and loss carry for five years	P27	656.981
27	Accelerated depr. by 50% + loss carrying forward for five years	P26	393.316

Source: Data source authorial calculation

Through table no(1/2), we find that the policy of exemption for ten years and tax deduction policy at percentage of 100% is the policy which occupies the first and second rank i.e. less tax proceeds of the state. the twenty-six and twenty-seven policies are less tax exemption i.e. they give the largest tax proceeds to state. It may take the policies that are arranged P13-P14-P15 as the best policies might satisfy both parties.

By using the method of simple linear regression test to study the relation between tax proceeds and followed policies considering that the tax policy represents the independent variable and the tax proceeds represent the subsequent variable, where the researcher calculated the simple linear regression equation which takes the following form.

$$Y = B_0 + B_1 * X_i \quad (1)$$

- where
- $Y$  = subsequent used variable,
  - $X_i$  = the independent variable,
  - $B_0$  = constant term or the intersection of the regression line with vertical axis,
  - $B_1$  = tendency.

Following figures summarise results of regression for certain policies

**Fig. 2: Regression results: Tax exemption for 5 years + loss carrying forward for 10 years**

Std. Error of the Estimation	Adjusted R Square	R Square	R	Model
7580.5431	.940	.940	.970(a)	1

a Predictors: (Constant), Tax exemption and loss carrying forward10.

ANOVA(b)

Sig.	F	Mean Square	df		Model
.000(a)	5179.446	297634965774	1	Regression	1
		57464634.057	328	Residual	
			329	Total	

a Predictors: (Constant), Tax exemption and loss carrying forward10.

Coefficients(a)

Sig.	t	Standardized Coefficients Beta	Unstandardized Coefficients		Model
			Std. Error	B	
.000	3.74		426.25	1596.71	(Constant)
.000	71.96	.970	.014	.991	Tax exemption 5 years and loss carrying forward 10 years

**Fig. 3: Accelerated depreciation by 75%**

Std. Error of the Estimation	Adjusted R Square	R Square	R	Model
16661.0109	.790	.791	.889(a)	1

a Predictors: (Constant), Accelerated depreciation 75%.

**ANOVA(b)**

Sig.	F	Mean Square	df		Model
.000(a)	878.043	243735460362	1	Regression	1
		277589285	232	Residual	
			233	Total	

a Predictors: (Constant), accelerated depreciation 75%.

b Dependent Variable: tax revenue.

**Coefficients(a)**

Sig.	t	Standardized Coefficients	Unstandardized Coefficients		Model
		Beta	Std. Error	B	
.000	4.616		1107.58	5112.08	(Constant)
.000	29.63	.889	.052	1.549	Accelerated depreciation 75%

**Fig. 4: Accelerated depreciation by 50%**

Std. Error of the Estimation	Adjusted R Square	R Square	R	Model
16815.5632	.786	.787	.887(a)	1

a Predictors: (Constant), accelerated depreciation by 50%.

**ANOVA(b)**

Sig.	F	Mean Square	df		Model
.000(a)	857.732	242535120536	1	Regression	1
		282763164	232	Residual	
			233	Total	

a Predictors: (Constant), Accelerated depreciation by 75%.

b Dependent Variable: tax revenue.

**Coefficients(a)**

Sig.	t	Standardized Coefficients	Unstandardized Coefficients		Model
		Beta	Std. Error	B	
.000	3.885		1122.89	4362.33	(Constant)
.000	29.28	.887	.077	2.263	Accelerated depreciation 50%

**Fig. 5: Loss carrying forward ten years**

Std. Error of the Estimation	Adjusted R Square	R Square	R	Model
18763.5578	.734	.735	.857(a)	1

a Predictors: (Constant), loss carry for ten years.

**ANOVA(b)**

Sig.	F	Mean Square	df		Model
.000(a)	643.210	226455679239.503	1	Regression	1
		352071100.917	232	Residual	
			233	Total	

a Predictors: (Constant), loss carrying forward for ten years.  
b Dependent Variable: tax revenue.

**Coefficients(a)**

Sig.	t	Standardized Coefficients	Unstandardized Coefficients		Model
		Beta	Std. Error	B	
.000	5.796		1236.25	7165.794	(Constant) 1
.000	25.362	.857	.038	.975	Loss carrying forward 10 years

a Dependent Variable: tax revenue.

**Fig. 6: Loss carrying forward five years**

Std. Error of the Estimation	Adjusted R Square	R Square	R	Model
18753.1483	.734	.735	.857(a)	1

a Predictors: (Constant), Loss carrying forward for five years.

**ANOVA(b)**

Sig.	F	Mean Square	df		Model
.000(a)	644.182	226546282375	1	Regression	1
		351680570	232	Residual	
			233	Total	

a Predictors: (Constant), Loss carrying forward for five years.  
b Dependent Variable: tax revenue.

**Coefficients(a)**

Sig.	t	Standardized Coefficients	Unstandardized Coefficients		Model
		Beta	Std. Error	B	
.000	5.835		1235.35	7207.70	(Constant) 1
.000	25.381	.857	.038	.975	Loss carrying forward 5 years

## 6 Conclusions

The researcher was done an analytical study to identify the validity of the model for application, and he selected to conduct this study a set of tax incentives policies; they are classified into five major groups each group links its granting to particular factors , the first group is the group of tax exemption policies for a number of years, the second is the group of tax deduction policies, the third is the group of accelerated depreciation, the fourth is the group of carrying forward losses and the fifth is the group of additional policies for tax incentives. Statistical study was done on a set of existing companies, and the researcher concluded to the following results:

Firstly; through simple linear slope tests, it can may determine the best policies in the study, which achieve a balance between the income of companies and tax proceeds as follows:

- Policy no. 22: the policy of carrying forward the losses for ten years
- Policy no. 24: the policies of tax exemption for five years in addition to carrying forward the losses for ten years.
- Policy no. 21: the policy of carrying forward losses for five years.
- Policy no. 18: the policy of accelerated depreciation at percentage of 75%
- Policy no. 17: the policy of accelerated depreciation at percentage of 50%.

Secondly; it should be applied the tax incentives policies that suit with the controlling factors in the investment projects which are meant to attract investments to it, in the area of banks and financial institutions where the percentage of current origins rises from the fixed origins , it would be preferable to give these activities a tax incentives linked to its income such as the tax deduction , while in the industrial companies where the percentage of fixed productive origins to total origins , it would be preferable to give these companies tax incentives linked to fixed origins such as accelerated depreciation whereas agriculture projects, which require spending of a huge sums , it would be preferable to give these projects tax exemption linked to the size of investments such as tax exemption for a number of years.

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## ***The Impact of Tax Incentives on Tax Revenue and Net Income in Libya Companies: The Empirical Study in Libyan Companies***

### **Summary**

Many countries have recently been competing with one another in according to all kinds of tax privileges and immunities to newly established foreign and local enterprises in an attempt to attract foreign and local capital to their own territory, with adverse consequences on their ability to collect revenue. Although, several countries have expanded their use of tax incentives, this experience is not uniform, with some countries cutting back on such incentives, and some

reintroducing them, after a period of reduced use.

**Key words:** Tax incentives; Tax revenue; Net income; Tax incentives policies.

**JEL classification:** G30.

# The Crisis Effects on Bank Profitability Determinants: Evidence from Romania

*Ionica Munteanu\**

## 1 Introduction

The recent global crisis has shown that banks, either in market-based or bank-based financial systems, have still an essential role for the performance and operation of modern economies. Again, it has been proven that the health of the banking sector is very critical to the health of the general economy at large. If the measure for the health of the banking sector is profitability, the questions that arise are the following: What are now the most important determinants of bank profitability? Are they bank specific or macroeconomic factors?

This paper intends to offer relevant answers to these questions for the case of the Romanian banking sector, so as to revert to the former upward trend. The analysis is focused on the profitability of 20 commercial banks over the period from 2002 to 2009. In order to highlight the differences in the post-crisis structure of influencing factors, I analyzed separately the crisis years 2008-2009.

The paper is organized as follows. Section 2 reviews the related literature on determinants of bank profitability. Section 3 outlines the econometric model and the variables used in the analysis, together with the description of the data sample of the methodology used. Section 4 reports the empirical results and Section 5 concludes this paper and offers paths for further research.

## 2 Literature review

Literature on the topic of bank profitability determinants offers a wide range of studies that empirically validate the influence of internal and external factors over the profitability of banks, usually measured by two indicators – return on average assets (ROAA) and return on average equity (ROAE).

Analyzing the influence of internal/bank-specific factors, a recent study (Pasiouras and Kosmidou, 2007) argues that banks are more profitable if they maintain a high capital ratio, since they obtain lower costs of funding due to the lower prospective bankruptcy costs. Another study (Athanasoglou et al., 2008) documents the importance of the overhead costs as a determinant of profitability and validates the inverse relationship between the two variables. An important seminal analysis (McKillop et al., 2002) of factors such as total assets, loans to assets ratio, bank's credit quality and cost-to-income ratio empirically explains their influence over the profitability indicator.

Focusing on the influence of external/macroeconomic factors, scholars (Delis, Papanikolaou, 2009) used a semi-parametric methodology to highlight the positive effect that bank size, industry concentration and investment environment have on banks' profitability. Furthermore, another study (Albertazzi, Gambacorta 2006) concluded that the influence of taxation over bank profitability is reduced because banks can transfer a large part of their tax burden onto borrowers, depositors or other clients. In 2010, the evolution of Herfindhal-Hirshman Index, the PIB growth/decline or the changes of inflation complete the profitability determinants structure (Flamini et al, 2010).

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### 3 Data and methodology

In the table below I describe the internal and external variables that I considered to be explanatory for the dependent variable – the return on average assets – and the hypothesized relationship between these variables. Also, the variables' order is the hypothesized order of importance.

The return on average assets (ROAA), the resulting variable, is measured through the ratio between net profits and average total assets, reflecting the efficiency of bank's management. This indicator has become the most commonly used measure of profitability in the literature (Dietrich, Wanzenried, 2010), since the return on average equity disregards the higher risk that is associated with a high leverage.

**Tab. 1: Explanatory variables and their hypothesized effect on profitability**

<b>Independent variables</b>	<b>Description</b>	<b>Hypothesized effect</b>
<i>Internal Factors</i>		
1. Capital adequacy	Equity / Total Assets	+
2. Cost to income ratio	Total expenses / Total generated revenues	-
3. Assets quality	Loan Loss Reserves / Gross Loans	-
4. Leverage	Net Loans / Total Assets	+
5. Net interest margin	(Total Interest Income - Total Interest Expense) / Total Earning Assets	+
<i>External factors</i>		
1. Fiscal burden	Taxes/ Pre-tax Profit	-
2. GDP real growth	$(GDP_t - GDP_{t_0} / GDP_{t_0}) \cdot \text{GDP Deflator}$	+
3. Concentration	Herfindhal-Hirschman Index (IHH)	+

#### 3.1 Data

The source of data used for the bank-specific factors is Fitch's BankScope database, which provides comprehensive financial information on an annual basis for banks in 180 countries around the world and the data regarding macroeconomic factors was taken from Eurostat, the statistical office of the European Union and the site of National Bank of Romania for the Herfindahl-Hirschmann Index.

Table 2 lists the descriptive statistics for the variables included in the analysis over the whole period and separately, before and after the crisis years 2008-2009. Obviously, the values of almost all indicators have worsened in the crisis years. The only indicator whose value improved in the crisis years is the ratio between taxes and pre-taxes profit. An expectable result, since the monetary authorities all over the world have taken measures to help banks to recover after the shock they suffered.

**Tab. 2: Descriptive statistics**

Period	2002-2007		2008-2009		2002-2009	
%	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
<b>ROAA</b>	1,20	1,71	,74	2,70	1,10	1,96
<b>Loan Loss Res / Gross Loans</b>	2,02	1,74	4,03	2,62	2,46	2,12
<b>Equity / Tot Assets</b>	13,96	6,07	9,97	3,51	13,10	5,84
<b>Net Interest Margin</b>	7,35	3,35	5,17	1,66	6,88	3,19
<b>Cost To Income Ratio</b>	79,19	35,88	65,97	34,06	76,338	35,77
<b>Net Loans / Tot Assets</b>	51,45	12,12	62,08	7,69	53,75	12,11
<b>Taxes/ Pre-tax Profit</b>	17,48	26,23	13,86	5,60	16,69	23,38
<b>real GDP growth</b>	6,20	1,53	2,86	6,77	5,48	3,66
<b>IHH</b>	1177,59	108,56	904,77	32,47	1118,48	148,89

### 3.2 Econometrical model

In order to empirically investigate the relationship between the selected variables, I use a linear multivariate regression model, which is widely used in the literature:

$$Y = \alpha + \beta_1 \cdot X_1 + \dots + \beta_n \cdot X_n + \varepsilon, \quad (1)$$

where

- Y = the return on average assets (ROAA),
- $\alpha$  = constant,
- $X_1 \dots X_n$  = independent variables,
- $\beta_1 \dots \beta_n$  = estimated regression coefficient,
- $\varepsilon$  = disturbance term.

The estimated model will be tested so as the errors to be normally distributed and independent and with constant variance (homoscedasticity). Furthermore, the simultaneous inclusion of certain variables may raise concerns of multicolliniarity and I performed specific tests to make sure that this problem is eliminated.

## 4 Results

The hypothesized relationship between the independent variables and the dependent variables are confirmed or infirmed through the Pearson coefficient, relevant for the correlation between variables. Table 3 presents the values of this indicator for the whole period (2002-2009), the crisis years (2008, 2009) and the pre-crisis period. In the case of the highlighted variables (loan loss reserves over gross loans and net loans over total assets) the relationship with profitability went from being direct to being inverse in the crisis period. The ratio equity over total assets became positive related with profitability in 2008-2009. This measure of capital adequacy was one of the first issues addressed when the crisis started, and the negative relationship with profitability before crisis in Romania emphasizes the legitimacy the measures imposing higher levels of capital.

**Tab. 3: Correlations**

Pearson Correlation with ROAA	Period	2002-2007	2008-2009	2002-2009
		<b>Loan Loss Res / Gross Loans</b>	,253	-,610
<b>Equity / Tot Assets</b>	-,288	,137	-,153	
Net Interest Margin	,382	,114	,318	
Cost To Income Ratio	-,771	-,902	-,760	
<b>Net Loans / Tot Assets</b>	,048	-,030	-,008	
Taxes/ Pre-tax Profit	,134	,770	,162	
real GDP growth	,055	,401	,266	
IHH	,017	,401	,107	

The estimated coefficients that fit best the regression model for the entire period 2002-2009 are presented in Table 4.

**Tab. 4: Bank profitability determinants over the period 2002-2009**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3,178	,399		7,963	,000		
<b>Loan Loss Res / Gross Loans</b>	-,183	,056	-,198	-3,258	,001	,690	1,449
<b>Net Interest Margin</b>	,165	,033	,268	4,941	,000	,869	1,151
<b>Cost To Income Ratio</b>	-,041	,003	-,744	-	,000	,977	1,023
<b>real GDP growth</b>	,068	,032	,126	2,135	,035	,734	1,363

The results for the crisis years 2008-2009 are listed in the table below:

**Tab. 5: Bank profitability determinants over the period 2008-2009**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-16,815	4,497		-3,740	,001		
<b>Cost To Income Ratio</b>	-,053	,006	-,670	-8,612	,000	,549	1,821
<b>Taxes/ Pre-tax Profit</b>	,138	,037	,287	3,698	,001	,552	1,811
<b>IHH</b>	,021	,005	,254	4,350	,000	,973	1,028

The results show that the cost to income ratio is the most important bank profitability

determinant in the crisis period, while the other two influencing variables are external factors – again an expectable result, since the crisis developed at a global level.

In the pre-crisis period 2002-2007, other are the coefficients that fit best the regression model:

**Tab. 6: Bank profitability determinants over the period 2002-2007**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3,011	,379		7,950	,000		
<b>Net Interest Margin</b>	,128	,032	,250	3,998	,000	,967	1,034
<b>Cost To Income Ratio</b>	-,035	,003	-,725	-11,579	,000	,967	1,034

In each case, the cost to income ratio is the internal factor that explains best the profitability indicator through a constantly negative effect.

Also, in each table, the collinearity statistics show that the problem of multicollinearity has been eliminated and that the independent variables are not explained one by each other.

## 5 Conclusions

The results of my study are synthesized in the table below, listing also the validated order of importance for the analyzed variables. Obviously, the crisis brought substantial changes on the structure of bank profitability determinants, reducing the number of internal determinants to one.

**Tab. 7: Summary of results**

<b>Bank profitability determinants Period</b>	<b>2002-2009</b>	<b>2002-2007</b>	<b>2008-2009</b>
<b><i>Internal factors</i></b>	Assets quality (-) Net interest margin (+) Cost to income ratio (-)	Net interest margin (+) Cost to income ratio(-)	Cost to income ratio (-)
<b><i>External factors</i></b>	real GDP growth (+)		Fiscal burden (+) Concentration (+)

O lower level of the cost to income ratio will contribute to a higher profitability and the bank manager will have to optimize this ratio, reducing costs and increasing the sources of income. This is a rule that could not be taught by this crisis, but simply be highlighted.

Banks' managers and monetary and fiscal authorities have now the responsibility to gather valuable information, discuss with market participants in order to create efficient non-intrusive legislation and reform private arrangements not individually, but as parts of a network where over-regulation is counterproductive.

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## ***The Crisis Effects on Bank Profitability Determinants: Evidence from Romania***

### **Summary**

This research paper used a multivariate regression model to analyze the influence of bank-specific factors and macroeconomic factors over bank profitability, on a sample of 20 commercial banks active in Romania in the period 2002-2009. The results showed different determinations in the crisis years (2008-2009) comparative with the pre-crisis period.

**Key words:** Bank profitability; Global crisis; Explanatory variables.

**JEL classification:** E44.

# The Endogeneity of the Optimum Currency Area: Evidence from Trade<sup>#</sup>

*Cristina Puiu\**

## 1 Introduction

Optimum currency area theory, first introduced by Mundell (1961), became known especially thanks to the cost-benefit analysis of monetary integration. Thus, the theory sustains that the advantages of joining a currency area depend on the capacity of the member countries to form an optimum currency area. The creation of the European Monetary Union stimulated the interest in theoretical and empirical research on optimum currency areas and it is considered that the latter contributed to the foundation of the single European currency.

Professor Ronald Mckinnon proposed one of the economic criteria, the degree of economic openness. According to this, countries which are more opened to each other could form a monetary union since renouncing at the exchange rate as an adjusting instrument for asymmetric shocks would not be costly.

One of the most important recent developments in the literature regarding optimum currency areas is represented by the analysis of how the creation of a currency union can affect the factors that influence the well functioning of it. The endogeneity problem of monetary integration can be explained by observing the fact that sharing a common currency by many countries can bring them closer together. These considerations have been captured in the endogeneity hypothesis of optimum currency area criteria.

The theory of optimum currency area endogeneity was first introduced by Frankel and Rose (1998), who sustained the idea that countries joining a monetary union can satisfy the criteria ex - post, even though they are not fulfilled ex - ante. Thus, according to Warin, Wunnava and Janicki (2008), examining historical data gives a wrong image about the right moment to join a currency union since the criteria are endogenous. The argument brought by those two authors is based on the experience of the first wave of participants to the euro area which showed that some criteria for a successful monetary area, like trade openness and business cycle convergence, are endogenous.

This analysis should be regarded carefully because the degree of endogeneity can be exaggerated, some taking it too far by suggesting that almost any currency union can become optimal (Willett, Permpoon and Wihlborg, 2010).

## 2 Criteria of an endogeneous monetary union

Frankel and Rose (1998) have argued the fact that an increase in trade integration can lead to stronger business cycles correlation and, thus, to a reduced need of monetary independence. With this paper, the authors have opened a series of debates on optimum currency areas, showing that the introduction of the single currency in an area can help to fulfill criteria ex-post even though they were not fulfilled ex-ante. Frankel and Rose analyzed business cycles and the trade intensity of twenty industrialized countries between 1959 and 1993 and found a positive relation between these two criteria.

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At the end of the paper, the authors sustain that this represents only the application of “Lucas’s critique” to the optimum currency areas analysis, arguing that trade flows between states influences the business cycle synchronization since both criteria are affected by policies. According to the analysis of Silvestre and Mendonca (2007), this shows that business cycles of the countries belonging to an optimum currency area are affected after integration by a centralized monetary policy and by an increase in trade flows.

Recent studies show that, before formulating the hypothesis of endogeneity by Frankel and Rose (1998), this was intuited by the founder of the optimum currency area theory, Robert Mundell. The work of Warin, Wunnava and Janicki (2008) brings to attention a less known article of Mundell that sustains the fact that risk division is optimal when countries fulfill a great degree of heterogeneity. This article represents an improvement, if not a correction of the optimum currency area theory, initiated by Mundell in 1961. Until this paper, Mundell argued that an economic area must be optimal before sharing a single currency or a fixed exchange rate mechanism. The causality has been reversed in 1973 since the sharing of a single currency or the participation on a fixed exchange rate mechanism can help an economic area become optimal. Thus, there is a precedent for the endogeneity of optimum currency area theory (Frankel and Rose, 1998) represented by Mundell’s intuition from 1973.

The endogeneity hypothesis of optimum currency areas is the opposite of the specialization hypothesis formulated by Krugman (1993). The latter appears illustrated in the work “Lessons of Massachusetts for EMU” where they use the example of the economic evolutions in USA from the last century. Based on this, the author considers that it will be specialization in the euro area countries and, thus, they will be more vulnerable to specific shocks.

Akiba and Iida (2010) have sensitized the results of Krugman’s work (1993) and showed that, as countries become more integrated, their reciprocal volume of trade increases (a macro-economic sufficient condition for the OCA), implying an increase in the degree of fulfilling the criteria. The increase of openness encourages specialization of production in commodities, for which the exporting countries have a competitive advantage and this determinates the undermining of the necessary condition for an optimum monetary area. Countries in a monetary union are vulnerable to asymmetric shocks because the correlation coefficient of the outputs tends to fall.

Frankel (2005) combated the anti-synchronization hypothesis of Krugman by emphasizing the fact that a great share of the current trade is in inputs and intermediate goods, therefore it leads to a positive cyclical correlation.

Later on, there have been discovered other sources for the optimum currency area theory. Many authors brought concept similar to the ones already mentioned, but in other fields than trade. Mongelli (2008) examined three additional sources of endogeneity, as:

- the endogeneity of financial integration or the equivalent of insurance schemes;
- the endogeneity of symmetry of shocks and synchronisation of outputs;
- the endogeneity of product and labour market flexibility.

### **3 Empirical results regarding trade**

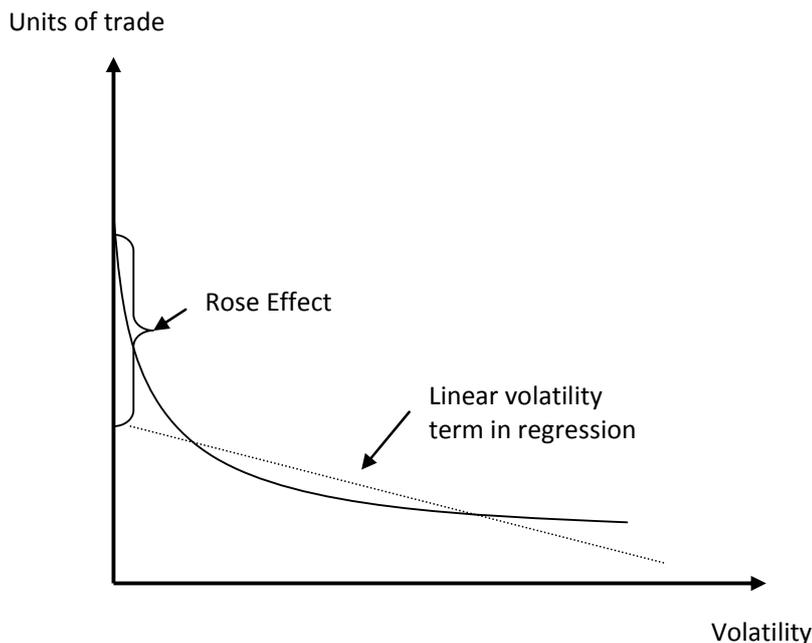
Endogeneity hypothesis launched by Frankel and Rose has been followed by a series of empirical studies considering the impact of joining a monetary union on trade and business cycle synchronization.

Professor Andrew Rose from California-Berkley University opened a new chapter in the international economy research with an article published in 2000. He addressed a simple question and got a simple answer: What effects has a single currency on international trade? The answer: big. The model used represented a naive version of the standard gravity model and

found that trade approximately triples among countries that share a common currency, after controlling for exchange rate volatility. The idea of Andrew Rose that monetary union can contribute to trade expansion within euro area lead to the formulation of “Rose effect” concept.

The results of Rose study showed that the effect of a monetary union might be different from the effect of reducing volatility. Taking into consideration that a common currency is a much more robust commitment than a promise to reduce exchange rate volatility or even a currency board arrangement, it might be expected to have non-linear effects. This can be illustrated in the fig.1 bellow.

**Fig. 1: Exchange rate volatility and trade**



Source: Mongelli, F.P – Vega, J.L., What effect is EMU having on the euro area and its member countries? An overview, ECB Working papers, accessed on november 2010 at <http://www.ecb.int/pub/pdf/scpwps/ecbwp599.pdf>

From the previous graphic it can be observed that the non-linear relationship is illustrated by the solid line, while the linear exchange rate volatility term in a regression captures the relationship given by the dashed line. Thus, the addition of a common currency dummy to the linear volatility term might be showing up as the “Rose Effect”.

The effect on trade of the single currency estimated by Rose was too high to convince many economists, fact that brought him many critiques. Such large estimates generated significant interest and researchers began the “Shrink the Rose Effect” effort (Eicher and Henn, 2009). Some of the critiques were grouped by Baldwin (2006) into three categories:

- omitted variables (omitting variables that are pro-trade and correlated with the CU dummy biases the estimate upwards);
- reverse causality (big bilateral trade flows cause a common currency rather than vice versa); and
- model misspecification.

A recent analysis conducted by Frankel (2008) identifies five sources for the skepticism regarding Rose (2000) results. Two of them can be found in those formulated by Baldwin (2006): omitting some factors and the endogeneity of choosing the currency.

A new critique is related to the fact that the evidences obtained at section level do not necessarily lead to the real time affect obtained by the countries who adopt a single currency. Also, Frankel sustains the fact that the estimated effect on trade is too high to be credible. The arguments brough by other autors related to choosing the parameters and to the fact that the real effects are more reduced, seem to sustain this critique.

Finally, the last critique refers to the fact that Rose evidences are obtained after analyzing countries that were small or very small. Thus, it was not so clear that the estimations could have been extended to bigger countries. The economies in euro area tend to be large, very large, while the countries outside the area tend to be small, some of them even very small.

Rose (2000) paper regarding the impact that unions have on trade has been followed by many studies.

Micco, Stein and Ordoñez (2003) have realized the first published study that applies Rose techniques to euro area. The authors used the gravitational model of bilateral trade, taking into consideration the fixed effects of countries pairs and using annual data for 1992-2002 periods. Based on different regressions, the authors have estimated that the single currency effects on trade inside euro area ranged between 4 and 16%.

Flam and Nordstrom (2003) have introduced a number of innovations that corrected some standard econometrical mistakes in the literature. Their main results on aggregate data are similar to those of Micco, Stein and Ordoñez (2003), in matters of size and synchronization. They have used countries outside euro area and eight other additional countries with high income as a control group and obtained as a result the fact that Rose effect implies approximately a 15 percent higher trade; the volume of trade between euro area countries and other countries is raised with half of the previous mentioned value. Using the clearest definition of the control group, the Rose effect is only 9 percent. Findings on sectoral data show that Rose effect is found only in the sectors with differentiate products.

The work of Flam and Nordstrom (2006) revised the 2003 study by using more recent data. Moreover, they have offered estimations of Rose effect on components trade in opposition to the final goods trade, for studying the possibility already indicated in 2003 that euro currency encourages production fragmentation. This study shows that the “Euro Effect” is increasing over time. While for their 1989-2002 dataset is 15%, for 1995-2005 data is about 26%.

Bun and Klaasen (2007) represents an actualization of the paper wrote in 2002. Unfortunately, the results are destroyed by the „silver medal” mistake. This is kind of surprising because the previous paper, Bun and Klaasen (2002), is one of the few studies that have avoided this mistake. At the beginning of the paper they have reproduced the results from previous literature by estimating the euro’s effect on trade between 51% and 18% for data sets from 1997-2002, 1992-2002 respectively. After including the trends, their estimations dropped to 3 percent and 2 percent respectively.

De Nardis, De Santis and Vicarelli (2007) also improved their previous paper from 2003, the central point of the new one being represented by the application of the dynamic study in estimating euro’s effects. Unfortunately, their results are difficult to interpret since their work is marked by the “Anderson-van-Wincoop wrong interpretation”, which is very common in the literature. This paper shows a euro effect about 4-5%.

A less known paper is the one of Gil-Pareja, Llorca-Vivero and Marinez-Serrano (2008), which uses the gravitational model based on data referring to 25 OECD countries in 1950-2004 period for estimating euro’s effect on trade. The problems found in used methodologies are high lined by the obtained results. The main estimations show a euro effect between 38% and 71%.

As Baldwin (2006) mentioned about the literature before the introduction of euro, such high

estimations lack of credibility. If the trade between the countries who used euro would have increased in 1999 with 60-70% over the one of the other EU countries who had not adopted euro, there would not have been needed special econometrical studies to detect this growth. The effect would have been obvious since the rest of the factors which determined the trade was not different in euro area compared to the rest of the countries from EU5 group.

Baldwin (2006) identified the main critiques as the gold, silver and bronze medal for gravity equation mistakes. The gold medal is for omitted variable bias; the silver is for using the average of exports and imports and the bronze medal is for deflating nominal trade variables by US CPI inflation.

Baldwin and Taglioni (2006) examined the dimension and the sign of the errors caused by the mistakes in the econometric studies previously presented. The paper also analysis a number of problems related to data manipulation. To offer a reference point, the authors took as example the paper of Micco, Stein and Ordoñez (2003), using a data set as close as possible to those regarding the analyzed years and countries.

The most recent paper of Jeffrey Frankel (2008) studies the causes of the discrepancies between estimations referring to euro's trade effects between member countries – approximately 15% result of own research and of other previous studies – and the estimates of the effects on other currency unions – up to 200%. The author shows that the difference between estimations is not caused by one of the invoked reasons. Mainly, the difference is not caused by lags (or by the vision that it takes time for the monetary unions to have an effect on trade), by omitted variables, by reverse causality (trade can help the creation of a monetary union) or by the threshold effect (or the vision that monetary unions can determine important increases of trade in countries with a certain dimension or with a certain income. In exchange, the paper shows that the difference between estimations can be determined by the sample size.

Rose (2008) considers the analysis of 26 studies regarding euro currency effect on trade. The author observes that individual analysis of each study shows the fact that there is no consensual on the effects of EMU; a conservative estimation shows an increase with 8 percent, but there is also plausible a 23 effect. The hypothesis of no effect can easily be rejected.

The Table 1 presents a summary of those 26 studies on the euro trade effects.

In the same paper of Andrew Rose are synthesized the studies regarding the effects of trade on business cycle synchronization. There are analyzed 20 studies realized from 1998 to 2007. And in this case the results are heterogeneous; the idea that a change in trade volume has no impact on business cycle synchronization is incompatible with the results found. A more conservative estimation shows that every increase of 1% in the trade between two countries seems to lead to an increase of the correlation coefficient about 2 percent.

Berger and Nitsch (2008) formulated some critiques to Micco, Stein and Ordoñez (2003) study. Most important ones referred to: the euro effect is too large relative to EU membership effect, it appeared in 1998, a year before the launch of the single currency and the effect is heterogeneous among countries.

Baranga (2009) argues that trade gravity equations will always suffer from omitted variable bias and that including fix effects can never completely control for endogeneity problems, as at least one free dimension of error variation has to be left uncontrolled for in order to estimate the coefficients.

Despite these critiques, the prior empirical evidence finds that the euro trade effect exists, but is much smaller than previously thought and smaller than results obtained with non-euro data.

**Tab. 1: Recent studies of currency union on trade**

		<b>Year</b>	<b>Gamma</b>	<b>SE</b>
1	Bun and Klaaseen	2002	0.33	0.1
2	de Souza	2002	0.17	0.24
3	de Nardis and Vicarelli	2003	0,061	0,027
4	Cabasson	2003	0,63	0,24
5	Micco, Stein, Ordonez	2004	0,089	0,025
6	Barr, Breedon and Miles	2004	0,25	0,033
7	Baldwin and Taglioni	2004	0,034	0,015315
8	Faruqee	2004	0,082	0,018
9	de Nardis and Vicarelli	2004	0.093	0.039
10	Clark, Tamirisa and Wei	2004	0.22	0.38
11	Baldwin, Skudelny and Taglioni	2005	0.72	0.06
12	Yamarik and Gosh	2005	1.8285	0.30475
13	Adam and Cobham	2005	1.029	0.039486
14	Baxter and Koupritsas	2006	0.47	0.22
15	Flam and Nordstrom	2006b	0.139	0.02
16	Berger and Nitsch	2006	-0.001	0.036
17	Gomes, Graham, Helliwell, Kano, Murray and Schembri	2006	0.069	0.011
18	Baldwin and Taglioni	2006	-0.02	0.03
19	Baldwin and Di Nino	2006	0.035	0.01
20	Flam and Nordstrom	2006a	0.232	0.024
21	Tenreyro and Barro	2007	1.899	0.351
22	Bun and Klaassen	2007	0.032	0.016
23	de Nardis, De Santis and Vicarelli	2007	0.04	0.01278
24	Brouwer, Paap and Viaene	2007	0.067	0.025769
25	Flam and Nordstrom	2007	0.248	0.046
26	de Nardis, De Santis and Vicarelli	2008	0.09	0.033962

Source: Frankel (2008)

#### 4 Conclusions

The endogeneity problem is relatively new and it makes necessary many empirical studies to prove its functionality. It remains an open question if the countries form a monetary union because they have a high trade level or trade increase is due the fact they form a monetary union. At the same time, we can ask if countries can form monetary unions and wait to automatically appear the benefits of a greater integration.

The validity of Frankel and Rose arguments is controversial as a result of the fact that recent empirical studies confront with difficulties caused by the short period of time since the euro introduction and the differences in the methodologies used. Even though the triple effects of

trade volume described by Rose have been rejected by many economists, monetary union positively influences trade openness of the countries that choose the participation to a monetary area.

Thus, after the analysis of many empirical studies regarding euro area, I can say that monetary integration in euro area had a direct consequence on trade growth. Even though there are no similar experiences and the time since euro introduction is relatively short for estimating the effects on trade, European monetary union is about to become an optimum monetary area.

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## ***The Endogeneity of the Optimum Currency Area: Evidence from Trade***

### **Summary**

This paper aims to review existing literature on the endogenous effects of monetary integration: whether sharing a single currency may bring countries closer together through a trade increase. The first part is a review of significant paper in the vast literature on the endogeneity of optimum currency area theory that focuses on the main criteria that are subject of this hypothesis. The second part considers empirical literature on the effects of monetary integration on trade based on evidences provided by the euro area experience. The main conclusion is that the hypothesis attracted a large number of studies and, although they provide heterogeneous results caused by using different methodologies, they all indicate a positive effect.

**Key words:** Optimum currency areas; Endogeneity; Euro; Rose Effect.

**JEL classification:** E42, F15, F3.



# Decision Making in Household Credit Granting Process

*Ilmars Purins, Didzis Rutitis\**

## 1 Introduction

Global economical crisis, which began in 2007, affected global capital markets in the form of valuation of credit and liquidity contraction. In addition to global crisis, it coincided with local crises in individual countries, which further worsened their economical situation. As one of the reasons, that led to the crisis, thoughtless and the excessive lending policy by commercial bank is. Looking back at the past four year events, the world's leading economists and many country leaders have reached a common point of view concerning the introduction of changes in the overall scheme, legislation and methodologies in the field of credit. However, in relation to changes that have been introduced by commercial banks to improve their financial situation and avoid the repetition of mistakes made during the current crisis, we need to carry out a separate research. To answer this question the author has conducted a study comparing household lending methodologies, which were used by Latvian and German commercial banks between the year 2006 and 2010. The choice of household lending is justified by its large proportion of overall lending market as well as due to the simplicity of the comparison between different countries. Latvia and Germany belong to the countries with active domestic lending market. However, Latvia is a relatively new lending market with undeveloped tradition, which was subjected to double effect of the crisis (global and local crisis). While Germany is a developed country with extensive lending experience, but it had gone through economic decline during the current period.

The objective is to put forward the development of improved methodology for the work in the current market conditions, thus basing it on the detected differences between the household lending methodologies in German and Latvian commercial banks. The following tasks have been identified:

- to analyze the peculiarities of Latvian and German household lending market and the current situation;
- to detect changes in both countries' domestic commercial bank mortgage lending's methodologies in pre-crisis (2006) and current (2010) periods;
- to compare the Latvian and German features of methodologies and develop proposals for the improved methodology of credit risk management.

To carry out the study several methods have been used: theoretical analysis, legislative, and recent analysis of research in areas of household lending and credit risk management, interviews of Latvian and German banking specialists, statistical data processing.

## 2 Household lending market in Latvia and Germany

### 2.1 Household lending in Latvia

All in Latvia registered commercial banks and branches of foreign banks practically are engaged in household lending. Since the second half of 2007, the banking activity in the area of

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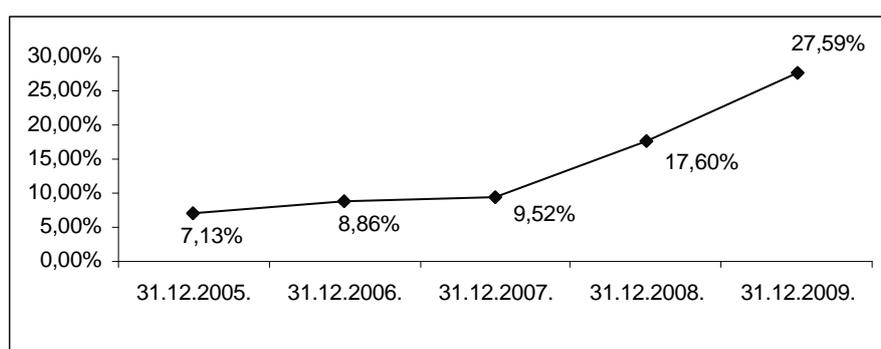
household lending has significantly diminished - from the annual increase of 76% in 2007 to -5% in 2010. (Table1). It was due to the introduction of credit banking action,<sup>1</sup> in spite of the decline of household income and the increased number of insolvent households in the country's worsening economic situation. At the end of 2006 overdue loan payments of households amounted to 13.7%, however at the beginning of 2010, this figure has quadrupled and amounted to 27.59% (Figure1).

**Tab. 1: Credits served to households in Latvia**

	31.12.2005	31.12.2006	31.12.2007	31.12.2008	31.12.2009
The total volume of loans to households (in thousands of LVL)	2 430 582	4 283 259	5 970 715	6 379 247	6 063 094
Growth of volume of credit to households (%)		76,22%	39%	7%	-5%
Without delay (%)	94,30%	91,14%	90,48%	82,40%	72,41%
With delay (%)	7,13%	8,86%	9,52%	17,60%	27,59%
The delay to 30 days (%)	3,4%	6,59%	6,71%	8,21%	6,89%
The delay to 31 - 90 days (%)	0,8%	0,8%	1,8%	4,2%	3,9%
The delay from 90 days (%)	1,4%	1,5%	1,0%	5,2%	16,8%

Source: Latvian Financial and Capital Market Commission

**Fig. 1: Share of overdue of household loans**



Source: Latvian Financial and Capital Market Commission

The number of late payments and credit default proportion increased; this led to the deterioration of financial parameters of Latvian commercial banks in 2009 and the first part of 2010. Further worsening of the situation, defaults and losses relating to credit types also increased, thus deteriorating financial parameters of commercial banks in Latvia. In 2009 and 2010 Commercial Banking Sector in Latvia lost -1,455 million EUR (Association of Latvian Commercial Banks). To solve the problem of exhausted credit markets there was a need to

<sup>1</sup> Customer Credit Act Section 8. Consumer lending (5) A person who deals with consumer lending: 1) before the issuance of credit demanded and received the State Revenue Service's statement of the consumer's income or in terms of content the equivalent of another national tax authority inquiries.

revise the regulatory framework in Latvia. Several laws have been adopted or revised, such as: "Framework of the credit risk management" (FCMC, 2010), "Rules of normative of asset quality assurance and savings" (FCMC, 2009), "Guidelines of loans secured by real estate mortgages, contract-court enforcement" (FCMC, 2009), "Act of consumer protection" (Saeima, 2009), "Laws and regulations of framework on wage policy" (FCMC, 2010), "Insolvency law" (Saeima, 2010). However, the laws related to credit risk management regulations can be characterized by the underlying problem-solving attempts and do not include enough preventive measures (Purins, 2010, 95-107). Preventive actions were supposed to be taken by commercial banks themselves. Lending methodology (internal policy, procedures, standard model, etc.) applied when granting loans and the quality of loan portfolio becomes important issue. In Latvia during active lending period between 2001 and 2006 lending methodology of commercial banks was focused on the rapid increase of the loan portfolio rather than on the quality of loans in the future. Banks failed to accurately determine household solvency, they failed to demand supportive documents for the evidence of official income, as well as did not assess collateral value. So, the risks were not calculated enough. By contrast, in Latvia after 2007, when economic downturn set in commercial banks, knowing their weakness of lending methodology, have made radical reforms. Banks strengthened substantially the requirements for both the household ability to pay, and for the submission of the alleged documents requiring the quality of content, as well as accuracy for internal contract design relating to credit granting process. These requirements led also to a number of limitations. As a result of it, the household lending market has declined sharply in Latvia (Table1). Most of the households are not able to fulfill the requirements of a bank, but a small proportion of solvent households face a difficult, expensive and lengthy procedure in order to obtain credit. Until now lending methodology of commercial banks, their evolution, efficiency, as well as the comparison with the experience gained from other countries including opportunities for the improvement of the situation in lending has not been systematically studied so far in Latvia. The research done by V. Andrejeva published in "Development of Latvian mortgage lending system. Problems and solution" (2005) and L. Litavniece's work "Lending for Latgale region development" (2008) serve as one of the basis for the research on the mortgage lending market in Latvia. However, this research was carried out during the lending boom between 2003 and 2008 as a result of this both research papers do not provide problems associated with the quality of methodology for mortgage related products.

## **2.2 Household lending in Germany**

In Germany commercial banks generally act as universal banks and major lenders. Moreover, there are specialized banks, such as mortgage and installment credit banks, to a part of the possible loan products available (Adrian, Heidorn, Hagenm 2000, 20). In Germany lending market is much larger than in Latvia. Only in 2006 German banks granted credits to non-banks residents of 2 651.1 billion euros (Adrian, Heidorn, Hagenm 2000, 20). In comparison, in Latvia this year granted loans were 190 times lower than in Germany amounting to 14 billion euros (FCMC, 2000). In Germany over the last year, domestic credit market has created the paradoxical situation. On the one hand the Federal Republic of Germany has experienced the sharpest economic downturn in its history. The expected for this year (2009) fell by 6% of gross domestic product is only an average. Some industries have cope with significantly greater declines. This is especially sectors that have had structural problems before crisis, and the export industry, which suffers most under the global recession (Association of German Banks, 2010).

On the other hand, despite the biggest economic downturn since the foundation of the Federal Republic, consumer spending remained unchanged. Even more, the demand for installment loans in 2009 increased by 17% and it was completed 10% more consumer credit agreements (SHUFA, 2010). CEO Rainen Neumann at the presentation of SCHUFA credit compass 2010th commented the situation in the following way: "It is rather that the crisis had not yet arrived in 2009 for the vast majority of citizens. Furthermore, there was no effect of scrapping, low

interest rates, discounts on trade and a relatively stable labor stimulating effect on consumer activity” (SHUFA, 2010). Following the sociological survey data two-thirds of German population feels 2009 is not affected by the economic crisis (SHUFA, 2010). Wiesbaden reporting agency Schufa only in 2010 reported that actual number of loans granted by banks fell by as much as 15% (SHUFA, 2010). Germany also suffered from active household lending crisis; thus, many private households had problems because of high household debts (Table2). A private household has become vulnerable and its indebtedness exceeds generated income over an extended period. So, households are not able to pay debts in due time, as they need to deduct living costs. At the same time they experience the decrease in the standard of living.

**Tab. 2: Number of private insolvencies in Germany**

<b>Year</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Number of private insolvencies</b>	3357	10479	13277	21441	33609	49123
<b>Change (%)</b>		212%	27%	61%	57%	46%
<b>Year</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	
<b>Number of private insolvencies</b>	68898	96586	105238	98140	101102	
<b>Change (%)</b>	40%	40%	9%	-7%	3%	

Source: SCHUFA (2010)

In Germany the proportion of debts for houses is around 64% of all debts. Sociological opinion poll survey reflected that 13% of Germans admit that they have some problems but 3.5% or respondents admitted that they have a big problem to settle credit payment. The main reason of indebtedness is the unemployment and the associated loss of revenue, accounting for about 29%. Another important cause constituting 14% is divorce, separation or death of a partner. In the early years between 1999 and 2001 the average debt level per case was around 187 000 EUR. Over the past 3 years from 2007 to 2009, the average amount refunded dropped to 59 000. However, mortgage debt is bigger than all other types of loans: in 2008 it amounted to an average of 130 123 EUR but in 2007 it constituted 160 000 EUR. Germans because of their previous debts have to pay, they owed their creditors on average 87 700 EUR in 2008 (2007: 96 000 EUR) (SCHUFA, 2010).

Despite the fact that the absolute figures of debts, which have not been reimbursed, seem quite large (Table 2), the proportion of total loan portfolio has remained at low levels, it is much lower than in the Latvian market. Out of 100 granted credits only 3 installment loans have failed. The average loan ratio stood at 2.4% in 2009, but over the last 3 years it remained stable (2.5% in 2008; 2.3% in 2007) [17]. Experts argue that the volume of unpaid loans in 2010 might have increased: “For 2010 we will see, however, a slightly higher risk of over-indebtedness among individuals. Using our figures we have calculated a risk of excessive debt, which is 2.5% higher than in 2009” (Neumann R.) (SCHUFA, 2010). So low default loan proportion in Germany have been achieved thanks to the quality of banking methodologies that have been applied to lending. Some of these aspects of classical methodology include the lack of negative information at Schufa database (analogous to the Latvian Bank Credit Registry). It also reflects the information concerning financial situation, including income, expenses, existing debt and owned property, and certainly by all means that there is a positive financial performance after the deduction of all required charges. It must be worth mentioning of specific requirement in the German banking system, that of seniority. The longer a person has been employed, the more he or she has the opportunity to obtain credit. In order to apply for loan a person must also have his

own savings. Banks do not credit the full value of the property. They stick to the principle that a person not only spends money but has to accumulate it, thus banks stimulate to reduce credit risks. German banks do not use so much distant communication channels (Internet, etc.) in case of credit granting. Even advanced technology is not enough to grant credit, banks require on-site personal interviews with borrowers to verify their ability deal with credit (Association of German Banks 2010). Overall, the German banking methodology applied to lending households is more developed in Germany than in Latvia. This has been proved in Section 2 by the author's study.

In a similar way like in the whole European Union in Germany, the credit risk is regulated by Basel II (Basel Committee on Banking Supervision, 2004, 228) and by law there have been determined minimum requirements for risk management. Risk management initiatives prescribe the procedures for risk assessment of loans involving the assessment or so called "rating" process and issue rules for the funding of loans (Deutsche Bundesbank, 2009, 34). In addition in German banks comply with articles in the "Civil Law" which regulates the allocation of loans (Federal Law Gazette, 2008). In Latvia the law on Credit institutions sets the legal requirements, whereas in Germany Banking Act limits the amount of bank lending: large exposure in individual cases may not be higher than 25% of liable capital (European Parliament and Council, 1998). In comparison with Latvia, in Germany Banking Act (18th paragraph) (European Parliament and Council, 1998) requires banks to disclose the current economic situation of the borrower.

Several extensive studies of legislative changes have been carried out in Germany relating to household lending and credit market developments during the economic downturn. It also related to the rights of households to receive the service of credit granting. Few studies, for example, "transnational comparison of private sector debt - trends, problems, solutions" (Reifner, Springeneer, 2004 161-211) highlights the problems associated with individual insolvencies and bankruptcies in different countries. However, in Latvia and similarly in Germany we do not see international studies on bank lending methodologies. Taking into account the differences in national household lending market, the banking experience, regulatory differences, as well as the need for the improvement of methodology in commercial banks, especially in the area concerning lending, granting loans as well as, because of defaults limiting the number of credits, the author has carried out the study described below.

### **3 A study of household lending methodology of Latvian and German commercial banks**

The matter of the survey has related to the questions about the influence of different factors in a credit approval process. The factors, which have been asked, were extracted from the application form for a loan. To make it easy to explore the issue, a possible set of answers was given as "no influence", "irrelevant influence", "influence" and "high influence" in this matter. Comments have not been asked. The last two questions gave different percentages in their answers. The questions have been grouped into different subject areas (Table3). The subject areas have been "Personal information", "Family information", "Furniture, income, assets", "Education and profession" and "Parameter of financing". Furthermore, all questions asked referred to 2006 and 2010 to see if there is any movement through the financial crisis.

Seventeen experts have been asked to give their opinion. The interviewed people are specialists from different German banks and different areas to have an overview over all Germany. All of them are working in private lending business- mostly the leader of the lending business in his bank.

**Tab. 3: Questionnaire**

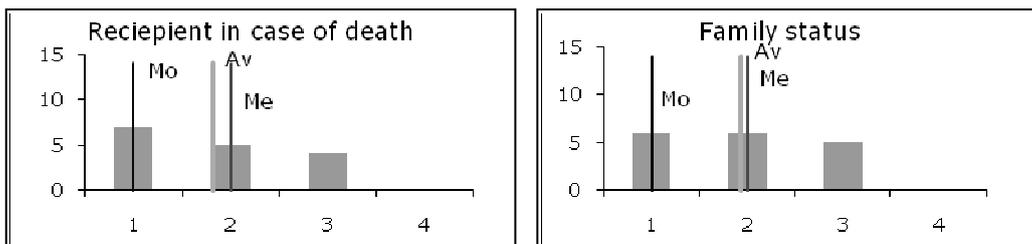
<b>Personal information</b>	Citizenship; Criminal record
<b>Family Information</b>	Family status; Recipient in case of death; Number of children in household; Number of dependents children; Received child support payments
<b>Fortune, income, assets</b>	Repaid loans (positive); Repaid loans (negative); SCHUFA entry available; Life insurance available; Other Insurance; Bank Accounts; Other savings; Other tangible assets
<b>Education and profession</b>	Education; My own business; Industry in the busy; Time of total work experience; Former Career; Duration and termination of actual employment relationship
<b>Parameter of Financing</b>	Percentage of Equity; The ratio of the monthly installments to be paid to the existing income

### 3.1 German Survey Analysis

It was really significant and unanticipated that there was almost no change in all questions from 2006 to 2010. If there was a change it was irreductable. The highest difference was  $-0.1/+0.2$  in the average of the answers.

The factors with the lowest influence are “family status” and “recipient in case of death” with an average of 1,8 (1,9) that means little bit less that irrelevant influence (Figure 2). So in Germany the “family status” is not important if u apply for a loan. But the statistical spread is high (6 times “no influence”, 6 times “irrelevant influence” and 5 times “influence”) so the specialists differ about the importance of family status. The “recipient in case of death” behaves different. The experts almost agree with each other.

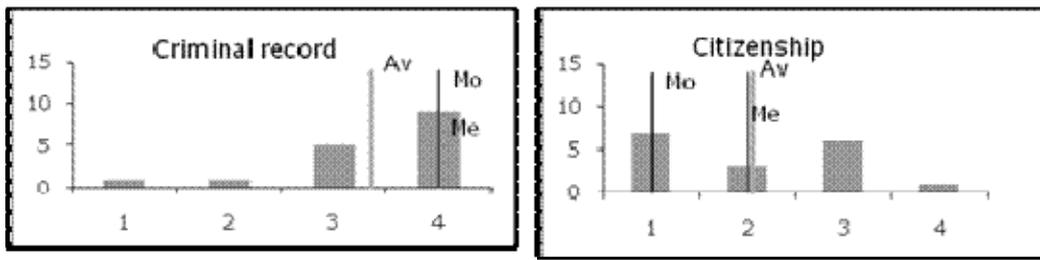
**Fig. 2: Germany: factors “Recipient in case of death” and “Family status”**



Source: own study

The topic “personal information” includes the factors “Citizenship” and “Criminal Record” (Figure 3). The answers about the “Criminal Record” were very clear and as expected. The experts think that it has at least “influence”. At the “Citizenship” the experts do not conform to each other. Whereas 41% think it has absolutely no influence if the applicant body has the German Citizenship, 35% apportion “influence” to that. One Respondent is in the persuasion that the “Citizenship” became less important from 2006 to 2010.

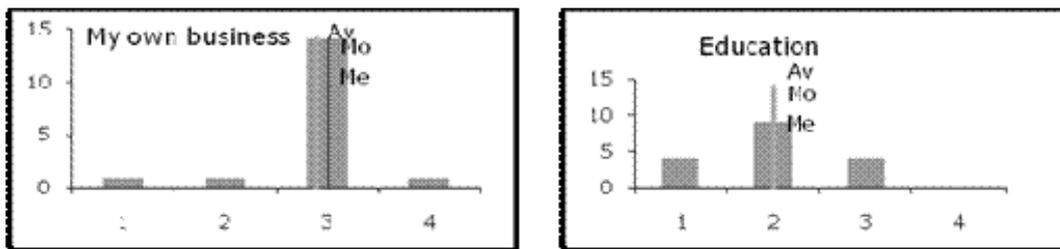
**Fig. 3: Germany: factors “Criminal record” and “Citizenship”**



Source: own study

Unanticipated was the fact that “education” is not an important factor for the application of a loan (Figure 4). More than 50% of the experts share the opinion that the education status has just irrelevant influence in the application process for a loan. In contrast to that the matter of the fact if the candidate has an own business and the area of the busy is really important for the acceptance of a loan (Figure 4). In this juncture it concern about the clearest performance in the survey.

**Fig. 4: Germany: factors “Education” and “My own business”**

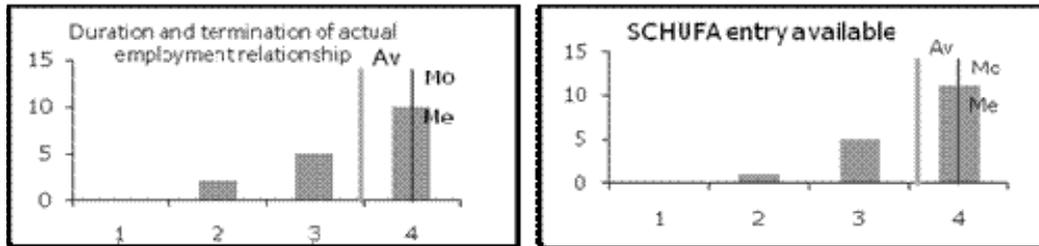


Source: own study

In the sight of the experts the “duration and termination of actual employment relationship” and the existence of a “SCHUFA entry” are the two most important factors of influence for an application process (Figure 5). In Germany most employment relationships are fixed-term employment contracts. Mostly employees get a contract for one, two or five years and not without fixed term. If the employee proves himself during this time he has good chance to get a contract for an unlimited time. So for the experts it is very important if the applicant has fixed-term or unlimited. The risk that the creditor loses his job and is unable to pay the installments is higher if he has just a terminated contract. “SCHUFA entry available” is also very important. Schufa Holding AG - a member of the European Credit Research Institute - (own spelling SCHUFA, formerly SCHUFA e. V., protection association for general credit) is a privately organized German credit bureau that is borne by the lending industry. Head Schufa Holding AG is located in Wiesbaden.

Its business is to protect their party prior to loan defaults, according to the Schufa it also helps protect against over-indebtedness of consumers. The Schufa is in possession of 462 million individual data of 66 million individuals in order to have covered about three quarters of all Germans. The Schufa annually processes more than 100.4 million requests for credit. Of these, 1.4 million are self-declarations by citizens who want to access their data.

**Fig. 5: Germany: factors “Duration and termination of actual employment relationship” and “SCHUFA entry available”**

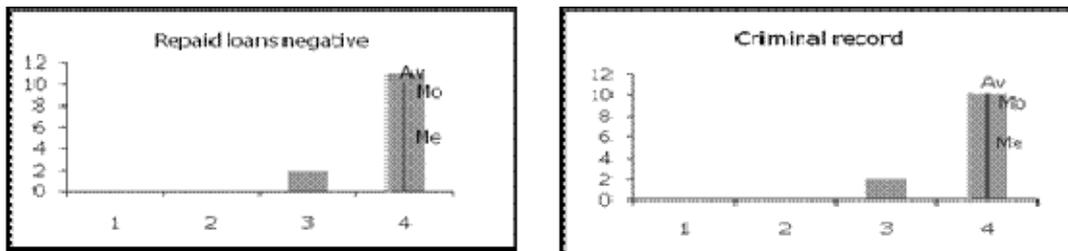


Source: own study

### 3.2 Latvian Survey Analysis

The most important factors in the sight of the Latvian experts are “Repaid loans” and “Criminal record” (Figure 6). The “Repaid loans” in the negative sight are very important for the decision for or against affording a loan. The “Criminal record” is very important for Latvian banks, too. Most experts think it has high influence and no experts think it has no or irrelevant influence.

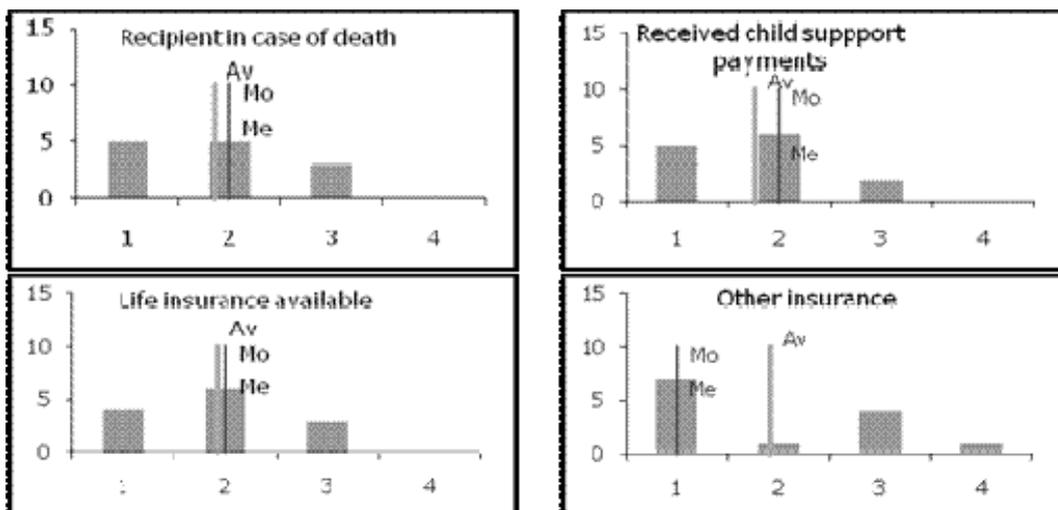
**Fig. 6: Latvia: factors “Repaid loans” and “Criminal record”**



Source: own study

The lowest interest is adjudicated to the factors “Recipient in case of death, received child support payments, life insurance and other insurances” (Figure 7).

**Fig. 7: Latvia: factors “Recipient in case of death”, “Received child support payments”, “Life insurance available”, “Other insurance”**



Source: own study

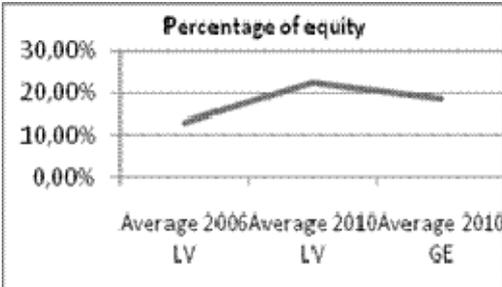
With the factor “other insurance” the experts don’t agree with each other. 53% of the experts don’t pay any attention to this factor. But 38% of the experts think it has influence or even high influence in the decision making process. The recipient in case of death is even more clear, 77% believe that it have no or just irrelevant influence but after all 23% still pay attention to this factor. With the factors Received child support payments and life insurance available it demands the same like Recipient in case of death.

German economy already survived several crises in the past years. So it is very stable and there haven’t been that high changes from 2006 and 2010 in the system of the process of the approval of a loan. But because of this stability and an already good working system already small changes are a big thing in the German system. Latvia never had to survive such a crisis, so it is very difficult to find the right way how to handle that. Latvia doesn’t have a stable system, yet. So they have bigger chances in their system since 2006. In this thesis we found the actual German system as a trend for the Latvian system in the future. Sometimes the Latvian decision making process has the right trend and sometimes they seem to overreact because of the crises. So now they act too strict at the moment that can be a problem in the system. In the thesis there is a description of the most significant changes and factors.

- Percentage of equity (Figure 8):

The expected percentage of equity has been started up with 13.13% in LV in 2006 while in Germany it already has been expected 16.18%. In Latvia there has been a high movement upward to 22.69% while in Germany it is now less than in Latvia with 18.53%. So both countries had a shift upward but the Latvian banks seem to overreact a little. In the last 4 years that was a shift upward around 9% in Latvia.

**Fig. 8: Germany and Latvia: changes in factor “Percentage of equity”**

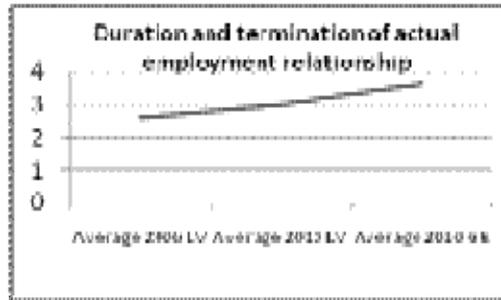


Source: own study

- Duration and termination of actual employment relationship (Figure 9):

Latvian Creditors did not pay a lot attention to the duration and termination of actual employment relationships. But the fact that in Germany there are a lot of jobs terminated and not “for ever” might be a reason for the higher attention to this fact. Nevertheless the Latvian system got closer to the German System and as the Graph shows there seems to be an uptrend. In 2006 the experts attribute irrelevant influence to the factor while in 2010 Latvian experts assign influence.

**Fig. 9: Germany and Latvia: changes in factor “Duration and termination of actual employment relationship”**

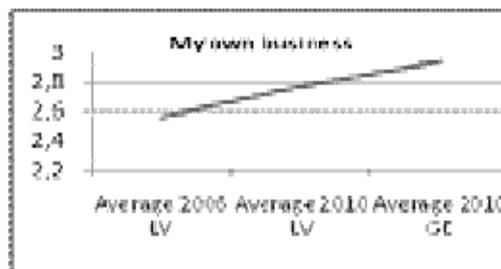


Source: own study

- Own business (Figure 10):

If a creditor has his own business was in 2006 in Latvia with an average of 2.5 in the middle between irrelevant influence and influence. In Germany the Average shows almost influence. So the trend should be traced to move to a solid system that can survive more than one other crisis.

**Fig. 10: Germany and Latvia: changes in factor “My own business”**

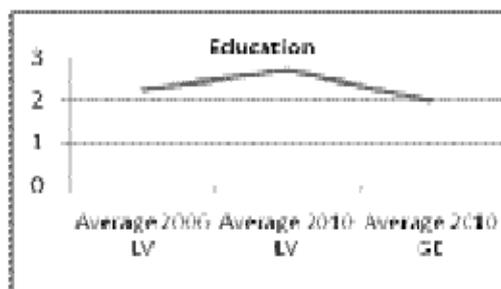


Source: own study

- Education (Figure 11):

The Education is the most surprising factor in this survey. The German experts don't pay a lot attention to it. The Germans simply concede irrelevant influence to the factor “Education”. The Latvian in 2006 thought about the same but after the crises they paid more attention to it. Maybe they should think about this fact, maybe it is an overreaction of the crises. Now the responsible people in banks try to change everything and make it stricter to low the risk of the lending business. But maybe they have to make sure that they don't overreact and make the system to strict. If nobody can get a credit anymore the business will be in bigger trouble because nobody is spending money anymore. Education is one factor, which often is not that important how people think. So at this sight there should not be given that much attention to Education.

**Fig. 11: Germany and Latvia: changes in factor “Education”**

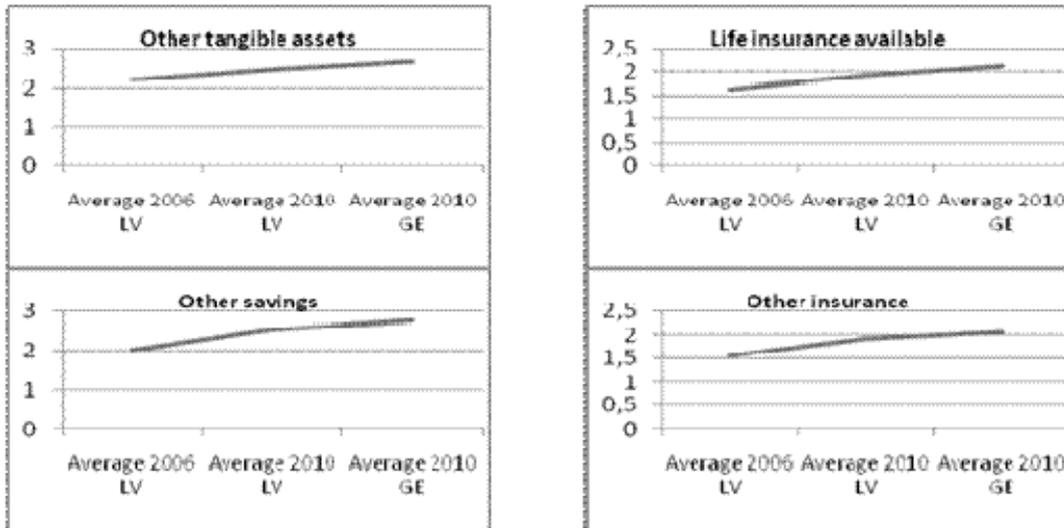


Source: own study

- Other tangible assets, Other savings, Life insurance, Other insurance (Figure 12):

With the four factors it restrained quite similar. All have the right trend upwards but there is still some difference to the German system. But in most cases just minimal. So this shows that Latvia is in the right trend to become a stable System and in this case the Experts reacted quite well.

**Fig. 12: Germany and Latvia: changes in factor “Other tangible assets”, “Other savings”, “Life insurance”, “Other insurance”**

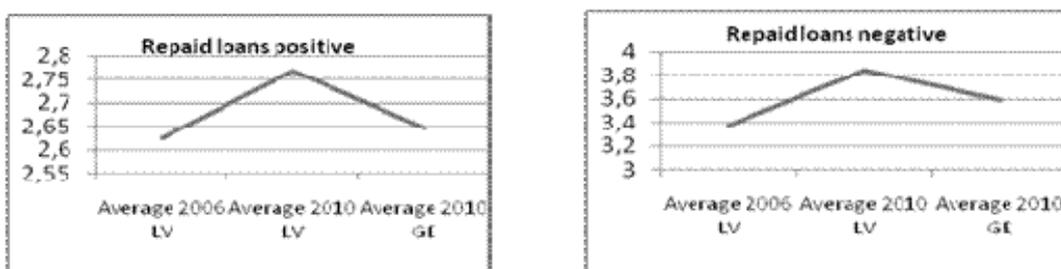


Source: own study

- Repaid loans – positive/negative (Figure 13):

Repaid loans in the positive way are in Germany not very important in the application process the Lender don't pay too much attention to that. In Latvia it was quite similar but through the crises they turned out to become quite strict with that and now it's a factor with real influence in the Latvian System. In Germany there was just a slight shift upward observable. In Germany it has a little influence but not as high as repaid loans in the negative sight. It seems that the Latvian system overreacted in this case. In the USA the experts give high importance to the fact if the debtor already repaid other loans in time. But now the American System has huge trouble in the financial crises. So maybe it is better not to pay too much attention to repaid loans in the past. In the future the focus should be set on other factor. In the negative way it is almost the same but the Latvian system shifts in the right direction. But if the economical attitude unstressed in some time they might slow down. At the moment the lenders won't take any risks.

**Fig. 13: Germany and Latvia: changes in factors “Repaid loans (pos/ neg)”**



Source: own study

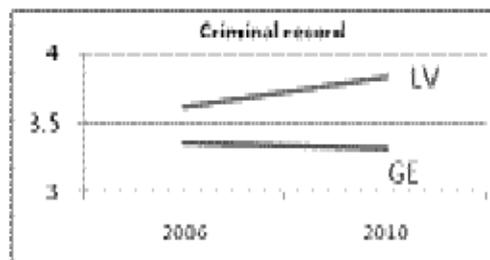
### 3.3 Differences between Germany and Latvia

There will be discussed the differences in the German and Latvian system. There are different aspects and reasons for the differences.

- Criminal record (Figure 14):

The criminal record is as Germany and Latvia both see a relevant factor in the decision process of the lender. But for Latvian it became more important than for German experts. While Latvia had a slight shift upward in the last 4 years Germany had a light shift downward. So the difference between Germany and Latvia became even higher. So they shift apart. For Latvian debtors it is one of the most important factors for obtaining a credit while in Germany it is not that important it is just in the middle of all factors.

**Fig. 14: Differences between Germany and Latvia in factor “Criminal record”**

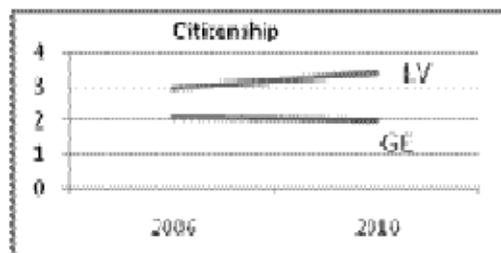


Source: own study

- Citizenship (Figure 15):

Citizenship is almost the same as the factor discussed above. The reason could be that in Latvia there has been a huge problem that people that couldn't repay a loan just disappeared. In Germany there was no problem like this existing. There are several laws for human rights. As a foreigner u need some more formulas to get a credit. A foreigner needs a residence permit and a work permit.

**Fig. 15: Differences between Germany and Latvia in factor “Citizenship”**



Source: own study

- Family status (Figure 16):

The Family status is in Latvia more important than in Germany. As in the former factors the family status moved apart. That shows that in many cases the Latvian experts just made their system stricter to lower the risk but maybe they overreacted in many factors. In Germany the family status has irrelevant influence while in Latvia they impute influence to this factor.

**Fig. 16: Differences between Germany and Latvia in factor “Family status”**

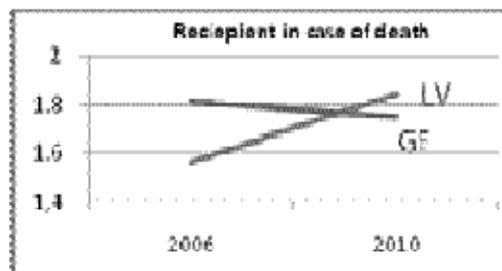


Source: own study

- Recipient in case of death (Figure 17):

While in Germany the “Recipient in case of death” became less important in Latvian the experts realized a shift upward. So now Germany and Latvia are closer to each other. But they cross in the last years. So there is a little overreaction from Latvia, which will become better if the deep crises become detached by the economical upshift the Latvian system might become less strict again.

**Fig. 17: Differences between Germany and Latvia in factor “Recipient in case of death”**

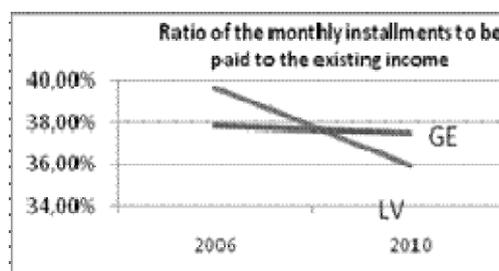


Source: own study

- Ratio of the monthly installments to be paid to the existing income (Figure 18):

“The Ratio of the monthly installments to be paid to the existing income” is a factor, which had a really high percentage possible in Latvia (around 40%). Germany had less percentage in 2006 (around 38%). To low the risk in Latvia there has been a huge shift downward to around 35%. In Germany they realized just a slight shift downward to a little bit less than 38%.

**Fig. 18: Differences between Germany and Latvia in factor “Ratio of the monthly installments to be paid to the existing income”**



Source: own study

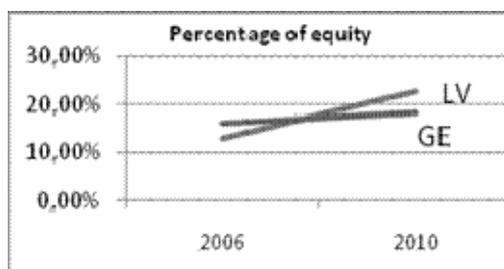
- Percentage of equity (Figure 19):

The expected percentage of equity has been startet up with 13.13% in Latvia in 2006 while in Germany it already has been expected 16.18%. In Lativa there has been a high movement

upward to 22.69% while in Germany it is now less than in Latvia with 18.53%.

So both Countries had a shift upward but the Latvian banks seem to overreact a little. In the last 4 years that was a shift upward around 9% in Latvia.

**Fig. 19: Differences between Germany and Latvia in factor “Percentage of equity”**

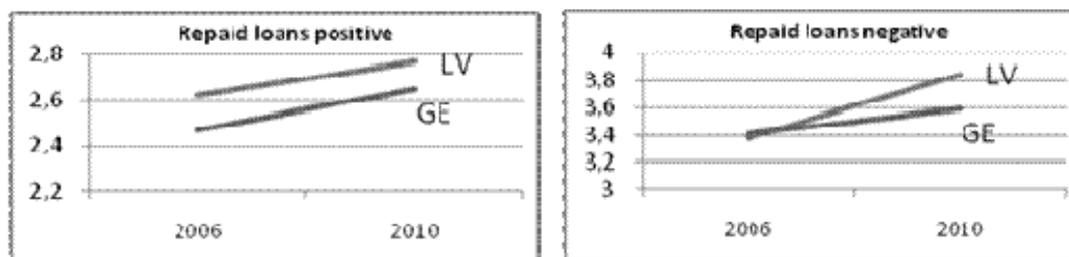


Source: own study

- Repaid loans – positive/negative (Figure 20):

As above already described and as it is shown in the graph on the left side there is an upshift in both countries about the importance for repaid loans with positive history. But it is almost like parallel movement. It is different in the negative repaid loan history. In Germany it was in 2006 on the same importance level like in Latvia. But now Latvia made it to one of their most influencing factors for the decision process of lenders.

**Fig. 20: Differences between Germany and Latvia in factor “Repaid loans (pos. and neg.)”**



Source: own study

## 4 Conclusions

Between the period 2007 and 2010 Latvian and German economy entered a recession caused by global and local crisis. However, the impact of the recession on housing credit markets in these countries is much broader and of mixed character. The differences could be observed in the volume of lending and mortgage loans, the increased number of debtors, as well as in the causes of debts. At the same time it concerns the differences in legislation and banking because they are the biggest creditors of households.

The current research carried out by the author in relation to banking sector behaviour in the credit market for households prior and after the period of crisis revealed:

- The credit market in Latvia is not mature yet; the methodology used by banks in household crediting depends on sharp changes;
- In turn the credit market in Germany is mature enough but the methodology of banks were subjected only to facelifting improvements.

As a result of crisis the requirements for those applying for credits in Latvia have been much stricter than in Germany and it has a dual effect. On the one hand the banks try to decrease the

credit risks, but on the other hand it leads to the drop in the credit volumes, which in turn affects the decrease in the future profit.

Taking into account the above mentioned, the author offers the commercial banks in Latvia to go through their household credit methodology in the following areas:

- Education of individuals, their credit history, marital status, especially because the impact of those indicators on credit risk is over-exaggerated.
- Customer's ability to save and accumulate, their business skills, as well as the legal form of job relations has been not taken into account on the proper level.

In Germany the contribution of each individual in crediting has historically been much higher and today the requirements have been converging. The role of credit history as a result of crisis for those credits has been overestimated.

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## ***Decision Making in Household Credit Granting Process***

### **Summary**

The present article is devoted to the comparative methodology and analysis of household mortgage lending carried out by commercial bank based on Latvian and German market examples during current and pre-crisis period. The aim of the article is to offer recommendations in order to improve the methodology. The aim which has been set derives from the necessity which is based on identified differences between the household lending methodologies in developed (German) and new (Latvia) market of mortgage lending despite both markets were exposed to the impact of global economical crisis. Three tasks have been set in order reach the aim. Firstly, to analyze the Latvian and German household lending market and the peculiarities of the situation. Secondly, to detect changes in the methodologies of household mortgage lending of Latvian and German commercial banks before the crisis (2006) and during the current (2010) periods. Thirdly, to compare the peculiarities of Latvian and German methodology and work out suggestions how to improve the methodology which takes into account management of credit risk. In order to carry out the set tasks, the following research methods have been used: the analysis of theoretical material, legislation, as well as the latest research analysis in areas of household lending and credit risk management. Besides, interviews of Latvian and German banking experts have been held. It also included the methods of statistical data processing. Research results have revealed that the methodology of household lending of German bank is more developed than Latvian banking methodology, which in turn served as the basis for working out recommendations in order to improve the Latvian banking methodology.

**Key words:** Household credit solvency; Lending methodology; Crediting.

**JEL classification:** G21, G32.

# The Effect of Mandatory Expenditure on Fiscal Flexibility<sup>#</sup>

*Vojtěch Roženský\**

## 1 Introduction

In most of the developed world, newly elected governments have only limited ability to make their own economic policy, because most of the decisions about fiscal resources has been already made before in the form of mandatory spending programs. This problem is known as the accumulation of policy legacies. It's accompanied by the loss of fiscal democracy, i.e. diminishing freedom of current politicians to chose how to use public resources. As a result, fiscal policy loses it's flexibility, i.e. the efficiency in smoothing out the economic cycle and facing the current economic problems. Fiscal flexibility plays an important role in every economy, because it improves it's resilience to shocks (Greenspan 2008, p. 255).

The excessive share of mandatory expenditure and lack of fiscal democracy means, that politicians can not freely decide about fiscal resources, because these decisions has been already made by their predecessors. Such situation results in insufficient democracy from the political point of view. Current political representation is not able to do it's own policy, because it has only limited control over the budget. Retired politicians may have higher influence on the present, than those who are newly elected. Also, when today's politicians approve some mandatory program, they undermine the future politicians' ability use fiscal policy to stabilize the economy, because they are forced to fulfil the liabilities, coming out of today's decisions. On the other hand, it's important to emphasize, that mandatory expenditure can be limited, but such change is connected with more difficult and also longer legislative process.<sup>1</sup>

The literature on accumulating of policy legacies is quite rich. Rose (1990) describes the legacy of newly elected governments as the accumulated commitments, made in the past by its predecessors. The reason is that most public spending programs continue indefinitely. Pierson (1998) claims, that accumulated policy legacies constrain the fiscal choices of newly elected governments and limit its ability to respond to emerging social and economic problems. Olson (1982) explains this problem with his theory of institutional sclerosis. Developed countries suffer from declining growth rates because of increasing influence of interest groups, which profit from redistribution. The longer the period of political stability, the greater the influence of these "distributional coalitions". Some authors studied the determinants of mandatory spending levels. According to Kappe (2008), over fifty factor, both quantitative and qualitative, have been already tested. The results differ a lot, however, the proportion of mandatory expenditure seems to be influenced mainly by the GDP growth rate and level, debt ratio, unemployment rate and population ageing.

On the other hand, only few authors tried to describe the problem of policy legacies quantitatively. In early 2010 American economists E. Steuerle and T. Roper presented their study on American fiscal policy, in which they constructed an index of fiscal democracy. According to their conclusions, in 2009 the total mandatory expenditure exceeded total revenue. It means that every dollar of revenue was committed before any decision-making process and

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<sup>#</sup> This paper is a part of the solution of IGA VSE F1/30/2010 project "The effects of tax and spending tools on macroeconomic and microeconomic efficiency".

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<sup>1</sup> It is also possible to overcome this process by some other legal action, e.g. the taxation of the state support to housing-purposes saving in the Czech Republic.

that discretionary expenditure could be financed only by deficit. Later on, W. Streeck and D. Mertens published their calculations of the Steuerle-Roeper index for Germany and concluded that the flexibility of German fiscal policy is even lower compared to the United States.

The aim of this article was to calculate the Steuerle-Roeper fiscal democracy index for the Czech Republic and assess the problem of fiscal democracy compared to Germany and the United States. The latter part contains a simple sensitivity analysis of possible determinants of the fiscal democracy index.

## **2 Fiscal democracy and fiscal flexibility**

### **2.1 Mandatory expenditure and related problems**

Mandatory expenditure can be defined as the part of government's expenditure, that is not voted on every year, i.e. is made automatically regardless of any action by the legislature. The beneficiaries of mandatory programs are legally entitled to receive a certain amount of money or service as long as this entitlement exists. This expenditure has to be made every year and the only way to reduce or eliminate them is to change the law.

Mandatory expenditure is related with many problems. It is politically difficult to reduce or eliminate it, even though its original purpose is not achieved any more. The groups of citizens who benefit from these programs, are usually strong enough to keep the law unchanged. Moreover, the construction of some programs immensely increases the costs over time. Pay-as-you-go pension systems are a typical example. Also, the number of individuals who benefit from these programs usually increases due to population ageing or due to an intended change in the behavior of potential participants, who want to make themselves eligible to participate. The increasing number of recipients limits the targeting of social transfers. As the payments flow to the people with the average income, transfers lose their ability to reduce real poverty. The retirement age does not reflect population ageing and an increase in life expectancy. Therefore, retirement pensioners receive the pensions for longer period of time. The costs of pension system increase, but the ratio of laborforce to the total population decreases. As most of the mandatory expenditure is directed to those who are not able to take care of themselves, public expenditure in general loses the ability to encourage future productivity and growth, because the share of expenditure flowing into education or research decreases.

The increase of the share of mandatory expenditure naturally means the decrease of the share of discretionary expenditure. As the tax ratio and the social and healthcare systems prevail, the governments have less and less resources to cover any other expenditure. Politicians are forced to choose whether to spend public resources on redistribution or on an active fiscal policy. In developed countries they usually solve this problem by permanent deficits. The debt increases and the problem of mandatory expenditure is getting worse due to debt service.

### **2.2 Fiscal democracy and flexibility of fiscal policy**

Mandatory expenditure is closely connected with fiscal democracy and flexibility of fiscal policy. By fiscal democracy we mean the freedom of current politicians to choose how to use public resources. Flexibility of fiscal policy is the ability of policymakers to use fiscal tools to stabilize the economy in case of shocks. Fiscal flexibility plays an important role in every economy, because it improves its resilience to shocks.

The excessive share of mandatory expenditure and lack of fiscal democracy means, that politicians can not freely decide about fiscal resources, because these decisions have been already made by their predecessors. Such situation results in insufficient democracy from the political point of view. Current political representation is not able to do its own policy, because it has only limited control over the budget. Retired politicians may have higher influence on the present, than those who are newly elected. Also, when today's politicians approve some

mandatory program, they undermine the future politicians' ability use fiscal policy to stabilize the economy, because they are forced to fulfil the liabilities, coming out of today's decisions. On the other hand, it's important to emphasize, that mandatory expenditure can be limited, but such change is connected with more difficult and also longer legislative process.

### 2.3 The Steuerle-Roeper index of fiscal democracy

The essence of the Steuerle-Roeper fiscal democracy index is very simple. The index relates the part of revenue that remains after mandatory expenditure, to the sum of total budgetary revenues. The formula is as follows:

$$I_{FD} = \left( 1 - \frac{MV}{\sum P} \right) \cdot 100, \quad (1)$$

where  $I_{FD}$  = Steuerle-Roeper index of fiscal democracy,  
 $MV$  = total mandatory expenditure (debt service and quasi-mandatory expenditure included),  
 $P$  = total budgetary revenue.

The reason for using the total revenues in denominator instead of total expenditure is straightforward. We need to quantify the extent of predetermination of fiscal resources and its influence on the flexibility of fiscal policy. Because the total expenditure includes the deficit, putting the expenditure to the denominator would bias the measure of fiscal democracy by including the new debt to its base. Highly indebted countries would have better (lower) values of the index, even though the deficits are definitely not a sign of healthy public finance. The advantages of the index are the simplicity of its construction, the possibility to analyse sufficiently long time series and its neutrality to the size of government. Also, in case we use consistent input data, the values of the index can be directly used for international comparison.

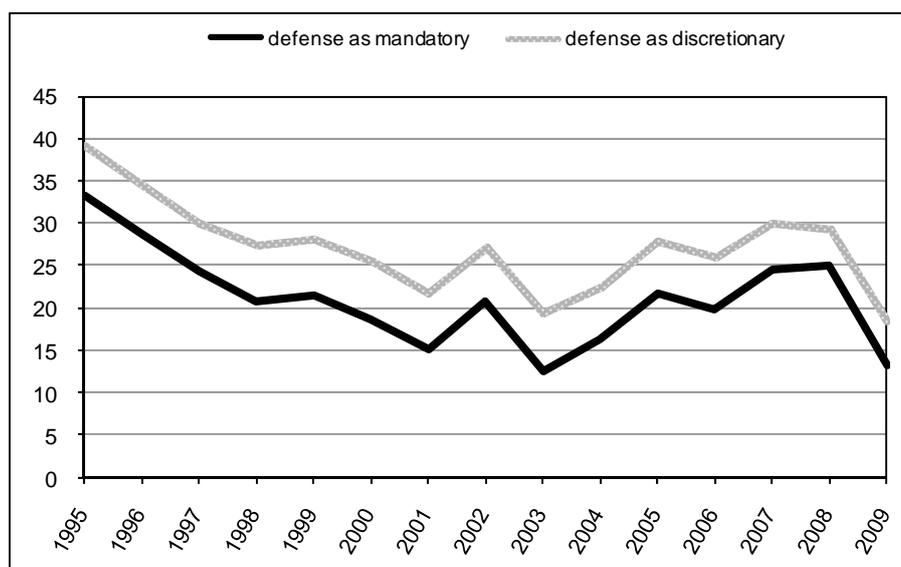
## 3 Fiscal flexibility in the Czech Republic

### 3.1 The Steuerle-Roeper index for the Czech Republic

The essential question is how to distinguish mandatory and discretionary expenditure. Mandatory expenditure are analysed separately because they're guaranteed by the law and therefore, any change is legally more difficult than in case of discretionary expenditure. However, we can find a lot of expenditure items that are discretionary from the legal point of view, but in fact even more difficult to change than many mandatory items. To calculate the fiscal democracy index we use the classification of expenditures by the Ministry of Finance.

The Steuerle-Roeper fiscal democracy index decreased by about 50% during last 15 years. Most of the decline happened in the mid- and late 1990's. We can observe a similar development in Germany and the United States in 1970's and early 1980's, which was a consequence of expanding welfare state. Between 2003 and 2007 the situation in the Czech Republic improved, thanks to high GDP growth, but in 2009 the index plunged again. Total mandatory expenditure used for the calculations of Steuerle-Roeper fiscal democracy index in Figure 1 do not include the expenditure of health insurers, so the index values are not internationally comparable.

**Fig. 1: Steuerle-Roeper index of fiscal democracy, Czech Republic 1995-2009**



Source: Ministry of Finance, Ministry of Defense, own calculations

### 3.2 International comparison

In order to make the index of fiscal democracy comparable, we need to adjust the data. In every country, the expenditure items guaranteed by the law differ, and in some countries mandatory expenditure do not exist at all. In Germany, all expenditures have to be approved by the parliament every year. There's no explicitly stated government's obligation to make some payments, i.e. there are no mandatory expenditure from the legal point of view, however, some groups of citizens have a guaranteed right to obtain certain benefits from the central government's budget. But this is not the only methodological problem. This is the list of the main complications and their effects on the fiscal democracy index:

- different source of covering social expenditures – using parafiscal funds instead of central government budget has a negative effect,
- covering healthcare expenditure from the budgets of health insurers has a negative effect,<sup>2</sup>
- taxation of social benefits decreases the index,
- redistributive components of tax system increase the index,
- private mandatory spending programs increase the index,<sup>3</sup>
- expenditures resulting from the country's historical development or other specific circumstances have a positive effect,<sup>4</sup>
- transferring social programs to municipal budgets increases the index,
- including defense expenditure in the total mandatory expenditure increases the index.<sup>5</sup>

<sup>2</sup> E.g. in the US, healthcare is mostly financed from Medicaid and Medicare programs, which belong under the federal budget. In the Czech Republic, health expenditure is mostly covered by insurers.

<sup>3</sup> E.g. paid sick leave paid by employers

<sup>4</sup> E.g. German federal budgetary expenditure included mandatory compensations to the victims of holocaust, or mandatory programs for the original inhabitants of Australia etc.

<sup>5</sup> It's difficult to decide, whether defense expenditure is mandatory or discretionary. For instance, in the US it should be considered as mandatory, because US is a superpower with global responsibility. On the other hand, in the Czech Republic, it may be reasonable to treat them as discretionary.

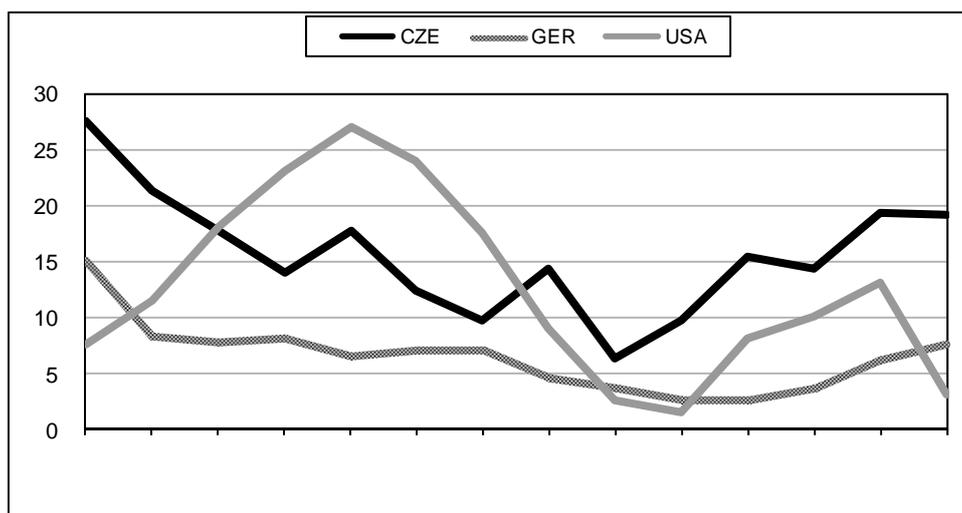
Some of these problems are easy to solve by a simple arithmetical operation, e.g. adding the expenditure of para-fiscal social funds to the total mandatory expenditure of central government's budget.<sup>6</sup> The other ones are not that easy to deal with and therefore cause some bias.

To compare the fiscal democracy index with Germany and the United States, we need to increase the mandatory outlays by healthcare expenditure. In the United States, these costs belong among mandatory expenditure from the federal budget. In Germany, healthcare costs are covered by a special para-fiscal fund, i.e. the total mandatory expenditure used for the calculation of fiscal democracy index was increased by the expenditure of this healthcare fund. Therefore we have to increase the mandatory expenditure of the Czech government budget by the expenditure of health insurers. On the other hand, we have to add their revenues, lowered by the state contribution to health insurance, to the total budgetary revenue.

Figure 2 compares the fiscal democracy index in case we consider defense expenditure as mandatory. Compared to Germany and the United States, the situation in the Czech Republic in 2008 was substantially better. The development was closer to Germany than to the United States. The decline of the 1990's was probably a consequence of economic slowdown and the growth of social expenditure. Later on, as the economy turned up, the situation became better.

The highest volatility of the fiscal democracy index was in the United States. It means that the index is more sensitive to its determinants. In the late 1990's its values grew very quickly. This was probably due to a strong economic growth during the second Clinton administration. At the beginning of new millennium the economy slowed down and the situation worsened. After a few-year growth the index values declined again and in 2009 it slumped deep into the negative territory. If we considered defense as discretionary, the highest fiscal democracy would be in the United States. This is because of much higher share of defense expenditure compared to Germany and the Czech Republic. The lowest values of the index were again in Germany.

**Fig. 2: Steuerle-Roeper index of fiscal democracy in the Czech Republic, Germany and United States 1995-2008, defense as non-discretionary**



Source: Streek, Mertens 2010, Ministry of Finance, Steuerle 2010, own calculations

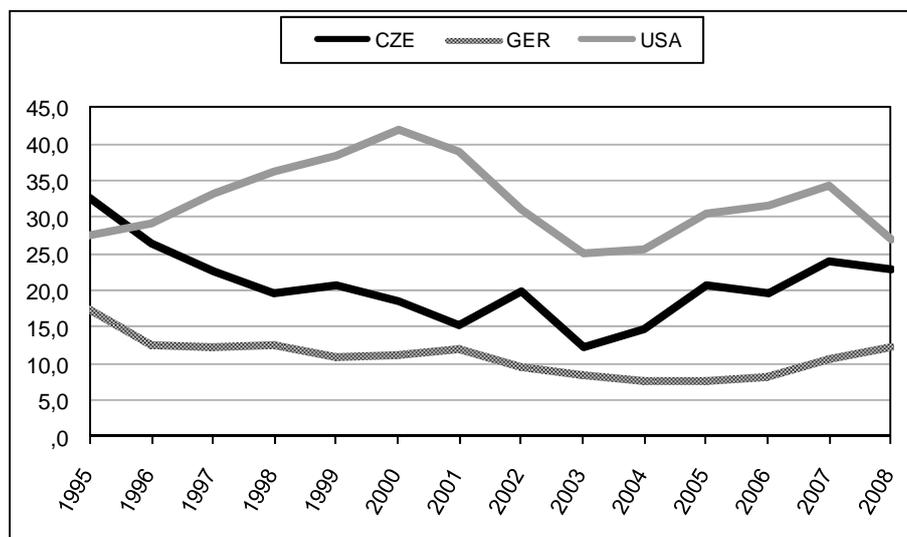
The highest volatility of the fiscal democracy index was in the United States. It means that the index is more sensitive to its determinants. In the late 1990's its values grew very quickly.

<sup>6</sup> E.g. in Germany, there are special para-fiscal funds for old-age pensions, healthcare, senior social care or unemployment insurers, but in the US these expenditures are covered by the federal budget.

This was probably due to a strong economic growth during the second Clinton administration. At the beginning of new millenium the economy slowed down and the situation worsened. After a few-year growth the index values declined again and in 2009 it slumped deep into the negative teritory. If we considered defense as discretionary, the highest fiscal democracy would be in the United States. This is because of much higher share of defense expenditure compared to Germany and the Czech Republic. The lowest values of the index were again in Germany.

If we considered defense as discretionary, the highest fiscal democracy would be in the United States. This is because of much higher share of defense expenditure compared to Germany and the Czech Republic. The lowest values of the index were again in Germany.

**Fig. 3: Steuerle-Roeper index of fiscal democracy in the Czech Republic, Germany and United States 1995-2008, defense as discretionary**



Source: Streek, Mertens 2010, Ministry of Finance, Steuerle 2010, own calculations

#### 4 Determinants of fiscal flexibility

The value of the Steuerle-Roeper index depends on total revenue and total mandatory spending. If we omit the changes in tax system and construction of social programs, the main “exogenous“ factors would probably be GDP growth, population ageing, unemployment rate and debt ratio. We would certainly find and test dozens of potential factors, but these four are probably the most important.

The effects are complicated and depend on many circumstances. For instance, the relationship between population ageing and healthcare expenditure may seem straightforward; as the average medicare costs per citizen are really an increasing function of his/her age. But in populations with higher life expectancy people live for more “healthy years“. It means that the period of higher medicare expenditure does not last longer, but only moves to higher age. Another example would be the long term social care expenditure. These expenditure depend not only on the population ageing, but also (maybe mainly) on the extent of informal family care, which is determined by the values and convetions of each society.

The unemployment in the Czech Republic was measured by the rate of registered unemployem. This measure is directly related to the total sum of unemployment benefits. The only problem is a change in methodology in 2004.

Government debt is a key factor of the debt service, which is the fastest growing component of mandatory expenditure. As a measure we use the debt ratio.

It's quite difficult to choose the right demographic variable. However, we need to include one in the model, because the expected age-related expenditure of the Czech government for 2010 exceeds 17% of GDP and in case of Germany over 23% of GDP. The share of old-age pensioners on the total population may seem suitable, but it is influenced by political decisions (the age of retirement), and we need to test the effect of population ageing as an exogenous factor. Therefore, the best variable would be the population aged 65 years and over to the total population.

**Tab. 1: Possible determinants of the fiscal democracy index in the Czech Republic (years 1995-2009)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Real GDP growth</b>	5,6	4,0	-0,8	-0,7	1,3	3,6	2,5	1,9	3,6	4,5	6,3	6,8	6,1	2,5	-4,2
<b>Unemployment rate – old methodology</b>	3,0	3,1	4,3	6,0	8,5	9,0	8,5	9,2	9,9	10,2					
<b>Unemployment rate – current methodology</b>										9,2	9,0	8,1	6,6	5,5	8,0
<b>Central government debt</b>	10,5	9,2	9,8	9,8	11,0	13,2	14,8	16,1	19,1	21,1	23,2	24,9	25,2	27,1	32,5
<b>Ratio of population aged 65 and over to the total population</b>	13,3	13,5	13,6	13,7	13,8	13,9	13,9	13,9	13,9	14,0	14,2	14,4	14,6	14,9	15,1

Source: Czech Statistical Office 2010, OECD Factbook 2009

Potential determinants of the index of fiscal democracy were tested by a classical regression model. The index of fiscal democracy was considered as a dependent variable and real GDP growth, registered unemployment, debt ratio and the ratio of population aged 65 and over to the total population as explanatory variables. Correlation coefficients between explanatory variables did not show any clear statistical dependence, so there's probably no multicollinearity bias. The model is

$$I_{FDt} = \beta_0 + \beta_1 \cdot GDP_t + \beta_2 \cdot UNEMPL_t + \beta_3 \cdot DEBT_t + \beta_4 \cdot OLD_t + u_t, \quad (2)$$

where  $I_{FDt}$  = Steuerle-Roeper index of fiscal democracy,  
 $GDP_t$  = real GDP growth,  
 $UNEMPL_t$  = rate of registered unemployment,  
 $DEBT_t$  = central government debt to GDP,  
 $OLD_t$  = population aged 65 and over to the total population.

It's natural to expect positive  $\beta_1$  and negative  $\beta_2$ ,  $\beta_3$  and  $\beta_4$ . Also, we can expect quite strong relationship between the GDP variable and the index of fiscal democracy, because the GDP

growth effects both budgetary revenue and expenditure. Thus the volatility of the fiscal democracy index is likely to be higher compared to the volatility of GDP. The effect of UNEMPL and DEBT variables seems to be logical, but it is not sure that the model would confirm it, because both unemployment benefits and debt service are relatively less important than other mandatory expenditure items, e.g. pensions. Population ageing is very likely to affect the sum of old-age pensions, but once again, one can not be sure about the model's result, as the OLD changes very slowly and the time series is quite short.

After running OLS we obtain the equation

$$I_{FDt} = -128,135 + 1,533GDP_t - 2,245UNEMPL_t - 1,143DEBT_t + 12,416OLD_t, \quad (3)$$

in case we consider defense as mandatory and

$$I_{FDt} = -83,122 + 1,451GDP_t - 2,121UNEMPL_t - 0,964DEBT_t + 9,287OLD_t, \quad (4)$$

if we consider them as discretionary. The quality of the estimation is not very satisfactory, as the  $R^2$  does not exceed 0.80 in any case. Only the variables GDP, UNEMPL and DEBT are statistically significant at the 10% level. According to the Durbin-Watson, we can't neither confirm nor reject autocorrelation. If we use the changes of explanatory variables instead of the values, we wouldn't be better off. However, the quality of the estimation is influenced by a small number of observations.

## 5 Conclusions

An increasing share of mandatory expenditure limits the flexibility of fiscal policy, i.e. it's efficiency as a stabilizing tool. The flexibility of fiscal policy can be quantified by the Steuerle-Roeper fiscal democracy index, which expresses fiscal flexibility as the part of revenue, that remains after the government pays out all the mandatory expenditure. The value of the index has decreased by more than a half in the Czech Republic during the last 15 years. After covering all it's obligations, Czech government is able to use only about 15% of it's revenue for an active fiscal policy. The main cause of the loss of fiscal democracy is an increase in the government's expenditure on old-age pensions and debt service. This development was quite similar to the development in Germany and the United states from the early 1970's to mid 80's.

From the three analyzed countries, the lowest fiscal democracy (regardless of methodology) is in Germany. If we treat the defense expenditure as discretionary, the best situation in 2008 was in the United States. If considered as mandatory, the highest fiscal democracy was in the Czech Republic. The last recession caused a sharp fall of the index in all three countries. In the United States, the index plunged below zero. The seriousness of the problem depends on how the situation will change after the recession. American fiscal policy was always flexible and almost every period of solid GDP growth since 1970 was accompanied by an increase of the fiscal democracy index, e.g. during the second Clinton administration in the late 90's. What seems more threatening is a decline of the index during the period of a strong GDP growth.

Potential determinants of the fiscal democracy index were tested by a regression model. As explanatory variables we chose real GDP growth, unemployment rate, central government debt as a percentage of GDP and the ratio of population aged 65 and over to the total population. The regression confirmed only the negative relationship of fiscal democracy index with unemployment rate.

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## ***The Effect of Mandatory Expenditure on Fiscal Flexibility***

### **Summary**

This paper deals with the development of mandatory expenditure and its effect on the flexibility of fiscal policy in the Czech Republic. Fiscal flexibility is measured by the Steuerle-Roeper index of fiscal democracy, which expresses the proportion of budgetary revenue that remains after covering mandatory expenditure, i.e. the proportion of resources available for discretionary spending. The lower the value of the index, the lower the flexibility of fiscal resources. A negative value indicates, that tax revenue is not sufficient to cover mandatory expenditure and the government has no resources available for discretionary spending. The analysis of Czech fiscal data from the period between 1995 and 2009 shows, that even though the share of mandatory expenditure increases, the flexibility of fiscal policy is still substantially better compared to Germany. The results of the comparison with the United States are ambiguous, depending on methodology. Some of the possible determinants of fiscal flexibility were tested by OLS regression. The analysis confirmed a negative relation of unemployment rate with the index of fiscal democracy. Panel regression also indicates a positive effect of GDP growth and a negative effect of the debt-to-GDP ratio. The effect of population ageing was, maybe surprisingly, not confirmed.

**Key words:** Mandatory expenditure; Fiscal policy; Index of fiscal democracy.

**JEL classification:** H61.



# Limitations of the Black-Scholes Model<sup>#</sup>

*Dean Teneng\**

## 1 Introduction

Black-Scholes model is considered the biggest success in financial theory both in terms of approach and applicability. Its biggest strength is the possibility of estimating market volatility of an underlying asset (generally as a function of price and time) without direct reference to specific investor characteristics like expected yield, risk aversion measures or utility functions [5]. Its second strongest strength aspect is self replicating strategy or hedging i.e. an explicit trading strategy in underlying assets and risk less bonds whose terminal payoff is equal to payoff of a derivative security at maturity. This means basically that an investor can continuously buy and sell derivatives by the strategy and never incurs loss. This replicating strategy therefore provides a kind of insurance against loss in the sense that if loss is incurred on one side of the portfolio at payoff, it is exactly compensated by a gain on the other side still at payoff (Dynamic hedging as it involves continuous trading). These kinds of trading strategies are automated usually. Their existence is assumed and challenged by arbitrage. Arbitrage equals risk free money. An arbitrage claim says that there should be no risk-free money i.e. as times goes on, money is only moved around and within the portfolio. No money is taken out or added to the portfolio - self financing. Claims are only replicated with stocks and bonds (securities) claims. Also, Black-Scholes models are built on Brownian motion which can be seen as continuous time limits of random walks. The model can also be derived from additive binomial tree models.

The next section begins with the mathematical definition of a Brownian motion. Then, it follows a derivation of the general Black-Scholes model and some discussions, before challenging the general assumptions of the Black-Scholes model and concluding with some remarks.

## 2 Brownian motion

Brownian motion is important because movements in stock prices which rise and fall due to unforeseen circumstances can be captured by it. Notable contributions to this theory were made by Bachelier (1910 PhD thesis "Theorie de la speculation"), Einstein (1905 paper using Brownian motion to estimate molecular sizes), Wiener [3] (i.e. Wiener process in 1920 with the proposal of continuous path Brownian motion) just to mention a few.

Generally, uncertainty in the economy is represented by a filtered probability space  $(\Omega, \mathcal{F}, \mathcal{F}_t, P)$  where  $\mathcal{F}_t$  is the filtration of information available at time  $t$  and  $P$  is the real probability measure.

Let  $(\Omega, \mathcal{F}, \mathcal{F}_t, P)$  be a filtered probability space. The process  $\{B(t, \omega), t \geq 0, \omega \in \Omega\}$  is called Brownian motion if [4]

- for each  $t$ ,  $B_t = B(t, \cdot)$  is a random variable
- for each  $\omega$ , the path  $B_t = B(t, \cdot)$  is continuous
- $B_t \sim N(0, \sqrt{t})$  where  $\sqrt{t}$  is the standard deviation
- If  $0 \leq t_1 < t_2 < \dots < t_n$ , then  $B_{t_1}, B_{t_2} - B_{t_1}, \dots, B_{t_n} - B_{t_{n-1}}$  are independent;  $B_{t_n} - B_{t_{n-1}} \sim N(0, \sqrt{t_n - t_{n-1}})$ ; i.e. the process has stationary and independent increments. The moment generating function of such a process is given by

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$$E\left(e^{\gamma B_t}\right) = \int_{-\infty}^{+\infty} \left( e^{\gamma x} \frac{1}{\sqrt{2\pi t}} e^{-\frac{x^2}{2t}} \right) dx = e^{t\left(\frac{\gamma^2}{2}\right)}. \quad (1)$$

### 3 Mathematical foundation of the Black-Scholes model

The simplest form of the Black-Scholes model involves only two assets: a riskless asset called a cash bond and a risky asset called a stock. The cash bond appreciates at a riskless rate of return  $r_t$  which can be time varying but non-random in this classical case. The price  $Z_t$  of this riskless cash bond at time  $t$  is assumed to satisfy the differential equation

$$\frac{dZ_t}{dt} = r_t Z_t. \quad (2)$$

with unique solution

$$Z_t = Z_0 \left( e^{\int_0^t (r_s ds)} \right). \quad (3)$$

where  $Z_0$  is the price of the riskless asset at time  $t=0$ .

Let  $S$  be the price of the risky asset. After a short time interval of time  $dt$ , the asset price changes by  $dS$  to  $S+dS$ . Rather than measuring the absolute change  $\Delta S$ , we measure the return on the risky asset defined by  $dS/S$ , i.e. returns measure a change in the risky asset price as a proportion of the original risky asset price. Since this is a risky asset, we assume the risk can be generated from both predictable and unpredictable sources/circumstances. That from the predictable circumstances is assumed to be almost equal to the risk free rate of the bank, i.e. the rate of appreciation of the riskless cash bond. We denote this  $\mu$  also called the drift which measures the average growth of the asset price. The second contribution that comes from unpredictable factors is denoted  $\sigma$  - the volatility, which is a measure of the standard deviation of the returns. It is generally accepted to be of form  $\sigma dB$  where  $B$  is standard Brownian motion and  $dB$  is its stochastic differential. The parameters this  $\mu$  and  $\sigma$  can always be estimated from historical data. Bringing the two components together gives us the equation

$$\frac{dS}{S} = \mu dt + \sigma dB. \quad (4)$$

This equation describes the evolution of the risky asset price and is called Black-Scholes market model. If  $\sigma=0$ , then  $dS/S = \mu dt$  and  $S_t = S_0 e^{\mu t}$  which is a purely deterministic asset price.

The stochastic differential equation 4 can be solved for  $S_t$  using Ito's formula

$$F(B_t, t) = F_t dt + F_{B_t} dB_t + \frac{1}{2} F_{B_t B_t} d(< m >). \quad (5)$$

For example, let us show that

$$S_t = S_0 \left( e^{\left( \sigma B_t - \frac{t}{2} \sigma^2 + t \mu_s \right)} \right). \quad (6)$$

is a solution to 4. Define

$$F(B_t, t) = S_0 \left( e^{\left( \sigma B_t - \frac{t}{2} \sigma^2 + t \mu_s \right)} \right). \quad (7)$$

Then

$$F_t = \left( \mu_s - \frac{\sigma^2}{2} \right) F(B_t, t); F_{B_t} = \sigma F(B_t, t); F_{B_t B_t} = \sigma^2 F(B_t, t) \quad (8)$$

and substituting these in to the Black-Scholes formula gives

$$F(B_t, t) = \left( \mu_s - \frac{\sigma^2}{2} \right) F(B_t, t) dt + \sigma F(B_t, t) dB_t + \left( \frac{\sigma^2}{2} \right) F(B_t, t) d\langle m \rangle \quad (9)$$

Now,  $d\langle m \rangle = dt$  by approximation leading us to

$$dS_t = S_t (\mu_s dt + \sigma dB_t). \quad (10)$$

Same equation as equation 6.

#### 4 Limitations of the Black-Scholes model

Despite their popularity and wide spread use, the model is built on some non-real life assumptions about the market. These assumptions are stated and challenged below.

- **Volatility – a measure of how much a stock can be expected to move in the near-term – is a constant over time.** While volatility can be relatively constant in very short term, it is never constant in longer term. Large price changes tend to be followed by large price changes, and vice versa leading to a property called volatility clustering. But measures of volatilities are negatively correlated with asset price returns (leverage effect), while trading volumes or the number of trades are positively correlated, hence volatility cannot be a constant over time [2]. Some advanced option valuation models substitute Black-Scholes' constant volatility with stochastic process generated estimates.
- **People cannot consistently predict the direction of the market or an individual stock.** It assumes stocks move in a manner referred to as a random walk. Random walk means that at any given moment in time, the price of the underlying stock can go up or down with the same probability. This is usually not true as stock prices are determined by many economic factors that cannot be assigned the same probability in the way they will affect the movement of stock prices. Also, the price of a stock in time t+1 is independent from the price in time t (martingale property of Brownian motion). Furthermore, there may not exist a single source of uncertainty driving say two assets even if one is a derivative of the other as mathematicians often state in the martingale representation theorem.
- **Log normally distributed returns on the underlying stock are normally distributed.** This assumption is reasonable in the real world, though not fitting observed financial data accurately. Asset returns have a finite variance and semi-heavy tails contrary to stable distributions like log normal with infinite variance and heavy tails (Clark, 1973). As the time scale over which return of assets are calculated increases, the distribution of asset prices look more like the normal-distribution with heavy tails despite the fact that autocorrelation of asset prices are often insignificant [1].
- **Interest rates are constant and known, just same like with the volatility.** It uses the risk-free rate to represent this constant and known rate. In the real world, there is no such thing as a risk-free rate, but it is possible to use the U.S. Government Treasury Bills 30-day rate since the U. S. government is deemed to be credible enough. However, these treasury rates can change in times of increased volatility
- **The underlying stock does not pay dividends during the option's life.** In the real world, most companies pay dividends to their share holders. The basic Black-Scholes

model was later adjusted for dividends, so there is a workaround for this. This assumption relates to the basic Black-Scholes formula. A common way of adjusting the Black-Scholes model for dividends is to subtract the discounted value of a future dividend from the stock price.

- **No commissions and transaction costs**, i.e. the model assumes that there are no fees for buying and selling options and stocks and no barriers to trading. Usually not true as stock brokers charge rates based on spreads and other criteria.
- **Assumes European-style options which can only be exercised on the expiration date.** American-style options can be exercised at any time during the life of the option, making American options more valuable due to their greater flexibility.
- **Markets are perfectly liquid and it is possible to purchase or sell any amount of stock or options or their fractions at any given time.** This again is not plausible as investors are limited by the amount of money they can invest, policies of their companies and by the wish of sellers to sell. It may not be possible to sell fractions of options as well.

Since most of these limitations relate to fundamental aspects of the market, it is necessary to come up with models that will take into consideration some of the assumptions not addressed by Black-Scholes models. Many models have been proposed over time, all attempting to mimic the characteristics of the market fully. Every aspect of the market cannot be considered in any given model, as every factor affecting the price of a financial security cannot be captured mathematically. We can only attempt to capture most of the aspects, which is what is proposed by Levy models and other advanced models.

## 5 Conclusions

In this paper, we have reviewed the limitations of the Black-Scholes model in light of financial return data characteristics, market behavior and investor considerations. Brownian motion on which the model is built has also been considered in light of its limitations in modeling the log returns of financial data. This paper did not explain myriad of Brownian motion properties like scaling, memoryless etc as well as consideration for time change properties.

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# *Limitations of the Black-Scholes Model*

## **Summary**

This paper illustrates and challenges the general limitations of the Black-Scholes' model based on observe return data characteristics and investor/market considerations.

**Key words:** Black-Scholes; Brownian motion; Volatility.

**JEL classification:** G10, G12, G17.



# Modern Trends of Realizing the Innovational Activity in Industrial Enterprises

*Yevgeniya Andrievskaja\**

## 1 Introduction

It is extremely important to study the interaction of science and the subjects of housekeeping nowadays, because there is a clear need for interaction and information exchange between science and innovation on the one hand, and between the persons and organizations, which are participating in the introduction of new technologies on the other hand. Today, the realization of innovative potential most effectively done through the action of various innovative structures, such as Technopolis, science and technology parks, innovative businesses and other.

Issues of innovative development of enterprises are studied by modern Ukrainian and foreign scientists, among which are: I. Ansoff, P. Drucker, M. Porter, J. Schumpeter, V. Alexandrov, A. Alimov, B. Santo, E. Galushko, A. Galchinskiy, V. Geyets, A. Demin, N. Goncharova, A. Grinev, V. Grineva, P. Zavlin, G. Dobrov, G. Zhitsa, S. Ilyashenko, Eg. Lapin, A. Kuzmin, I. Lukinov, V. Medinskiy, L. Melnik, Y. Morozov, I. Otenko, A. Trofilova, P. Pereriv, V. Soloviev, R. Fathutdinov, N. Chukhrai, A. Yakovlev, Jiri Dvorak, Pavel Svejda and other scientists.

## 2 The essence of innovation

Nowadays, the development of society is defined largely by the presence of innovative processes and their efficiency. These processes are responsible for the transition of research and development into new products, services and technologies.

While study this problem, we would have the opportunity to hear the views of various scholars about the prospects for the development of innovative activities in countries with economies in transition, including Ukraine.

So, B. Garbar, after close studied of the issue, said: "The mechanism of creation and dissemination of innovations with significant national identity has three general components: a system of state support for basic and exploratory research, various forms and sources of funding and indirect stimulation studies, maximum stimulation of small innovative enterprises and their maintaining" [1, p.228].

B. Garbar explor the main components of economic support for the innovative development of industrial enterprises. He stated that typically the development of innovation in industry is influenced by government policy to provide benefits; but also he noticed that, this policy stands particularly effective in times of economic upswings. In this case, the most successful institutional forms, for which the solution of large-scale scientific - technical problems can be possible, serve the university and industrial research centers, which should facilitate the creation of the state [1, p.228].

The same views on the implementation of innovative strategy development in the EU and the U.S. adhere to another scientist - M. Dolishniy. Scientist suggests: "One of the main areas of work in the regions should be the development of cooperation in the triangle of local authorities - the business - the science, the creation of new institutional structures responsible for innovation - technology parks, innovation centers, business - incubators and other transfer and infrastructure firms that contribute to introduction of new techniques and technologies in

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production" [2, p. 96].

M. Dolishniy after analyzing the development of innovative processes in these countries argued that the development of high-tech industries is becoming a real integration with enterprises which have the potential and use the latest innovative technology combined with the modern management. He identified clusters as a promising model of such a structure. So, clusters become a catalyst for the innovative regional development. It is evident the fact that in a developed country like the U.S., there are about 380 clusters, which are engaged in both service provision and cover the scope of the processing industry. Almost 57% of employable Americans are engaged in clusters, about 61% of industrial products are produced in them.

In our view, another important aspect of the investigations of M. Dolishniy was to study the interaction of the science and business entities. This matter is extremely urgent, as is obvious need for collaboration and information exchange between science and innovation on the one hand, and the persons and organizations that are related to the introduction of new technologies on the other. It is particularly important for small and medium enterprises to resolve this issue. This can be explained by the fact that all developed countries, namely their small businesses, are closer to the scientific and technological progress and are considered to be an attractive investment target. Having examined the experiences of those same successful countries - the U.S. and EU, it can be seen that 50% of innovative products are created specifically by small businesses. It is an important fact that the creation of such a volume of products by these businesses consumes no more than 5 - 10% of funds spent on research and development.

Small and medium-sized businesses quickly react to changes and innovations; they are more dynamic than large enterprises. That's why they are able to provide the accelerated modernization and restructuring. This will come in handy after creating of regional administrations, advisory centers to look after the transfer of innovative technologies [2, p. 97].

In support of the expressed views, it seems appropriate to quote another Ukrainian scientist Stadnytsky: "World economic experience demonstrates the high performance clusters, which are territorial association of related businesses within a region. The cluster approach can improve the competitiveness of regional economies and their attractiveness for foreign investment "[3, p. 251].

We examined the latest forming, which are designed to combine scientific and industrial potential. So, we are interested in studying not only scientists from Eastern Europe, but East Asian countries, those that have a transitional economy. Thus, Vietnamese scholar Nguyen Thi Khanh, adheres to the following terms: "The latest scientific and technological forms are rapidly developing throughout the world. This was especially reasorable in science and technology incubators: in the early 90-ies of XX century. They numbered about 200 items there are, and now more than 3000 items [4, p. 73].

Scholar argues that the zone of high technology can be called the most effective form of cooperation between science and industry. As proof, he cites the example of Germany, where they number about 200, and the U.S., where they are more than 400 [4, p. 74].

### **3 Implementation of innovative capacity**

In fact, in the modern world, the realization of the innovative potential most effectively done through the impact of various innovative structures, such as Technopolis, scientific - technological parks, innovation - technology centers, and innovative business - incubators, small and medium-sized innovative companies, and others.

The main purpose of creating such innovative structures is the combination of scientific and educational potential of a particular region and the material - technical basis of industry, ensuring the alignment of innovation and scientific development of different regions, reducing

the duration of the innovation cycle, stimulating small business innovation.

Thus, we agree with the views of these scholars, namely the promotion of small innovative businesses is very important. This is explained by the fact that it develops on concessional terms in the innovation business - incubators and technology parks, allows scientists to assign the income subject to the implementation of research results.

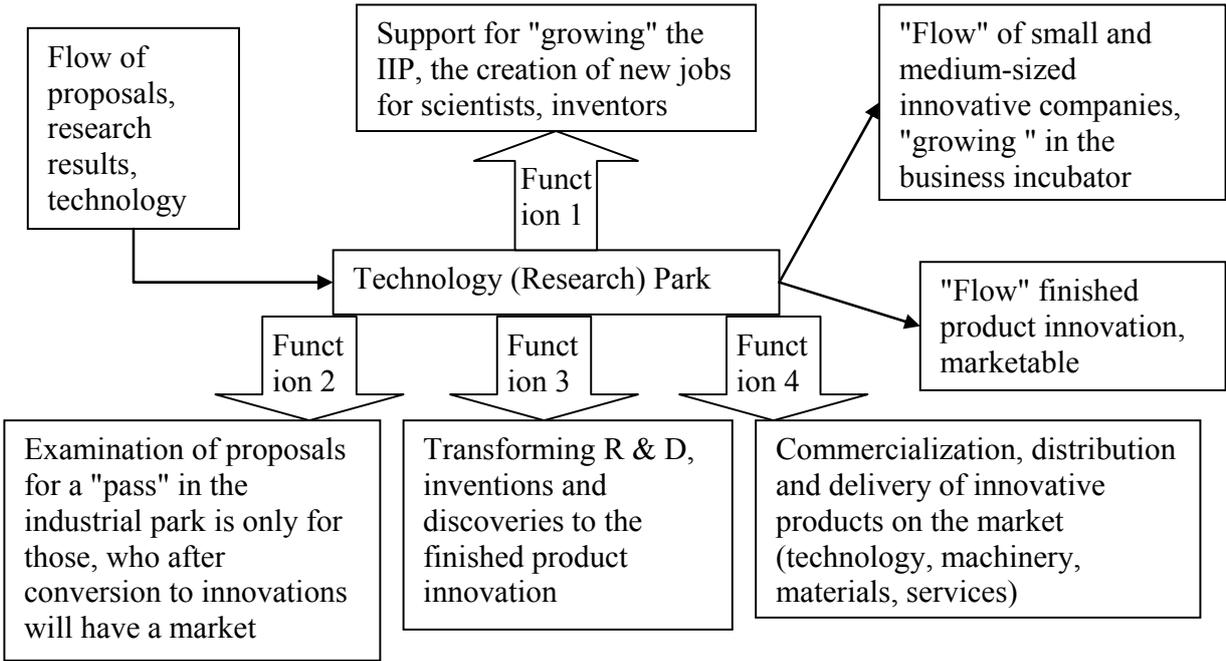
Science and technology parks combine technology, research and manufacturing facilities and provide a rapid introduction of the results of prospecting and scientific research and invention in business and industry.

The main task of technology parks is to promote the microwave technology. A large number of such structures have successfully operated in the modern world in developed countries.

Ukrainian law states: "Technology Park (Technopark) - a legal person or a group of legal entities (hereinafter referred to members of Technology Park), acting in accordance with the contract on joint activity without creating a legal entity and no union contributions in order to create the institutional framework of projects and technology parks in industrial introduction of high technology development, high technology and software for industrial production globally competitive products "[5].

You can deal with the main features inherent in techno-parks (Fig. 1) [6, pp. 39]:

**Fig. 1: The main function of the inherent techno-parks**



Technopark scientists are interested by the fact that it becomes possible commercialization of future research. Scientists working in the industrial park have the opportunity to work part-time without interrupting the educational and scientific process. These scientists have the opportunity to enjoy a useful property, which is on the balance of Technopark, namely: use of laboratory equipment, library, information available to the industrial park, as scientists are able to provide jobs to their gifted counterparts. Working in Technopark, a scientist raises your own level of knowledge, since working with a talented team that selects manual Technopark. Another important advantage for researchers is the availability of opportunities to sell licenses for using the know-how the selected firm - party Technopark.

On the other hand, studying of foreign experience, one can observe that industrial parks have a

positive impact on regional development through industrial restructuring through the using of new technologies.

In our opinion, based on the analysis of opinions of various scholars, more accurately the essence of the industrial park reflects the following definition, which is given in the Regulations of the University Technology Park, and developed by the Association "Technopark" Russia and is the regulatory document: "Technopark - an organization that is a legal entity or, by law, carries out on behalf of the rights of legal entity, has a close relationship with one or more institutions of higher learning and / or research centers, industry, regional and local authorities and administration and exercise on the territory under its jurisdiction, creating a modern innovative environment to support innovative entrepreneurship through the creation of material - technical, socio - cultural, service, financial and other bases for the effective formation, development, support and training to independent small and medium-sized innovative enterprises, commercialization of scientific knowledge, inventions, know - how and high technologies and transfer them to the market and the country". [6, p. 72].

We can observe and more succinct definition: "Science (Technology) Park - scientific - production (usually territorial) complex, including the Research Centre and the surrounding compact industrial base, which under the lease are located, small high-tech firms" [7, with. 256].

As we can see, in this definition it is noted that in the industrial park is "fitting compact production area, but the experience of technology parks in Ukraine shows that they include facilities located throughout Ukraine. In today's world this problem is solved by using modern means of telecommunications, with the help of information technology, the Internet.

Consider the following type of innovative structures, namely the innovation business - incubator, which represents one or more houses that are rented for a certain period recreated small businesses to commercialize the results of their scientific research and transfer of research to the market. Interest of enterprises stems explained to the fact that the rental period house in the business - incubator them on preferential terms available information, financial, material - technical resources, consulting and services. Innovative feature of an incubator is that it can function autonomously or in a technology park or, more generally, virtually.

The next scientific - industrial complex, which we wish to consider, is Technopolis. It has a developed infrastructure in the service sector, as well as a residential complex that can hold a separate area of the city. In its place leading economy research centers and universities are involved in the development of new technologies and companies that use these technologies. Technopolis can reach in size of the region and then it acquires the status of scientific - industrial agglomeration area or development of new and high technology or science in the region.

Recently we can observe a mentioned tendency when innovative structures provide organizational, information, consulting firms and support innovative businesses that have already been formed and consolidated their position in the market.

Also, you can see from the world of practice that technopark structures created primarily for the purpose of scientific - technological developments and discoveries in the field of innovation. The need for their creation facilitated by the availability of resource intensive industries, high environmental requirements for these industries, demanding criteria for selection of experts and scientists who can effectively apply their knowledge and experience.

For industries based on biotechnology, microelectronics, information infrastructure, it is more important their proximity to consumers, than to the suppliers or sources of raw materials, so these high-tech production are located near research centers.

We list the main components of the industrial park: right area with houses, Scientific - Research

Center staff; innovative business - incubator, engineering centers, enterprises and firms, administrative - administrative structure, the establishment of infrastructure, serving entrepreneurs, scientists, engineers, to ensure accelerated implementation business - plans and developments. That is, Technopark is working in the field of so-called umbrella bodies.

To ensure the effective functioning of innovation systems is necessary to create the development of innovative, consumer and market infrastructure, which should include: venture capital (innovation) funds, business - centers, innovative exchange of information - computer centers, office of patent protection for intellectual property offices evaluation of innovative projects, firm specializing in advertising, marketing, leasing and auditing, consulting, certification, etc. In such way, Technopark, author of the idea, which gave to the business plan and received support from Technopark becomes his client. The contract will sign with this client for 2 - 3 years. This client has a "cell" technology park. It is a module in which it operates. So, he has the opportunity to use all services of Technopark on concessional terms and to consult with any experts in the territory of industrial park. It is no need to look for them and pick the best. In this case, the client is given the credit, which may be granted by the bank or company concerned, to pay for services.

Now, there are more than fifty technopark structures. In France there are about 30; in the UK for more than 40 in China more than 50 in Japan - about 50 in the U.S. - more than 140 [8, p.48]. Countries in Central and Eastern Europe, operating more than 100 industrial parks and science parks, our neighbor - Russia has about 60.

The number of innovative companies in the parks and science parks in the whole world was more than 11 thousand in the nineties, while the number of employed professionals exceeded 430 thousand people.

As we know from history, the first technology park in the world has been and remains successful today Technopark "Silicon Valley" in the U.S., which was created in the 50-ies for the commercialization of scientists from Stanford University and to the development of microelectronics through interaction with leading enterprises in the industry «Hewlett - Packard». This industrial park location differs significantly stand density of high-tech companies involved in the development of computers and their components (with particular emphasis given to the microprocessor), computer software, issues of mobile communications, biotechnology, etc. The concentration of leading universities and major cities in close proximity to each other, to funding emerging companies, and even contributing to the climate of the Mediterranean type formed the basis for the emergence and development of "Silicon Valley".

In 2006 Silicon Valley was the third largest technopark among U.S. technology centers (the number of jobs in high technology was 225,300 persons). The first and second places were: New York and Washington. But according to other reports in the Bay Area San Francisco employs more than 286,000 professionals of the IT industry, which suggests that the Silicon Valley United States ranks first among the largest technology centers in the U.S.

In Europe, industrial parks began its activity in the early 70 - ies. Among the first can be identified Research Park University Heriot - Watt in Edinburgh, Sophia Anti Polis "in Nice, a research technology park Rinitis College, Cambridge in the UK, ZIRST in Grenoble in France and Louvain - la - Neuve in Belgium.

The most effective development of Finland is determined by the development of industrial parks. It began in 1981. In Finland 2000, there were about 17 parks [8, p. 48].

As we can observe, the development of a globalized world has become a trend in which the European industrial parks cooperate with multinational companies, industrial parks, joint efforts of several countries. Examples of such companies can be: opened by Microsoft and ATT branches in Cambridge Technopark; a Ukrainian - Chinese industrial park; industrial parks; joint

efforts of Russia, China and India, with supporting from the EU Commission in the European Union to implement a program PAKSIS intended to create a network of innovation centers and technology parks.

The Commission has on 9 February 2011 adopted a Green Paper 'From Challenges to Opportunities: Towards a Common Strategic Framework for EU research and innovation funding' (COM(2011)48). This Green Paper launches a public consultation on the key issues to be taken into account for future EU research and innovation funding programmes. The outcome of the consultation will subsequently feed into the preparation of the Commission's formal proposals for these programmes, which are due to be adopted before the end of 2011.

We could see attempts to create innovative systems 10 and even more years ago, but these attempts were haphazard to the 1999 Law of Ukraine "On special regime of investment and innovative activity of technological parks" [5], in which the government has envisaged promotion of such structures.

For example, this law was established a special regime of the three parks, namely: "Institute of Electric. EA Paton, "Semiconductor technologies and materials, optoelectronics and sensor technology" (Kiev), "Institute for Single Crystals (Kharkov), as well as their participants, special and subsidiaries.

When were made changes to this law, in Ukraine in 2002 was created 5 other parks: "Uglemash" (Donetsk), industrial parks of Kiev Institute of Engineering Thermophysics", "Intelligent Information Technologies, Ukrinfoteh", "Perspective" (National Technical University "KPI").

In the first five years of industrial parks, only four of them showed real results, namely: "Institute of Electric. EA Paton, "Semiconductor technologies and materials, optoelectronics and sensor technology" (Kiev), "Institute for Single Crystals (Kharkov) and Uglemash. But even during this period all technology parks have been implemented innovative production of more than 3.8 billion USD, received benefits amounting to 387 million USD. It is listed in the state budget and trust funds more than 252 million UAH, and it was created more than 2,2 thousand jobs for this industry.

We can see that the greatest contribution to the receipt of these results was made by the two technology parks: "Institute of Electric. EA Paton" and "Institute for Single Crystals".

Unfortunately, the industrial parks in Ukraine are not yet the same source of innovation. Although, according to the Law of Ukraine on May 11, 2004 № 1702-IV, were recorded seven new parks, namely: "Agro industrial park" (Kiev), "Eco – Ukraine" (Donetsk), "Scientific and educational equipment" (Sumy), "Textiles" (Kherson), "Resources of Donbass" (Donetsk), "Ukrainian Centre for microbiological synthesis and advanced technologies" (UMBITSENT) (Odessa), "Sycamores" (Lviv district the Sycamores). Their activities had been suspended in connection with the adoption of the Law of Ukraine "On amending the Law of Ukraine" On State Budget of Ukraine for 2005 and some other legislative acts of Ukraine, which canceled benefits previously provided by Technopark. But January 12, 2006, the Law of Ukraine № 3333 - IV "On special regime of innovation and technology parks" [9], which has provided technologies and many hope for a renaissance in connection with the provision of public financial support.

We can also observe that most of the parks in Ukraine does not contribute to the creation of innovative structures such as innovation, though this feature parks are very important. And, in general, the creation of other innovative structures, including business incubators, has recently slowed down due to lack of appropriate legislative framework.

We consider that a long time in Ukraine there was no comprehensive program of innovative

development designed for the long-term. Perspective it becomes clear that an in-depth and professional analysis of the choice of instrument to stimulate innovation in our country was extremely difficult and almost impossible and all the obtained results are useful to challenge and verification. Ukrainian scientists Pashuta M. and L. Fedulova note that "despite the public interest in the phenomenon of the most innovative models of development in Ukraine. it is currently formed by science-based innovation policy that takes into account international experience gained by the formation of innovation systems and has been adapted to Ukrainian reality "[10, p. 46].

#### 4 Conclusions

After analyzing the dynamics of the positive changes that have occurred in recent years in Ukraine in the sphere of innovation activity, we conclude that the transition of enterprises to innovative form of development is very slow and does not provide the expected quality of results. We have come to the conclusion that: in the twentieth century, despite the scale of individual innovations, the possibility of their practical application, impact on economic or social development in a certain period of time. The greater attention must be given to the creation of a fundamentally new segment of the economy, namely the innovation system, which activates the ever-increasing flow of innovations.

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## ***Modern Trends of Realizing the Innovational Activity in Industrial Enterprises***

### **Summary**

This article examines modern forms of business organization and proves the effectiveness of the work that takes place in high-technology zones. It also provides proof for the benefit of realizing innovational potential using various innovational structures such as technology towns, science parks, innovational technology centers, innovational business incubators, and others. Furthermore, the article recommends the construction of such structures with the goal of integrating the scientific and educational potential of any region with a material and technical industrial base, lessening the duration of the innovation cycle and stimulating small innovational business.

**Key words:** Innovation potential; Innovational activity; Innovational structure; Business incubator.

**JEL classification:** G30.

# Determinants of Corporate Governance: A Three-Dimensional Approach<sup>#</sup>

*Anamaria Avadanei\**

## 1 Introduction

Governance describes the structures and collective decision-related processes. In modern society, governance is seen as an interrelated mechanism of government institutions, civil society and economic forces.

Corporate governance is the system based on which corporations are directed and controlled by the distribution of rights and obligations between participants, setting goals, the instruments used to achieve them monitoring performance level

In the first part of this paper we proposed a review of the literature in order to outline the relation between corporation and corporate governance. Defining the concepts we provide a detailed framework for the elements of the corporate governance theories studied in the second section

As a motivation of the title, in the third and fourth parts we pointed out differences and similarities of corporate governance models in three regions: the United States of America (USA), Europe and Latin America.

To conclude, this three-dimensional approach has the role to create a problem-solution vision determined by each corporate governance model, the national particularities and the market perspective.

## 2 Literature review: Corporation and corporate governance- “a true bond”

The high degree of communications development and technological innovation has revolutionized transfers between corporations, influencing the implementation of decisions orientated to an increasing virtual reality. Position and corporate perspective changes substantially, from the real economy to artificial engineering so that in recent years, diverse opinions point to an "irrational exuberance" of creating value within companies.

The central element defining the systemic nature of failures is reflected in the gradual evolution of modern corporatism. Considered compatible with capitalism because it can correct defects recorded in the internal concentration and the level of competition, corporatism is a reaction to the problems of modern society. Corporatism uses the incorporation of divergent interests of manufacturers to control them in order to maintain power.

Initially, corporate governance relied on legal issues, structures, individual skills and independence (Shleifer and Vishny, 1997). The stage of development was completed by the commitment of stakeholders and the emergence of new models of accountability. As current corporate governance features, we distinguish partnerships and complex transactions that require monitoring and performance measurement; the entity is economic value creating, councils must consider and act in accordance with participants' interests and skills must be above technique and previous experience in order to increase responsiveness in relation to new situations and

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challenges (Claessens, 2003).

Corporate governance can be defined following two directions. In terms of behavior it studies efficiency, growth, financial structure, treatment of shareholders, corporate performance-summarizing its current behavior. In light of the regulatory framework, reporting is done according to the rules under which firms operate (the sources of the legal judicial system, financial markets or labor market) (Colley-Doyle-Logan-Stettinius, 2005).

Corporate governance deals with how financial providers of corporations ensure themselves a certain return on investment and aims at solving collective action-related problems of different investors, namely the reconciliation of interest conflicts between all categories of participants (Post-Preston-Sachs, 2002).

Corporate governance defines a set of mechanisms based on which firms operate when ownership is separated from management. As a successful socio-economic institution of modern society, the corporation involves a control mechanism, organized in various ways.

Differentiation is carried out according to existing practice, which sometimes defies harmonizing impulses generated by economic globalization. Motivation concerns the extent to which corporate governance affects the firm's organizational structure influencing the decisions linked to external factors (Barker, 2010).

From another perspective, corporate governance is an important factor in determining economic and political outcomes, including the economic growth and efficiency, innovation capacity, level of competition and financial openness.

The premises of corporate governance growing importance are the followings:

- Cyclical financial crises-the manifestation of structural weaknesses of internal origin;
- Enhancing and repositioning the role of investment process;
- Technological development, liberalization, structural reforms which redefine the local and global landscape. Institutional arrangements of corporate governance are being replaced by new ones in order to reduce inconsistencies and gaps caused by progress.
- Increasing of firm size, position, financial intermediaries and institutional investors, and the conscription of capital;
- The allocation of capital, as a complex process associated with financial market liberalization, deregulation and price competition increase market risk exposure;
- The international financial integration (increased trade and investment flows) has led to controversy on corporate governance due to national characteristics (Kirkpatrick, 2009).

Corporate governance can be regarded as a three-dimensional relationship: between shareholders, creditors and corporations, between financial markets, institutions and corporations, or between employees and corporations. Since the 1990s, governance reform has evolved along with increased efficiency and earnings, but at a slower pace. The substance of the reform is reflected in the current performance of the management-fulfilling responsibilities to shareholders and the public environment (Busta, 2008).

The present crisis appeared from the inability of delivering the expected results of corporate governance, as a consequence of poor implementation of an efficient strategy or folly and unauthorized management implementation. The common elements present in cases of failure include internal transactions without coverage, fraudulent accounting and excessive financial leverage, aggressive trading positions on volatile markets or inefficient investment decisions (Millstein-MacAvoy, 2003).

Corporate governance has the role to maintain a balance between economic and social

objectives, between the individual and common ones. In order to achieve this goal, its framework should encourage the efficient use of resources and ensure accountability. The aim is to align the overall interests of individuals, corporations and society.

A real problem of corporate governance is the current low efficiency of its control mechanisms. The Board of Directors is the most important internal control mechanism within the group, but its effectiveness in protecting shareholders' interests may be distorted when a dominant management (the case of the UK and USA). Separation of responsibilities leads to independence, namely in defining and implementing corporate strategy. A good working environment, solid-built policies, ethical corporate culture is one of the key elements of the efficient functioning of Directors Board. Establishing a balanced financial policy stimulus has been a weakness of corporate governance, increasing financial compensation not being correlated with the performance level (John-Kedia, 2006).

From the outside, market capital control constitutes an effective mechanism for disciplining managers. Hostile takeovers are examples of poor management; skilled managers will exercise greater control over a larger array of assets generating increasing yields, but this process not only has a disciplinary nature, but allows exploiting of a dimension and a field.

Another external mechanism addresses the level of involvement of foreign institutional investors in corporate governance decisions and the impact of intervention on the performance of companies in which they invest. However, the nature of investor activism differs depending on the specific shareholder rights in each country. External regulation and legal system is another external control mechanism at corporate governance level, with clearly defined obligations for management and executives, which discourages individual interests and commitments that disadvantage minorities (Barker, 2010).

These corporate governance control mechanisms are designed to correct deficiencies that occur, but become ineffective when there is the phenomenon of overvaluation. The Board of Directors takes part in this case by accepting generous management compensation when the value is kept artificially high. Fraudulent defending of an excessive market capitalization, leads in fact, to the collapse of some financial institutions well positioned.

Reshaping corporate governance framework requires an analysis of significant items such as:

- Criterion cost (direct and indirect). The financial burden assumed by implementing new regulations can have negative, long-lasting effects and can affect a large network of partner institutions;
- Independent research on the functionality of Directors Board-merger risk-monitoring functions, changing the governance structure, the application of unwise decisions;
- The functions, responsibilities, and remuneration criteria must be clearly defined;
- Improving corporate governance control mechanisms;
- The need for uniform criteria associated with corporate governance, policy restrictions against tradition, standardization and competition between states;
- An appropriate design of remuneration packages, taking into account the relationship between motivation and performance (OECD, 2010).

The relationship between the corporation, corporatism and corporate governance is complemented by corporate social responsibility, according to which company's objectives must include society, namely the concept of sustainable development. Trust is the prerequisite for building a good reputation, because long-term associated benefits provide a better functioning of the corporation as long as they do not show the risk of attracting interest, with effects on capital allocation and the costs imposed to society. Corporations set their goals, measure their

performance, which will be independently audited, compared with the three dimensions of sustainable development: economic, social and contextual. Society’s expectations place corporate in a favorable or unfavorable perspective and corporate social responsibility positively influences the profitability level, generate internal loyalty, provides support and discourage foreign criticism (Zoolinger, 2009).

A global vision sustains the idea that corporations should redefine their role and mission through operational transformations. Corporate social responsibility is an answer to new problems and challenges: globalization and market expectations. The price? More costs and performance decrease. But in a financial crisis we expect big losses, uncertainty, panics, chaotic behaviors and irrational actions. Resources allocation related to corporate responsibility is a strategic choice offering a large view on the corporation aim: shareholder interests’ protection, stakeholder interest protection and the middle way. Corporate social responsibility consists with the belief that corporation should have a main direction: the separation between interests’ protection and risk management function.

The quality of corporate governance is influenced by the following factors:

- management integrity;
- board of Directors competencies;
- processes adequacy;
- individual implication of the members;
- the quality of corporate reports;
- stakeholders implication in the corporation management (Kirkpatrick, 2010).

The quality of information, competencies and an efficient risk management are premises of the corporate governance model. Rethinking priorities in order to fulfill the established objectives should increase transparency and offers the possibility to explain performance national characteristics related to long-term remuneration schemes.

**3 Theories of corporate governance**

In time there have been significant changes into corporation structures dictated by new corporate governance issues. The approaches commonly used to attempt understanding the governance methods and the whole system; the instruments used for improvement in a big, bad and global future are determined by a key factor, a regime of the corporate governance and a reference point.

**Tab. 1: Elements of corporate governance theories**

<b>Theory</b>	<b>Key factor</b>	<b>Corporate governance regime</b>	<b>Reference</b>
Agency theory	Property or control	Control, monitoring, compensation based on performance	The market
Transaction cost theory	Orientation of governance to distinct transactions	Formal and informal rules and structures	Hierarchy
Organization theory	Shareholders rights and responsibilities	Organizational resources, competencies	Strategic management

Source: Clarke, T.- Chanlat, J., F. (2009): European Corporate Governance, Routledge, 2009, p.68

The agency theory highlights the conflict between utility functions and managers interests inside

every corporation. Letza, Sun and Kirkbride (2004) outline that the agency problem was identified for the first time by Adam Smith in *The Wealth of Nations* (1776). The structure of governance should allow investors to monitor and control managers. Shleifer and Vishny (1997) sustain that the agency problem is an essential element of the contractual view of the corporation.

The market, through its competitive mechanisms, is a reference point which is not relevant under information asymmetry or in case of incomplete contracts. Difficulties in designing a plan for all possible tensions, the lack of negotiation experience and the interpretation of legal contracts are the main reasons of the incomplete contracts tendency (Hart, 1995).

Transaction cost theory describes the corporation as an efficient hierarchical structure which facilitates the legal contracts. Corporation is a nexus of contracts and corporate governance regime is based on rules, formal and informal structures which allow economic transactions achievement. The major objective is the cultural and politic fulfillment, to the injury of investors' protection. From this point of view, laws and contracts are structures of the governance, similarly to the corporate culture and the moral nature of the economic transaction. The agency theory and the transaction costs theory have in common that both work out of the characteristics of bounded rationality and opportunism.

According to the organization theory, the corporation is a human resource fund, capacities and competencies, the objective of corporate governance being to put together and to activate these resources in order to obtain a competitive advantage. The reference point in this case is the strategic management of the resources and competencies, while the stakeholders have a major role within the corporation.

#### **4 Shareholder model vs. stakeholder model**

Corporation was conceived as a sphere of private commitments, which is to achieve a reasonable profit and economic efficiency. In the academic literature, theories on corporation offer three alternatives in order to understand its purpose. According to a first view, the corporation place as priority the investors' interests and the role and responsibilities of the Directors Board intended only to protect the shareholders interests.

From another perspective, both the interest of the investors and the interests of the categories affected by the decision are important: suppliers, customers, employees, local community, environment and management acts as agent for these groups. In this case, the Board of Directors serves the interests of all participants in corporate activity.

A third view, the middle rank one, includes and scale the previous assumptions, so the protection of investors is dominant, but there are also considered the interests of other groups, namely the establishment of corporate accountability, without compromising the needs of society and its members. Practical experience shows that all three approaches are on the market: examples are the U.S. and the European countries (notably Germany in the case of the second approach).

The legal nature of the corporation is different in United States of America (USA), United Kingdom (UK) and continental Europe. The analyses show similarities between the USA and the UK, namely Anglo-Saxon corporate governance systems; in Europe there is a continental corporate governance system which includes internal variations generated by national particularities.

According to the concession theory, in the USA, the Board of Directors is the heart of corporate governance. In the UK, corporation is defined as a legal member association. The essence of the

council is to delegate members as agents of company shareholders. The property and control are dominated by large institutional investors. In continental Europe prevails stakeholders perspective and the public interest but differences came from the corporate control style.

In the last 20 years, the corporate governance system from the USA suffered important changes. Enron, WorldCom, Tyco are examples of dysfunctional corporate governance mechanisms. The question is: what went wrong?

Before 1980s, the aim of the corporation was to ensure firm growth by balancing the interests of employees, suppliers, local community and shareholders. The external mechanisms of the governance were rarely used, hostile takeovers were unusual, the corporate management was dominant and the council control was reduced. The major objective of long-term performance plans was to increase selling and shares value. Shareholders behavior led to multiple takeovers and reorganizations. In 1990s the role of corporate governance mechanisms changed as well as the Board of Directors and shareholders implication.

In Europe, the major directions to improve the corporate governance are:

- shareholder rights;
- transparency;
- righting votes;
- remuneration schemes;
- organizational structure design;
- corporate social responsibility.

The main problem is to design efficient management systems which integrate both the moral dimension of economic transactions and their value into corporation strategies, policies and procedures.

In Europe there are significant differences related to the property structure and market corporate control. The Anglo-Saxon model is characterized by a low concentration of investors compared to the continental model. The central elements of the corporate governance system are the stakeholders' interests and the active role of employees in the strategic decisional process (Barker, 2010).

In recent years, the profile of the private investor has become an institutional one. Majority in UK and the United States of America, institutional investors display an increase in continental Europe also. Differences are related to their interventionist nature, the exposure of Directors Board to certain pressures, appointment of new members and executive remuneration (United Kingdom). Concentration of ownership leads to reduced effectiveness of external mechanisms of corporate governance (corporate control exercised by the market and investor activism) in order to protect capital providers (Continental Europe).

Legislative agenda of the US and the United Kingdom highlights the need to increase and improve investor activism. Differences between the two countries relate mainly to shareholder rights (the right to convene extraordinary meetings (UK case), limited access to regular meetings, campaigns, voting initiatives (USA case).

As a result of the pressure generated by U.S. institutional investors active in continental Europe the interactions between shareholders tend to get a cross-country dimension. National configurations explain why the internationalization has not led to a rapid convergence of corporate governance models.

**Tab. 2: Anglo-Saxon-American Model vs. Continental Europe Model**

<b>Anglo-Saxon-American Model (shareholder model)</b>	<b>Continental Europe Model (stakeholder model)</b>
Large-scale publicly traded corporations	Small and medium corporations
Short-term management	Long-term management
Low concentration of institutional investors	High concentration of private investors
Decentralized markets and the individual interest function in a self-regulation framework	The major role of banks and the interaction between corporations and banks creates a stable economic environment
Profit orientated behaviors, individualism	Long-term profit orientation
Well developed corporate governance mechanisms (the market for corporate control, regulation, contractual incentives)	Corporate governance mechanisms are related to direct control and low managerial incentives
<b>The role of the management in corporate social responsibility</b>	
Coalition control	Shareholders direct control
Low influences of investors over corporation management	Direct and indirect influences of investors and banks over corporation management
Individual investors high protection, strict rules for information dissemination and internal transactions	An increased minority shareholders protection, information transparency in order to reduce possible distress
A heterogeneous labor market, instability, a reduced internal flexibility, professional and geographical mobility	There is a codetermination chain between the Board of Directors, the Work Council and employees, with the effect of reducing mobility inside corporations
Employee's reduced implication in strategic decisions. In the USA, corporations developed special programs for employees in order to participate in operational decisions	The employees have an active role inside corporation through works councils and trade unions
Performance related financial incentives (especially in the USA)	An increased tendency of incentive scheme based on performance
<b>USA, UK</b>	<b>Germany, Holland, Austria</b>

Source: Adaptation after Clarke, T.; Chanlat, J., F. (2009): European Corporate Governance, Routledge, 2009, pp.145-150

The fundamental difference between Europe and the U.S. is that although European reform aimed at adopting U.S. similar laws, the move towards reducing managerial opportunism is not an appropriate way to prevent trading in someone's own interest. U.S. solutions, adopted to reduce management deficiencies do not affect earnings of major shareholders. Recent developments define European corporate governance process classified in Europe as an ongoing reform (Clarke-Chanlat, 2009).

The market corporate control constitutes an important mechanism of corporate governance. Depending on corporate governance systems, this mechanism can be highly active (U.S., UK) or almost nonexistent (Germany, Netherlands, China). The current crisis shows that the European market is increasingly adopting it, mainly because of the banking system problems.

A detailed analysis of the Directors Board indicates differences related to the main features: board size, independence from management, directors' experience, the endogeneity of the structure. In the U.S., independent boards are associated with superior corporate performance, and the board size varies inversely with the performance. A common element in the U.S. and most European countries is the one-level structure of the director's board, with the exception of

Germany and Austria (a two level-architecture) and France and Finland where there is the possibility of a choice between the two structures.

The two-tier system faces different problems in relation to its monitoring function: large size, inadequate flows of information, occasional meetings and in some cases the underdevelopment of the committee structure.

**Tab. 3: Deficiencies of corporate governance in the USA and Europe**

USA	EUROPE
Monitoring failures by the Board of Directors	Independency and financial responsibilities of the council
Excessive payments underevaluation	Minority shareholders protection
The incapacity of institutions to manage audit deficiencies	Dificulties to support an active market for corporate control
The equity overevaluation problem	

Source: Owen, G., Kirchmaier, T., Grant, J. (2006): Corporate Governance in the US and Europe. Palgrave Macmillan, 2006, p.31

A common problem of corporate governance systems in the last few years reflects a high level of compensation, especially in the USA. Excessive compensation is determined by external costs as a result of various negotiation methods, strategic errors, an increasing number of executive members and a misallocation of responsibilities from compensation committee to human resources department. The problem is the size of the gap between countries related to the incentive schemes and the solution focuses on the relation between national compensation system, the errors and financial performance.

The nature of legal systems influenced national systems development and highlighted corporate governance deficiencies. In continental Europe, the corporate governance model is based on civil law, but in Anglo-Saxon countries and USA, the model follows common law path. In the first case, the negative aspects came from excessive executive payments and a reduced efficiency of internal and external monitoring. In the civil law system, minority shareholders rights are not a priority, but the shareholders have an active role in management monitoring (Rickford, 2009).

**5 Latin America: far behind?**

The countries from Latin America do not witnessed failures of financial institutions generated by corporate governance systems. An explanation for the absence of corporative scandals in this region is the low level of investor protection and transparency. External influences and political governance considerations are determinants of capital flows in Latin America.

Weak developments of financial markets and a reduced presence of institutional investors place Latin America on an inferior position considering the complexity of corporate governance system. The low level of dynamism determines large gaps between markets and the real economy. Capital markets are not real financing sources because of insignificant economic experiences and a reduced political stability.

The analysis of strengths and weaknesses in these seven countries of Latin America offers a large view on the potential development towards corporation-investments-regulation. Chile and Brazil have the most competitive economies, well defined corporate governance mechanisms and consistent regulations, but they still place on an inferior position compared to United States of America and Europe.

**Tab. 4: Strengths and weaknesses in Latin America's countries**

Country	Strengths	Weaknesses
Argentina	<ul style="list-style-type: none"> <li>✓ Entrepreneurial activism</li> <li>✓ The quality of accounting standards</li> </ul>	<ul style="list-style-type: none"> <li>✓ Corruption, bureaucracy, the political influence and the lack of a stable framework discourage investments</li> </ul>
Brazil	<ul style="list-style-type: none"> <li>✓ Permissive regulations for institutional investors</li> <li>✓ The quality of accounting standards</li> <li>✓ Fiscal policies</li> <li>✓ Bankruptcies procedures</li> <li>✓ Capital markets development</li> <li>✓ <b>Corporate governance</b></li> </ul>	<ul style="list-style-type: none"> <li>✓ Constrains and procedures associated to intellectual property</li> <li>✓ Corruption massively manifested in the public sector</li> <li>✓ Structural deficiencies in the political and legal systems</li> </ul>
Chile	<ul style="list-style-type: none"> <li>✓ Well defined regulation for investors</li> <li>✓ Developed capital markets</li> <li>✓ Legal transparency</li> </ul>	<ul style="list-style-type: none"> <li>✓ Requirements of internal investment portfolios</li> <li>✓ Transition to international accounting standards</li> </ul>
Columbia	<ul style="list-style-type: none"> <li>✓ Investments regulation</li> <li>✓ The protection of minority investor rights</li> <li>✓ <b>Corporate governance</b></li> </ul>	<ul style="list-style-type: none"> <li>✓ Corruption, deficiencies of the local legal system</li> <li>✓ Restrictions on the capital market in terms of liquidity and size</li> <li>✓ Transition to international accounting standards</li> </ul>
Costa Rica	<ul style="list-style-type: none"> <li>✓ The quality of accounting standards</li> <li>✓ Fiscal treatment</li> <li>✓ The legal system</li> <li>✓ Openness to foreign investment portfolios</li> </ul>	<ul style="list-style-type: none"> <li>✓ Low level of protection of minority shareholder rights</li> <li>✓ Restrictions for the institutional investors</li> <li>✓ Entrepreneurship</li> <li>✓ <b>Corporate governance</b></li> </ul>
Mexico	<ul style="list-style-type: none"> <li>✓ Fiscal treatment</li> <li>✓ <b>Corporate governance</b></li> <li>✓ The protection of minority shareholder rights</li> </ul>	<ul style="list-style-type: none"> <li>✓ Legal framework for the investment activity</li> <li>✓ Corruption, the role of authorities in controlling</li> </ul>
Peru	<ul style="list-style-type: none"> <li>✓ The use of international accounting standards</li> <li>✓ <b>Corporate governance</b></li> <li>✓ Openness to internal investments</li> </ul>	<ul style="list-style-type: none"> <li>✓ Investment regulations</li> <li>✓ Fiscal regulations</li> <li>✓ The protection of minority shareholder rights</li> <li>✓ Corruption</li> </ul>

Source: Adaptation after \*\*\*LAVCA (Latin American Venture Capital Association): The Private Equity and Venture Capital Environment in Latin America, 2010, pp.6-26, <http://lavca.org/wp-content/uploads/2010/05/scorecard2010-updated-for-web-1.pdf>

Low levels of transactions reveal the inactivity of capital market from this region. The relatively stable macroeconomic environment and the transition to democracy did not determine a consolidation of capital markets as viable financing sources.

In 1990s, in Latin America's countries, the characteristics of corporate governance were dictated by an inefficient and corrupt legal system, institutional deficiencies and a reduced quality of

accounting standards, accounting being a central element of the corporate governance all-important to verify and evaluate money flows, their availability and the management performances.

Starting with 2005, the scandals from Asia, Europe and the United States of America determined a repositioning of investor protection as a top priority of the corporate governance system. Comparing to continental Europe countries, Latin America assure a low level of investor rights protection. Inadequacy of legal institutions generates a high level of property concentration, a reduced access to external financing, deficiencies of law enforcement and inefficiency. Corporate control is made by the principal shareholders. The solutions are implemented in the structures which request a clear separation between control rights and financial rights (the presence of industrial, financial and hybrid conglomerates). The Boards of Directors, their role and practices highlight the fact that compared to United States of America and Europe these structures are weak mechanisms of the corporate governance (Chong-Lopez-de-Silanes, 2007).

The reform priorities in Latin America are:

- taking voting rights seriously through an active role of institutional investors;
- fair treatment between shareholders during changes in corporate control profile;
- ensuring the integrity of financial reports by adopting the international standards;
- the quality of auditing requires a periodical evaluation in order to eliminate the interest conflicts;
- ensuring an appropriate level of transparency of the corporate property and control structures;
- designing efficient Boards of Directors, promoting independence against company's interests and shareholders;
- improving the quality of regulations and legal framework;
- continuing regional cooperation in order to implement national initiatives (OECD, 2003, pp.13-14).

In a region characterized by economic volatility and repeatability of financial crises, corporate social responsibility is mostly influenced by the actual social problems: poverty and inequality. This concept was adopted around 1997 and the most active country was Brazil followed by Mexico. One of the channels used in public and private sectors with the aim to reduce poverty is the entrepreneurial channel. Corporations create jobs as a passport to a better social life for the employees and their families. In the same time, direct local and foreign investments determine an increasing demand, which maintain a high level of local production.

The vision of corporate social responsibility is different in USA, Europe and Latin America. In Latin America the motivation is to reduce social pressures, poverty as well as the improvement of corporate sustainability; in the United States of America the corporate social responsibility is similar to corporate philanthropy; in Europe the concept is often associated to day-to-day management responsibility.

## **6 Conclusions**

The international financial crisis reveals the importance of corporate governance systems. Strong deficiencies, large gaps between regions, low control mechanisms outline an instable corporate environment, prone to unjustified actions. Inefficient decisions can lead to multiple failures in the national and international economies. The governance exposure and risks should

find solution in a proper evaluation of information. A clear distinction between roles and responsibilities is a basic requirement in every corporate governance model and the power of supervision leads to efficient operational activity. Corporate social responsibility has the role to strengthen the relation between corporation and society, with long-term positive effects. The main characteristics of corporate governance are provided by the national particularities and deficiencies are reflections of national problems. In this context, the reform is a necessity, an important step to corporate consolidation, rethinking strategies and repositioning the role of the participants offer new perspectives for reconstruction!

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## ***Determinants of Corporate Governance: A Three-Dimensional Approach***

### **Summary**

In a society where the power of corporation is growing fast, it is necessary to determine the effects and the consequences dictated by this evolution. To highlight the framework of corporate governance means to analyze the corporation, what it brings new in times of financial distress, uncertainty and failure in the financial markets. The aim of this paper is to highlight the particularities of corporate governance regimes in three areas: Europe, United States of America and Latin America. Structured on four parts, the study offer answers for the following questions: what are the visions of the connections between corporation and corporate governance? Corporate governance models are based on the principal theories? What are the similarities and differences of the corporate governance regimes in the selected areas? In conclusion, the relevance of this three-dimensional approach is determined by the reform proposals on a problem-solution axis.

**Key words:** Corporation; Financial crisis; Corporate governance; Corporate social responsibility.

**JEL classification:** G30, G34, G01.

# Does Transparency Affect Relevance? Evidence from IFRS Goodwill Disclosures of Listed Companies on the Athens Stock Exchange<sup>#</sup>

*Diogenis E. Baboukardos\**

## Summary

Despite the important role IFRS mandatory disclosures is said to play in preserving the information content of accounting figures, there is almost no empirical evidence corroborating that importance. This study, applying an adaptation of Ohlson's (1995) model examines whether the level of compliance with IFRS disclosure requirements for goodwill affect the information value of goodwill of listed companies on the Athens Stock Exchange during the first four years of IFRS mandatory use. The results indicate that the information value of goodwill is affected by the extent of information provided through IFRS mandatory disclosures for goodwill.

**Key words:** IFRS; Goodwill; Fair Value; Transparency; Disclosures; Value Relevance; Athens Stock Exchange.

**JEL classification:** M41.

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<sup>#</sup> **Editorial note:** Upon author's request, only the summary is included in the Proceedings. For further information on paper, please contact the author.

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# Section 404 of the Sarbanes-Oxley Act and Its Effects on Information Asymmetry

*Mirela Dobre\**

## 1 Introduction

This paper investigates the market effects of Section 404 of the Sarbanes-Oxley Act of 2002 by looking at the changes that the passage has brought in trader's information asymmetry, proxied by market makers' bid-ask spreads. Before the enactment of Sarbanes-Oxley, firms were only required to publicly disclose internal control deficiencies if there was a change in auditor (SEC, 1988). We hypothesize that if compliance with SOX 404 increases internal control over financial reporting, investor confidence in annual reports will also increase. Superior disclosures available to all traders lead to a reduction of information asymmetry. An increase in the quality of financial information should determine a narrowing of market maker's bid-ask spreads because the adverse selection cost is lower. We identify the cost components of the bid-ask spread for a sample of stocks surrounding the implementation of SOX 404. Our expectation is that market makers react to the implementation of Section 404 as if information asymmetry has diminished, considering that the chances of trading against better informed traders are lower.

Information Asymmetry is a situation in which one party in a transaction has more or superior information compared to another. This often happens in transactions where the seller knows more than the buyer (although the reverse can happen as well) and can lead to adverse selection - immoral behavior that takes advantage of asymmetric information before a transaction.

The Bid Price is the current highest price at which someone in the market is willing to buy a stock. The Ask Price is the current lowest price that someone is willing to sell a stock. The difference in these two amounts is called the Bid-Ask Spread. These prices are constantly changing during each trading session as shares change hands. The Bid-Ask Spread is determined mainly by liquidity. If a stock is highly liquid, meaning there is a large volume of shares being bought and sold, the Bid-Ask Spread will be much lower. A low Bid-Ask Spread is important to traders because the extra cost that they pay in the spread will eat away at the profits of their trades (Kosminder, 2006).

Section 302 of the Act, requires that chief executive officers and chief financial officers evaluate quarterly the design and effectiveness of internal controls, and report an overall conclusion about their effectiveness. Section 404(a) of SOX outlines management's responsibility and requires that the annual report include an internal control report by management which contains an assessment of the effectiveness of internal control over financial reporting as of the end of the most recent fiscal year. Section 404(b) requires the auditor to make a separate independent assessment of the company's internal controls over financial reporting.

Implementing stronger internal controls over financial reporting (ICFR) is considered an important step towards higher quality disclosures, although there has been some criticism concerning the high costs of compliance with Section 404. Healy and Palepu (2001) argue that the demand for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside directors. The credibility of management disclosures is enhanced by regulators, standard setters, auditors (mandatory provisions for auditor assessment of ICFR effectiveness) and other capital market intermediaries. The passage of the Sarbanes-Oxley Act by U.S. was meant to provide this precise enhancement of credibility,

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after the market had previously witnessed significant financial failures and frauds. The financial reporting system is generally regarded as a means by which shareholders can monitor managers and, furthermore, effective ICFR is considered a tool for mitigating the agency problem (Goh, 2009 and Hoitash, Hoitash and Bedard, 2009, among others). Because strong ICFR restrict management's discretion over earnings measurement, disclosures made under Sections 302 and 404 provide additional measures beyond financial reports that can reveal the extent to which corporate governance has succeeded in reducing agency costs.

While complying with SOX 404 is considered by far more expensive than SOX 302, a good research question is whether all the supplementary requirements are really necessary and meet their intended purposes, or complying with SOX 302 does a similar job in the eyes of investors? This issue is of great importance, as the extension of Section 404 auditor testing to smaller U.S. public companies remains controversial (Hoitash et al. 2009) and has been postponed several times in the recent years. The answer could be useful to regulators in other countries who seek evidence on whether less stringent internal control regimes are sufficient for high-quality financial reporting.

Instead of looking for a general disclosure quality measure, we investigate the effects of a specific type of disclosure in the market – Material Weaknesses disclosures under Section 404 a) and b). Reporting these weaknesses reflects a firm's ability to identify internal control risks and could be a good indicator of future remediation of such weaknesses.

Since there are few measures for information asymmetry between informed and uninformed traders, previous research mainly uses the relative bid-ask spread to proxy for it. The market bid-ask spread is the amount by which the ask price exceeds the bid for a share. It is a function of order-processing costs, inventory holding costs, market maker competition and adverse selection costs. The first three are not affected by SOX Section 404 so any variation of the spread must be driven by a change in adverse selection costs. Increased disclosure quality driven by compliance with SOX 404 should determine a reduction in information asymmetry between informed and uninformed traders and therefore, a reduction of adverse selection costs included in the bid-ask spreads.

Following Sidhu, Smith, Waley and Willis (2008), we separate the cost components of the bid-ask spread for a sample of compliant firms in the period surrounding the implementation of SOX. Their model is based on the one developed by Bollen, Smith and Whaley (2004) and investigates the market effects of a law imposed by the SEC – Regulation Fair Disclosure. Other authors (Brown and Hillegeist, 2007) have used the PIN (probability of informed trading) proxy for information asymmetry, but it is not entirely reliable (Ertimur, 2007). However, our study is related to that of Brown and Hillegeist in that it also shows how disclosure quality reduces information asymmetry.

## **2 The Sarbanes Oxley Act of 2002 and its market effects - Prior research**

This paper contributes to the literature on internal control by further investigating the market effects of regulation concerning internal control weaknesses disclosures. Three types of internal control weaknesses can be disclosed under Sections 302 and 404. Listed in increasing order of severity, these are control deficiencies, significant deficiencies, and material weaknesses. The primary differences between a control deficiency and a significant deficiency are in the probability and magnitude of the financial statement misstatements, which may result due to the existence of the weaknesses. A material weakness is “a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. Although the initial impact in stock price of such disclosures is negative (Litvak, 2007), other research shows that internal control risk

matters to investors and that firms reporting effective internal controls or firms remediating previously disclosed internal control deficiencies benefit through lower cost of equity and higher accruals quality (Ashbaugh – Skaife et al., 2009). Doyle, Ge and McVay (2007a) show that firms which disclose material weaknesses tend to be smaller, younger, financially weaker, more complex, growing rapidly, or undergoing restructuring. Also, firms with IT-related weak components report more material weaknesses and misstatements than firms without IT related weak components, providing evidence on the pervasive negative impact of weak IT controls, especially in control environment, risk assessment, and monitoring (Klamm and Watson, 2009).

There is also a line of research addressing the issue whether the provisions of Section 302 are sufficient for informed investment decisions, or more restrictive, detailed regulation of such disclosures is truly necessary, taking into account both costs and benefits. Some critics of SOX maintain that the costs of regulation exceed its benefits for many corporations (Carney, 2006). Additionally, it has been suggested that internal controls, no matter how adequate, could not have done much to prevent the accounting scandals that took place. The requirements to set up and assess the efficiency of these controls were already in place sometime before. Internal controls are generally designed to prevent small frauds, but the large frauds are perpetrated by those with the authority to circumvent any policy (Sinnet, 2004). Litvak's research (2007) tests investor's beliefs about costs and benefits of SOX. Results show that stock prices have declined for foreign firms subject to SOX, compared to cross-listed firms not subject to SOX. Engel, Hayes and Wang (2007) argue that going-private is an attractive response to SOX for some firms. Zhang (2007) hypothesizes and finds evidence that if the governance provisions of SOX imposed net costs on firms, firms with corporate governance structure weaker than optimum would incur more costs and experience more negative cumulative abnormal returns around the SOX rulemaking events. Bhamornsiri et al. (2009) focus on the impact of SOX 404 requirements for cross-listed non- US companies and the impact on external audit fees for filers during the first 2 years it was effective. Findings indicate that audit fees increased by an average of 65% for the initial group of filers in the first year SOX 404 was effective and by 9% in the second year. This increase was associated with a 5% decrease in earnings for these companies.

We also add to existing literature on general effects of the Sarbanes-Oxley Act. Hansen, Pownall and Wang (2009) investigate the listings and delistings on US stock exchange after SOX. Results show that the passing of SOX was not associated with an increase in delisting likelihood for any size quintiles. However, the implementation of SOX 404 was significantly positively associated with the probability of delisting for larger firms, especially if they were performing poorly. Carter, Lynch and Zechman (2009) find support for the joint hypothesis that the implementation of SOX led to a decrease in earnings management because the reporting environment became less flexible. A more recent paper by Ashbaugh - Skaife, Collins, Kinney and Lafond (2009) investigate how changes in internal control quality affect firm risk and cost of equity and finds that firms with internal control deficiencies have significantly higher idiosyncratic risk, systematic risk, and cost of equity. Accounting information system quality includes not only the disclosures the firm makes to outsiders, but also the internal control systems that a firm has in place. The quality of accounting information and the systems that produce that information influence a firm's cost of capital in two ways: (1) direct effects—where higher quality accounting information does not affect firm cash flows, per se, but does affect market participants' assessments of the variance of a firm's cash flows and the covariance of the firm's cash flows with aggregate market cash flows—and (2) indirect effects—where higher quality information and better internal controls affect real decisions within the firm, including the quality of operating decisions as well as the amount of firm resources that managers appropriate for themselves. Chhaochharia and Grinstein (2007) study the effects of SOX Act of 2002 on firm's returns, taking into consideration their size and level of compliance. Evidence shows that firms that are less compliant have greater abnormal returns than those that

are more compliant. Also, large, less compliant firms show positive abnormal returns while smaller, less compliant firms show negative abnormal returns, meaning that some provisions are detrimental to small firms.

Ogneva, Subramanyam and Raghunandan (2008) find that, on average, ICWs are not directly associated with higher cost of equity, for firms that filed first-time Section 404 reports with the SEC. Although they find that ICW firms have higher implied cost of equity than firms without such weaknesses, there is no significant association between ICW and cost of equity after controlling for analyst forecast bias and primitive firm characteristics associated with ICWs.

### **3 Does compliance with Section 404 impact information asymmetry?**

#### **3.1 Hypotheses development**

Brown and Hillegeist (2007) examine the precise mechanisms through which disclosure quality affects information asymmetry among equity investors over a year. Information asymmetry occurs when one or more investors possess private information about the firm's value while other uninformed investors only have access to public information. The presence of information asymmetry creates an adverse selection problem in the market when privately informed investors trade on the basis of their private information. Their findings provide some empirical support for regulators' beliefs that high quality disclosures make the capital markets more attractive to "ordinary" uninformed investors. Results indicate that disclosure quality primarily affects information asymmetry by reducing the likelihood that investors discover and trade on private information.

B. Sidhu, T. Smith, R. E. Whaley and R. H. Willis (2008) examine the cost of adverse selection before and after Regulation Fair Disclosure (Reg FD) became effective in 2000. The evolution is observed through the cost components of market maker bid-ask spreads. The market bid-ask spread is the amount by which the ask price exceeds the bid for a share. This is essentially the difference in price between the highest price that a buyer is willing to pay for an asset and the lowest price for which a seller is willing to sell it. It is a function of order-processing costs, inventory holding costs, market maker competition and adverse selection costs. The first three are not affected by SOX Section 404 so any variation of the spread must be driven by a change in adverse selection costs. Their conclusion is that Reg FD led to an increase in adverse selection cost (risk premium which covers losses caused by trading against better informed traders). They use the model developed by Bollen, Smith and Whaley (2004), which is also the one that this research is based on. Sidhu et al. (2008) conclude that Reg FD has led to an increase in the expected cost of information asymmetry, contrary to its objectives.

Since there are few measures for information asymmetry between informed and uninformed traders, previous research mainly uses the relative bid-ask spread to proxy for it. However, most models assume that the only time-series variation in spread is driven by information asymmetry. Movements in order-processing costs, inventory holding costs and competition are considered constant. In some cases, the adverse selection cost component of the spread is not explicitly isolated, in which case, results could be driven by the other components as well.

The most common proxies for information asymmetry are briefly described by Leuz and Verrechia (2000). The bid-ask spread is commonly thought to measure information asymmetry explicitly. The reason for this is that the bid-ask spread addresses the adverse selection problem that arises from transacting in firm shares in the presence of asymmetrically informed investors. Less information asymmetry implies less adverse selection, which, in turn, implies a narrower bid-ask spread. An alternative, and perhaps less explicit, proxy for adverse selection is trading volume in firm shares. Trading volume is a measure of liquidity in that it captures the willingness of some investors who hold firm shares to sell and the willingness of others to buy.

This willingness to transact in firm shares should be inversely related to the existence of information asymmetries. Trading volume, however, can be influenced by a host of other factors unrelated to information. Finally, share price volatility has been used by prior studies as a proxy for information asymmetry. To the extent that smooth transitions in share prices suggest the absence of information asymmetries between the firm and shareholders, or among investors, low levels of volatility suggest fewer information asymmetries. Higher disclosure should lead to a lower bid-ask spread, increased trading volume and less share price volatility.

Instead of looking for a general disclosure quality measure, we investigate the effects of a specific type of disclosure in the market – Material Weaknesses disclosures under Section 404 a) and b). Reporting these weaknesses reflects a firm’s ability to identify internal control risks and could be a good indicator of future remediation of such weaknesses.

### 3.2 Hypothesis

I hypothesize that if compliance with SOX 404 increases internal control over financial reporting, investor confidence in annual reports will also increase. A confidence increase means lower compensation premiums incorporated in the bid-ask spread. The higher financial information quality is, the lower the adverse selection cost should be, assuming that the chances of trading against better informed traders are lower. Our expectation is that market makers react to the implementation of Section 404 as if information asymmetry has diminished, so the adverse selection cost component of the bid-ask spread of market makers should **narrow** after the implementation of SOX 404.

If compliance with SOX 404 increases internal control over financial reporting, investor confidence in annual reports will also increase.

**H1:** The adverse selection cost component of the bid-ask spread of market makers should narrow after the implementation of SOX 404.

### 3.3 The Bollen – Smith –Whaley Model

Following Sidhu et al. (2008), I separate the cost components of the bid-ask spread for a sample of compliant firms in the period surrounding the implementation of SOX 404. My study differs significantly; not only in time span but also in that I attempt to simplify the Bollen, Smith and Whaley (2004) model of estimating the spread components.

**Quoted spread** = ask price – bid price (at the time of each transaction t)

**Herfindahl Index** – incorporates the number of dealers ND making a market in a particular stock, as well as their respective trading volumes  $V_i$ .

$$HI = \sum_{i=1}^{ND} \left( \frac{V_i}{V} \right)^2, \quad (1)$$

**Inventory Holding Premium:**

$$IHP = S[2N(.5\sigma E(\sqrt{t})) - 1] \quad (2)$$

where  $S$  = the stock’s average share price over the month,  
 $\sigma$  = the expected annualized return volatility,  
 $E(\sqrt{t})$  = the expected value of the square root of the time between trades,  
 $N(.)$  = the cumulative unit normal density function.

A preliminary regression is used including the following variables: inverse of trading volume, modified Herfindahl Index, inventory holding premium. This regression shows that competition

among market players also plays an important role in determining the absolute level of the bid-ask spread.

$$SPRD_i = \alpha_0 + \alpha_1 InvTV_i + \alpha_2 MHI_i + \alpha_3 IHP_i + \varepsilon_i, \quad (3)$$

where  $SPRD_i$  = the bid-ask spread of stock  $i$ ,  
 $InvTV_i$  = the inverse of trading volume,  
 $MHI_i$  = the modified Herfindahl Index,  
 $IHP_i$  = the inventory holding premium.

In this model, the specific components of the bid-ask spread are:  $\alpha_0$ , the minimum tick size;  $\alpha_1 InvTV_i$ , order-processing costs;  $\alpha_2 MHI_i$ , competition; and  $\alpha_3 IHP_i$ , the sum of the inventory holding and informational asymmetry components of the spread.

A second regression that estimates the probability and expected cost of informed trading includes not only the previous variables but also a dummy variable  $d_t$  whose value is 0 in the months preceding November 2004 and one after November 2004. Other coefficients are added using this variable; and they measure changes in cost components of the bid-ask spread after Section 404.

$$SPRD_i = \alpha_0 + \alpha_1 InvTV_i + \alpha_2 MHI_i + \alpha_3 IHP_i + \alpha_4 d_t + \alpha_5 InvTV_i d_t + \alpha_6 MHI_i d_t + \alpha_7 IHP_i d_t + \varepsilon_i \quad (4)$$

A third equation for the spread is considered, taking into account the difference of actions between an informed trader and an uninformed trader. The inventory-holding premium incorporates the trades of both uninformed and informed traders. It is possible that the informed trader  $IHP_I$  changes in one direction and the uninformed trader  $IHP_U$  changes in the other.

$$IHP = (1 - p_I) IHP_U + p_I IHP_I, \quad (5)$$

where  $p_I$  = the probability of an informed trade,  
 $(1 - p_I)$  = the probability of an uninformed trade.

This equation can be rearranged as:

$$IHP = (1 - p_I) IHP_U + p_I IHP_I, \quad (6)$$

and illustrates that an expected inventory-holding premium of  $IHP_U$  exists for all trades, uninformed and informed alike, as a result of the price risk associated with having the security in inventory. For informed trades, however, there is an incremental expected cost associated with adverse selection, that is,  $p_I (IHP_I - IHP_U)$ .

The following step is to substitute  $IHP$  into the previous equation which becomes:

$$SPRD_i = \alpha_0 + \alpha_1 InvTV_i + \alpha_2 MHI_i + \alpha_3 IHP_{U,i} + \alpha_4 (IHP_{I,i} - IHP_{U,i}) + \alpha_5 d_t + \alpha_6 InvTV_i d_t + \alpha_7 MHI_i d_t + \alpha_8 IHP_{U,i} d_t + \alpha_9 (IHP_{I,i} - IHP_{U,i}) d_t + \varepsilon_i. \quad (7)$$

The coefficient  $\alpha_1$  is expected to be positive because it represents the market maker's total order-processing costs. The coefficient  $\alpha_2$  should be positive. The fewer the number of dealers and the less evenly distributed the trading volume across dealers, the higher the modified Herfindahl Index and the higher the spread. The coefficient  $\alpha_3$  should also be positive. The higher the expected inventory-holding premium, the greater the bid-ask spread. The significance of the coefficient estimate  $\alpha_9$  in the regression results should indicate whether the probability of

informed trading has increased since the implementation of SOX404. A negative  $\alpha_9$  in the regression would mean decrease in informed trading, proving H1 true.

#### 4 Empirical results – Preliminary sample of daily observations

I first run a preliminary Bollen – Smith – Whaley regression on a pilot sample. I begin by searching The Center for Research in Security Prices (CRSP) Daily Stock file<sup>1</sup> for daily trading data for the 117 companies that disclosed material weaknesses in the month of March 2005. The reason for looking into March disclosures is that this was the first large output of annual reports after the implementation of Section 404. To see whether there has been significant change in returns, prices or bid/ask spreads surrounding the disclosures, I also include the previous and following months.

I retrieve price and intra-day transaction information for a three month period from February 2005 to April 2005 for each of these companies and compute the cost components of the bid/ask spread. After eliminating missing tickers, zero trading volumes and unavailable market maker count information, the search returns 1047 complete daily observations for 57 companies. A simplified method of computation is used as compared to the original Bollen-Smith-Whaley model cost components. I build a dated panel with 57 cross-sections, observed along 62 working days (Table 1 includes some statistics).

The 57 stocks analysed across three months have generated negative average holding period return, as shown in Table 1. Returns are generally small, only adding up to a few cents. There are some negative spikes in February and the disclosing month of March is dominated by poor, negative returns. It is interesting to notice that there is a significant positive spike around the 25th of March, right after almost all material weaknesses were made public and the market had time to absorb the bad news. April's returns vary so much from positive to negative that is difficult to draw a conclusion as to any possible impact of the annual reports.

The trading volume daily average for a company is quite high, around 900.000 units traded by an average of 38 market makers. I have only included companies which had number of trades, market maker count and trading volume larger than one. The highest price for ashare was 44\$ while the lowest was 63cents. Intriguingly, the maximum return was only 99 cents. The bid/ask spread has a mean of 53 cents, around 370 out of the total 1073 observations are set around that amount. The spread seems to have increased significantly around the 20th of February after a major narrowing a few days earlier. Mid-march and mid-April also show reductions in the bid/ask spread, most probably around disclosure dates. Reductions of the bid/ask spread are associated, according to prior literature, with reduced information asymmetry. However, in order to see a clearer trend, next section looks into monthly averages across a much longer time-span.

The first step is running a regression with the Bid/Ask spread as a dependent variable, using the least squares method with fixed effects. The Table 2 shows the regression results, Panel A including cross-section fixed effects, Panel B including both cross-section and period fixed effects. Overall, the second regression seems to be more accurate. The model explains only half of the variation of the SPREAD (49% in Panel A and 53% in Panel B), which means that it is also influenced by other factors not included in this linear regression. However, these results are not discouraging, as the Fisher statistic shows that the model is relevant.

The Modified Herfindahl Index coefficient is negative in both results panels, therefore narrowing the bid/ask spread, which is contrary to the model's expectations, and intriguing at

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<sup>1</sup> Access kindly granted by Amsterdam Business School during a research mobility program.

the same time. The fewer the number of dealers and the less evenly distributed the trading volume across dealers, the higher the Modified Herfindahl Index and the higher the spread should be. These results mean that a variation of the MHI of one unit inversely affects the SPREAD by 1.7 cents and 1.8 cents respectively. This inconsistency may be caused by the small number of observations for such a volatile variable, or by the simplified method of computing the MHI. The inverse of trading volume has the highest coefficient and it is positive, as expected, although the t-statistic and respective probability indicate that it is somewhat weakly significant (prob. is slightly higher than the acceptable 0.05 for a strongly significant coefficient). The Inventory Holding Premium coefficient estimate is positive in both cases, as expected, and significant, but only 0.26 and 0.34 respectively. It shows that a variation of one cent in the Inventory Holding Premium determines a variation of 0.34 cents in the Bid/Ask spread.

**Tab. 1: Descriptive Statistics for Pilot Sample of Stocks**

	ASK	BID	ASK OR HIGH PRICE	BID OR LOW PRICE	PRICE OR BID ASK AVERAGE	RETURNS	TRADING VOLUME	MARKET MAKER COUNT	NUMBER OF TRADES
Mean	14.51581	14.48892	14.79640	14.26376	14.50458	-0.002541	898677.5	37.52377	2255.074
Median	12.35000	12.33000	12.69000	12.17000	12.35000	-0.001372	219330.0	33.00000	804.0000
Maximum	44.59000	44.48000	45.43000	44.43000	44.43000	0.993062	1.28E+08	89.00000	228699.0
Minimum	0.640000	0.630000	0.680000	0.610000	0.630000	-0.264469	2716.000	14.00000	20.00000
Std. Dev.	9.504561	9.495058	9.633784	9.395030	9.501572	0.046177	4403696.	15.99917	8292.905
Skewness	0.731981	0.733396	0.722224	0.743770	0.731821	8.480812	23.24814	0.994929	20.08574
Kurtosis	2.908778	2.910745	2.879117	2.936008	2.906689	207.1080	652.8263	3.543677	524.8706
Observations	1073	1073	1073	1073	1073	1073	1073	1073	1073

Source: authorial computation (values are expressed in U.S. dollars, except Trading Volume, Market Maker Count and Number of Trades).

## **5 Testing the relation between the bid/ask spread and information asymmetry in the long run**

I use a sample of US companies that disclosed material weaknesses in internal control over financial reporting under Sections 404 of the SOX from November 15 2004 to July 2005 to check for any effects that these disclosures might have had on the market maker's bid-ask spread. These disclosures are collected from the Compliance Week database. There are in total

388 disclosures, out of which I eliminate 29 duplicate entries (same firm disclosed several weaknesses). Out of the remaining firms, there are 9 that have no available ticker symbol, which makes data search impossible so I eliminate these as well from the sample. A number of 350 firms with valid tickers make up the starting point for this study.

Using The Center for Research in Security Prices (CRSP) Monthly Stock file, I search for trading data for each of the 350 firms in the period November 2004 – November 2009. Starting month corresponds to the implementation of SOX 404 (b) and ending month is the last available record in the CRSP database.

For these companies, I add matching observations from the previous year before the implementation of SOX, November 2003 to November 2004, so that my study stretches along a period of 6 years, prior and after these companies started disclosing MWs. After eliminating invalid observations, months or firms with missing data and filtering for trading volumes for each stock to be > 0, I obtain a file of 10,470 cross-sectional observations. This is the data panel for 225 companies with monthly observations across 6 years. This monthly approach is still a work in progress.

**Tab. 2: Regression estimates with fixed cross-section effects and fixed cross-section and period effects**

**PANEL A**

Dependent Variable: SPREAD  
Method: Panel Least Squares

Sample: 2/01/2005 4/29/2005  
Periods included: 62  
Cross-sections included: 57  
Total panel (unbalanced) observations: 1073

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INVTV	1904.008	1004.296	1.895863	0.0583
MHI	-1.787288	0.295341	-6.051598	0.0000
IHP	0.260571	0.045971	5.668158	0.0000
C	-0.083547	0.117900	-0.708626	0.4787

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.495060	Mean dependent var	0.532644
Adjusted R-squared	0.465651	S.D. dependent var	0.450702
S.E. of regression	0.329459	Akaike info criterion	0.671567
Sum squared resid	109.9546	Schwarz criterion	0.949938
Log likelihood	-300.2956	Hannan-Quinn criter.	0.777005
F-statistic	16.83356	Durbin-Watson stat	1.448146
Prob(F-statistic)	0.000000		

**PANEL B**

Dependent Variable: SPREAD  
Method: Panel Least Squares

Sample: 2/01/2005 4/29/2005  
Periods included: 62  
Cross-sections included: 57  
Total panel (unbalanced) observations: 1073

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INVTV	1951.676	1038.007	1.880215	0.0604
MHI	-1.804811	0.311534	-5.793300	0.0000
IHP	0.348735	0.052729	6.613734	0.0000
C	-0.308022	0.135154	-2.279041	0.0229

#### Effects Specification

Cross-section fixed (dummy variables)  
Period fixed (dummy variables)

R-squared	0.533384	Mean dependent var	0.532644
Adjusted R-squared	0.474566	S.D. dependent var	0.450702
S.E. of regression	0.326700	Akaike info criterion	0.706335
Sum squared resid	101.6094	Schwarz criterion	1.267718
Log likelihood	-257.9489	Hannan-Quinn criter.	0.918969
F-statistic	9.068495	Durbin-Watson stat	1.475362
Prob(F-statistic)	0.000000		

## 6 Conclusions

The answer to the SOX 404 controversy could be useful to regulators in other countries who seek evidence on whether less stringent internal control regimes are sufficient for high-quality financial reporting.

Economic theory suggests that a commitment by a firm to increased levels of disclosure should lower the information asymmetry component of the firm's cost of capital. The difficulty lies in demonstrating this relation empirically. I hypothesize that an increase in the quality of financial information should determine a narrowing of market maker's bid-ask spreads because the adverse selection cost is lower. This measurement and the econometrical model associated with it stand out as the best possible approach to achieving my research objectives. The preliminary regression results obtained through a simplified version of the Bollen-Smith and Whaley model are consistent with previous research and provide a starting point for the more comprehensive study described in section 5.

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## ***Section 404 of the Sarbanes-Oxley Act and Its Effects on Information Asymmetry***

### **Summary**

Starting with November 15, 2004, Section 404 of the Sarbanes-Oxley Act of 2002 (SOX 404) requires all accelerated firms (with at least \$75 million in public equity) to report on the effectiveness of their internal controls over financial reporting. There has been some controversy regarding the burden that it casts on companies and whether the benefits outweigh the costs of compliance. Reporting under SOX is meant to improve investor confidence concerning the stock of a specific company by adding credibility to its financial statements. An increase in the quality of financial information should determine a narrowing of the bid-ask spread. We identify the cost components of the market makers bid-ask spread for a sample of stocks surrounding the implementation of SOX 404. Our expectation is that market makers react to the implementation of Section 404 as if information asymmetry has diminished. We use the model developed by Bollen, Smith and Whaley (2004) to separate the cost components of the bid-ask spread for a sample of compliant firms in the period surrounding the implementation of SOX 404.

**Key words:** Bid-ask spread; Informed trading; Information asymmetry; Internal controls; Adverse selection cost.

**JEL classification:** M41, M48.

# Time-Series Models Performance in Forecasting Quarterly Earnings in Baltic Stock Market

*Zana Grigaliuniene\**

## 1 Introduction

The measurement of earnings expectations is important for studies of cost of capital, asset valuation, and the relationships between unexpected earnings and stock returns, and, therefore, receives an extensive scholarly attention. Early research focuses on the time-series properties of quarterly accounting data and explores the forecasting performance of time-series models. They examine their ability to forecast future values of quarterly earnings and to approximate the capital market's expectations model when exploring the market responses to quarterly earnings announcements. After increasing number of firms that are followed by financial analysts, their forecasts receive high scholarly attention. A large body of research explores the time-series and analysts' forecasting performance in terms of forecast errors. After Brown (1987) concluded the superiority of analysts' forecasts over the time-series forecasts, the research on time-series properties of earnings experienced a deep decline. The further research uses analysts' forecasts to predict future earnings, as they exhibit better performance. However, analysts' forecasts are hardly available in emerging markets especially for young and small firms. Furthermore, behavioural finance literature documents the tendency of financial analysts to overreact and/or underreact to earnings announcements. Analysts' forecasts may be biased due to incentives and the effect of behavioural biases and heuristics. Moreover, recent research reports time-series forecasts to be superior to analysts' forecasts in predicting quarterly earnings for longer periods. Taking into consideration these limitations, the paper aims to explore the time-series models performance in forecasting quarterly earnings for Baltic firms. The importance of time-series research in accounting and finance motivates our interest to examine time-series behavior of quarterly earnings in Baltic market, which is described as thinly traded and limited liquidity market. We estimate quarterly earnings of 40 Baltic firms over the period of 2000-2009 and use Box-Jenkins approach for predicting each firm's earnings separately. Then we estimate the accuracy of each forecast, using MAPE, average ranks and ANOVA two way analysis including Friedman statistics. Based on goodness-of-fit statistics we compare the selected models forecasting performance and find that naïve time-series models outperform premier ARIMA family models in terms of mean percentage errors and average ranks. Our findings suggest that investors use naïve models to form their expectations. They are not sufficiently sophisticated to use premier models.

The paper is structured as follows. At first, we discuss the underlying research problem in the prior literature. The next section describes the data and methodology. Then we present the empirical tests and discussions and conclude in the last section.

## 2 Literature review

After comprehensive literature review we can identify some directions in the prior research on quarterly accounting data. The early research<sup>1</sup> focuses on time-series properties of quarterly earnings announcements. They provide evidence that quarterly earnings approximate simple

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<sup>1</sup> See in Beaver (1970); Ball and Watts (1972); Brown and Kennelly(1972); Watts (1975); Brooks and Buckmaster(1976); Griffin (1977); Foster (1977); Albrecht et al( 1977); McKeown and Lorek (1978); Brown and Rozeff (1979); Lorek (1979); Bathke and Lorek (1984); Brown and Niederhoffer (1986); Bernard and Thomas (1990); and etc.).

random walk process. The wide use of random walk is explained by simplicity of the use and the absence of restrictions for sample size. Subsequent studies (Albrecht et al, 1977; Foster, 1977; Bathke and Lorek, 1984, Bernard and Thomas, 1990) compare simple random walk models with more complicated models such as random walk with drift, seasonal random walk with drift or Box-Jenkins, and prove them all to be reliable forecasting models.

Brown and Kennelly (1972) use seasonal martingale and sub-martingale models to forecast quarterly earnings. The earnings forecast literature describes these models as standards of comparison that are available for forecast producers and users at minimal cost. They also performed the Box-Jenkins modeling, which enables to select the most appropriate time-series model consistent with the process generating each firm's time-series of quarterly earnings data. They report the better performance of individually fitted Box-Jenkins forecast models over a particular class of time-series models applied to all firms' time-series data. However, subsequent research (Watts, 1975; Griffin, 1977; Foster, 1977; Brown and Rozeff, 1979; Lorek, 1979, Collins and Hopwood, 1980; Bathke and Lorek, 1984; Lorek and Willinger 2006) suggests a premier model for individual firm quarterly earnings, which may generate forecasts that are equal or superior to those generated by the Box-Jenkins model. Among the models identified from prior research are:

- *Foster's model*, defined as a seasonally differenced first-order autoregressive model with a constant drift term. In terms of customary (pdq) x (PDQ) Box-Jenkins terminology, where: p, P represent autoregressive and seasonal autoregressive parameters; d, D represent consecutive and seasonal differencing; q, Q represent moving average and seasonal moving average parameters, this model is identified as (1, 0, 0) x (0, 1, 0).
- *Griffin-Watts model*, defined as a consecutively and seasonally differenced first-order moving average and seasonal moving average model. This model is identified as (0, 1, 1) x (0, 1, 1).
- *Brown- Rozeff model*, defined as a seasonally differenced first-order autoregressive and seasonal moving average model. In term of Box-Jenkins terminology, this model is identified as (1, 0, 0) x (0, 1, 1).

These models suggested as premier models on the basis of the diagnostic tests incorporated in the Box-Jenkins procedures and upon obtained predictive evidence. Foster (1977) conducted cross-sectional ACF and PACF analyses to derive the model, and on based on absolute percentage errors it performed better than firm-specific Box-Jenkins ARIMA models in one-quarter ahead quarterly earnings predictions on a sample of sixty-nine firms. However, Brown and Rozeff (1978), Griffin (1977), and Foster (1977) himself note that the Foster's model does not fit the data, as it fails to incorporate a systematic seasonal lag (a seasonal moving average component). The main defect of the model is the assumption that first-order autoregressive process describes the times series behaviour of the fourth differences in quarterly data of all firms. Watts (1975) and Griffin (1977) report that the cross-sectional auto-correlation function (acf) and partial auto-correlation function (pacf) could be modeled by the (0, 1, 1) x (0, 1, 1) model, which is a multiplicative first-order moving average process in first differences of the seasonal differences. Brown and Rozeff (1979) extend the model with incorporated seasonal moving average component and compared it with the Box-Jenkins, Foster and Griffin-Watts models. They conclude that their model as well as Griffin-Watts model outperform Foster's model on the basis of goodness-of-fit statistics. Brown and Rozeff (1978) obtain MAPE for one-, five-, and nine-quarter-ahead forecasts for each model and concluded that their model outperform Foster's model at all time horizons and also outperform Griffin-Watts and Box-Jenkins models at longer horizons.

Lorek (1979) examine the predictive ability of firm-specific Box-Jenkins models, Foster,

Griffin-Watts and Brown-Rozeff models. After firm-specific models are identified, a comparison can be made of the (pdq) x (PDQ) forms of the models versus the quarter-to-quarter and quarter-by-quarter findings of prior research. Since prior research reports one-step-ahead quarterly earnings predictions, Lorek (1979) was the first to compare the predictive ability of Foster and other parsimonious models, relative to firm-specific models over longer time horizons. Griffin-Watts model appeared to be the best-performing model.

Lorek's (1979) findings are diverse for models used in Brown and Rozeff (1979), Foster (1977), Griffin (1975), and Watts (1977). Lorek (1979) argues that it may be premature to single out a particular parsimonious time-series model for quarterly earnings. The diversity in results may be determined by underlying specific time-series. Collins and Hopwood (1980) discuss the value of multivariate techniques relative to univariate ones. They explore whether a univariate model should be identified individually for each firm or if a generally identified model would provide forecasts that are equal to or superior to those generated by the individually identified models. Prior research provides controversial or inconclusive results, and this motivates the further research in the area. Lorek and Willinger (2006) prove the random walk with drift model to be superior over ARIMA-based models in the pooled one-step-ahead quarterly earnings predictions. This finding is inconsistent with the time-series literature, where ARIMA family models outperform the naïve expectation models. However, the predictive power of tested models exhibits contextual predictive performance, dependent on the firm characteristics. They find that Griffin-Watts model outperforms random walk with drift model for regulated firms, whereas they report the joint dominance of the random walk with drift and Griffin-Watts models over seasonal random walk with drift, Foster and Brown-Rozeff models for the default sample of firms.

Following Brown and Kennelly (1972), Watts (1975), Griffin (1977), Foster (1977), Lorek (1979), Collins and Hopwood (1980), Bathke and Lorek (1984), Foster, Olsen and Shevlin (1984), Mendenhall and Nichols (1988), Bernard and Thomas (1990), Lorek and Willinger (2006) we use a broader set of univariate time-series models, Box and Jenkins models to make the most efficient use of the time-series data. Table 1 presents forecasting performance of the time-series models in prior research.

Table 1 summarizes the average rank, Friedman ANOVA S-statistic and MAPE of each prediction model for all quarters based on Foster (1977), Bathke and Lorek (1984), and Lorek and Willinger's (2006). Foster (1977) and Bathke and Lorek (1984) argue that seasonal outperform non-seasonal naive models in terms of MAPE and average rank. However, Lorek and Willinger (2006) document contrast findings. They report significantly higher MAPE for all models. They explain that by the differences in sample period. They analyze relatively new data in comparison with Foster (1977), Brown and Rozeff (1987) and Bathke and Lorek (1984). Bathke and Lorek (1984) argue that Brown-Rozeff model outperforms the remaining forecast models across all error metrics and quarters. Foster (1977) finds that naive seasonal models have lower ranks than non-seasonal naive models, and Foster model has the lowest rank and the lowest MAPE compares to the remaining models. However, as it was mentioned before, Foster (1977) later agreed that this model does not fit the data well. Lorek and Willinger (2006) report the best performance for Griffin-Watts model in terms of average rank and forecast errors.

**Tab. 1: Time-series Models in Prior Research**

No.	Model	Research papers	MAPE	Average rank
1.	Seasonal random walk	Brown and Kennelly (1972); Foster (1977)	0,287**	3,847**
2.	Seasonal random walk with drift	Brown and Kennelly (1972); Beaver (1974); Bathke and Lorek (1984); Bernard and Thomas (1990), Lorek and Willinger (2006)	0,404* 0,283** 0,594***	3,49* 3,395** 3,18***
3.	Simple random walk	Bradshaw et al (2010); Foster (1977); Lorek (1979)	0,346**	3,849**
4.	Simple random walk with drift	Foster (1977); Bathke and Lorek (1984), Lorek and Willinger (2006)	0,421* 0,346** 0,555***	3,17* 3,598** 2,93***
5.	Foster model	Foster (1977); Lorek (1979), Collins and Hopwood (1980), Bathke and Lorek (1984), Lorek and Willinger (2006)	0,398* 0,258** 0,576***	3,02* 2,710** 2,98***
6.	Brown-Rozeff model	Foster (1977); Brown and Rozeff (1979); Lorek (1979), Collins and Hopwood (1980), Bathke and Lorek (1984); Bernard and Thomas (1990), Lorek and Willinger (2006)	0,369* 0,563***	2,55* 3,00***
7.	Griffin -Watts model	Watts (1975); Griffin (1977); Foster (1977) Lorek (1979); Brown and Rozeff (1979); Lorek (1979), Collins and Hopwood (1980), Bathke and Lorek (1984), Lorek and Willinger (2006)	0,397* 0,562***	2,76* 2,90***
		Friedman ANOVA S-statistic	46.84* 919,7** 187,25***	

\*MAPE, Friedman ANOVA S-statistic and average rank for all quarters in Bathke and Lorek (1984)

\*\* MAPE, Friedman ANOVA S-statistic and average rank for all quarters in Foster (1977)

\*\*\* MAPE, Friedman ANOVA S-statistic and average rank for all quarters in Lorek and Willinger (2006)

In the period from 1968 to 1987, when financial analysts' coverage of the firms was increasing, the research asked whether analysts' forecasts are superior to time-series forecasts. After Brown (1987) reported the superiority of analysts' forecasts over the time-series forecasts, the research on properties of time-series forecasts experienced a deep decline. The most of further research (Brown and Rozeff, 1978; Collins and Hopwood, 1980; Mendenhall and Nichols, 1988; Kross, Ro, and Schroeder, 1990; Abarbanell, 1991; Branson, Lorek, and Pagach, 1995; Walther, 1997; Kothari, 2001; Bradshaw, Drake, Myers, and Myers, 2010; and etc.) compare the performance of analysts' and time-series forecasts and in most of cases they prove analysts' forecasts to be superior. Further research (Brown et al, 1987; etc.) investigates the sources of analysts' forecast superiority. One source of analysts' forecast superiority is related to *timing advantage*, because the experts process the information obtained between the date on which time-series forecast is done and the date on which the analysts' forecast is done. However, Kross et al (1990) provide evidence, that financial analysts' forecasts are negatively correlated with forecast horizon,

which is consistent with Bradshaw et al (2010) findings, who prove time-series forecasts to be superior over the analysts' forecasts for longer horizons. The other source of analysts' forecast superiority stems from *information advantage*, because analysts have an access to accounting and non-accounting information sources. O'Brien (1988) explores forecasting ability of time-series models and analysts forecasts and argues that the latter are superior, because analyst use times series modeling along with a wide range of other information sources, such as macroeconomic releases, management releases on sales, production, acquisitions; and other analysts' forecasts. Branson et al (1995) report that analysts' forecasts exhibit more accurate performance for large firms and time-series forecasts perform better for small firms without analysts' following.

Burgeoning accounting data research based on the analysts' forecasts challenged the other strand of literature. Financial analysts' overreaction and underreaction to news received a high scholarly interest.<sup>2</sup> Abarbanell and Bernard (1992) explore to what extent analysts' responses to earnings might explain the anomalous delayed stock price responses to earnings. They conclude that analysts tend to underreact to recent earnings. They criticize "generalized overreaction" in DeBondt and Thaler (1990), which is not easily viewed as an overreaction to earnings, and not clearly connected to overreaction in stock prices. Easterwood and Nutt (1999) reconcile the controversial evidence provided by DeBondt and Thaler (1990) and Abarbanell and Bernard (1992). They test Abarbanell and Bernard's (1992) underreaction robustness to the nature of information. By assuming that analysts' reaction might depend upon the nature of information in prior period earnings, Easterwood and Nutt (1999) re-examine analysts' reaction to prior earnings change (and forecast errors) and show that the evidence is more consistent with analysts underreacting to bad news and overreacting to good news. Gu and Xue (2007) find the same patterns in market professionals' reaction to good and bad news. Their findings are consistent with Easterwood and Nutt (1999), who emphasize the great uncertainty associated with good news leading analysts to overreaction to extremely good news. Gu and Xue (2007) argue, that optimism in analysts' forecasts following extreme good news is a manifestation of analysts rational behaviour in the face of high earnings uncertainty rather than overreaction. Scholars suggest that optimism in analysts' forecasts may be influenced by incentives. Abarbanell and Lehavy (2003) examine evidence on analysts' forecasts and incentives. They argue that the reason for controversy in results or lack of robustness of prior studies on existence and the nature of analysts' bias and inefficiency with respect to past news lies in firm reporting choices that play an important role in determining analyst forecasts errors. Espahbodi, Dugar, and Tehranian (2001) explore how changes in analysts' incentives and subsequent changes in the costs and benefits of issuing optimistic forecasts affect changes in the properties of analysts' earnings forecasts. Furthermore, they examine analysts' underreaction to past earnings changes and to past forecasts errors, as a phenomenon related to the informational efficiency issue of the stock market. Chan et al (1996) identify the slow or delayed earnings revisions especially for stocks with earnings below expectations and attribute it to analysts' reluctance to alienate the management. Amir and Ganzach (1998) and Marsden, Veeraraghavan, and Ye (2008) examine inefficiency in analysts' forecasts on the basis of behavioural decision theory. They argue that behavioural biases affect analysts' earnings forecasts and generate both analysts' overreaction and underreaction in their earnings forecasts. Behavioural literature provides evidence that analysts' forecasts are biased. This motivates our interest in time-series forecasting models.

After reviewing prior and recent research, we found that time-series forecasts are superior to analysts' forecasts in predicting quarterly earnings in Baltic stock market. The reasoning is the

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<sup>2</sup> Financial analysts' overreaction and underreaction is explored in DeBondt and Thaler(1990), Abarbanell (1991), Abarbanell and Bernard (1992), La Porta (1996), Chan et al (1996), Amir and Ganzach (1998), Easterwood and Nutt (1999), Espahbodi, Dugar and Tehranian (2001), Abarbanell and Lehavy (2003), Gu and Xue(2007), Marsden, Veeraraghavan and Ye (2008), and etc.

following:

- Time-series models dominated in the early research that examined from 50 to 100 firms (we have a sample of 40 firms).
- Time-series models perform better for shorter period. Times series models require at least 10 years of data (we have 39 observations of quarterly earnings).
- Time-series forecasts are accurate for both short and long forecast horizons. The early research use at least one quarter ahead in quarterly setting, and they perform better for longer horizons.
- Although in general analysts' forecasts perform better, the economic magnitude of the difference between analysts' and times series forecasts is modest.
- Time-series models exhibit better performance for small firms (all Baltic firms are characterized as small, young and without analysts' following).
- Sufficiently large panel of analysts' coverage for the Baltic firms is not available.

### 3 Data and methodology considerations

Quarterly earnings numbers are taken from the quarterly financial statements of 40 Baltic firms<sup>3</sup> over the period from 2000 through 2009. All sample firms are characterized as small-size, young and not followed by financial analysts. Therefore, motivated by prior research we use time-series models for forecasting quarterly earnings and analyze how these models perform in terms of average ranks and forecast errors.

We assume that investors in Baltic stock market resemble less accurate naïve models to form their expectations rather than more complicated. Therefore, we employ *seasonal random walk model*, which assumes seasonality in quarterly data:

$$E(Q_t) = Q_{t-4}, \quad (1)$$

where  $Q_t$  = is a quarter t of a given year.

The model was estimated by Brown and Kennelly (1972), Foster (1977), Foster et al (1984), Mendenhall and Nichols (1988) and Batallio and Mendenhall (2005).

We use *seasonal random walk with drift*, which captures seasonality patterns in quarterly earnings is estimated as follows:

$$E(Q_t) = Q_{t-4} + \delta, \quad (2)$$

where  $Q_t$  = is a quarter t of a given year,

$\delta$  = drift term, calculated over the quarter of interest.

We include this model because it was extensively used in prior research by Brown and Kennelly (1972), Beaver (1974), Lorek (1979), Bathke and Lorek (1984), Foster et al (1984), Mendenhall and Nichols (1988), Bernard and Thomas (1990), Ball and Bartov (1996), and Lorek and Willinger (2006). It appeared to be a good proxy for market's expectation of quarterly earnings. Its expectations are based entirely upon seasonal patterns in the data. Furthermore, it does not require a firm-specific parameter estimation aside from the deterministic trend constant and is relatively parsimonious in nature.

Following Bradshaw et al (2010), Foster (1977) and Lorek (1979), we use *simple random walk*, which ignores any seasonality in quarterly data:

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<sup>3</sup> See the list of sample firms in Appendix 1.

$$E(Q_t) = Q_{t-1}, \quad (3)$$

where  $Q_t$  = is a quarter t of a given year.

Following Foster (1977), Lorek (1979), Bathke and Lorek (1984), Lorek and Willinger (2006) we use *simple random walk with drift model*, which suppresses any seasonality:

$$E(Q_t) = Q_{t-1} + \delta, \quad (4)$$

where  $Q_t$  = is a quarter t of a given year,

$\delta$  = drift term, calculated over the quarter of interest.

Random walk with drift model serves as benchmark expectation model, which bases its expectations exclusively on adjacent (quarter-to-quarter) effects. This model does not require firm-specific parameter estimation aside from the deterministic trend constant, and serves as a control against potential structural changes in the holdout period.

Literature analysis (Foster, 1977; Lorek, 1979; Collins and Hopwood, 1980; Bathke and Lorek, 1984; Foster et al, 1984; Mendenhall and Nichols, 1988; Lorek and Willinger, 2007) showed that Foster's model exhibits better results in forecasting quarterly earnings. In terms of customary (pdq) x (PDQ) Box-Jenkins terminology, we estimate (100)\*(010) Foster's prediction model. This model is simple autoregressive process with a drift term, superimposed upon seasonally differenced series, which is calculated as follows:

$$E(Q_t) = Q_{t-4} + \varphi_1(Q_{t-1} - Q_{t-5}) + \delta, \quad (5)$$

where  $Q_t$  = is a quarter t of a given year,

$\delta$  = drift term, calculated over the quarter of interest,

$\varphi_1$  = autoregressive parameter.

This model belongs to ARIMA family models. It is more complex than naïve benchmark models and exhibits superior results. However, it has some issues that could be addressed employing more complex ARIMA models that we discuss next.

We also estimate *Brown-Rozeff model*:

$$E(Q_t) = Q_{t-4} + \varphi_1(Q_{t-1} - Q_{t-5}) - \bar{\theta}_1 a_{t-4}, \quad (6)$$

where  $Q_t$  = is a quarter t of a given year,

$\varphi_1$  = autoregressive parameter,

$\bar{\theta}_1$  = seasonal moving average parameter,

$\bar{\theta}_1 a_{t-4}$  = disturbance term at time t-4.

Brown and Rozeff (1979) addressed Foster's model issue by supplementing an autoregressive process with a seasonal moving-average parameter, which accounts for seasonality. This model appears to be superior over other time-series forecast models found in Lorek (1979), Collins and Hopwood (1980), Bathke and Lorek (1984), Bernard and Thomas (1990), Mendenhall and Nichols (1988), Brown and Han (2000) and Lorek and Willinger (2006).

Finally, we use *Griffin-Watts model*, which is calculated as follows:

$$E(Q_t) = Q_{t-4} + (Q_{t-1} - Q_{t-5}) - \theta_1 a_{t-1} - \bar{\theta}_1 a_{t-4} - \theta_1 \bar{\theta}_1 a_{t-5}, \quad (7)$$

where  $Q_t$  = is a quarter t of a given year,

$\theta_1$  = regular moving average parameter,

$\bar{\theta}_1$  = seasonal moving average parameter,

$\bar{\theta}_1 a_{t-4}$  = disturbance term at time t-4.

This is a consecutively and seasonally differenced first-order moving average and seasonal moving average model. The model was estimated in Watts (1975), Griffin (1977), Lorek (1979), Brown and Rozeff (1979), Collins and Hopwood, 1980; Bathke and Lorek (1984), Mendenhall and Nichols (1988) and Lorek and Willinger (2006).

The forecasting performance of the abovementioned models is tested by calculating mean absolute percentage error (MAPE). MAPE is calculated as follows:

$$MAPE = \frac{1}{n} \sum \left( \frac{Q_t - E(Q_t)}{Q_t} \right), \quad (8)$$

This error metric was previously used in many studies (Foster, 1977; Griffin, 1975; Lorek 1979; Brown and Rozeff, 1978; Bathke and Lorek, 1984; Mendenhall and Nichols, 1988; Bernard and Thomas, 1990; Lorek and Willinger, 2006; and etc).

For every quarter/firm combination in 2000-2009, the forecast errors from seven models will be ranked in terms of accuracy. The model with the most accurate forecast for a particular quarter/firm will be given a rank of 1; the model that gives the least accurate forecast will be given the rank of 7. Then the average rank of each model over all firms and all quarters will be estimated. We employ Friedman analysis-of-variance test to examine the null hypothesis that the average rank of all seven model is the same against the alternative hypothesis that average rank is not the same. The next section presents the results of the abovementioned methodology.

#### 4 Empirical results and discussions

Appendix 2 provides the descriptive statistics of time-series for 40 Baltic firms' quarterly earnings and Appendix 3 gives the summary of unit root tests for 40 Baltic firms' quarterly earnings. At first, we test the earnings series whether they have a unit root. From the variety of unit root tests KPSS test could be suggested. The reasoning is the following, Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) tests too often suggest unit roots even if there is no clear evidence for them (sensitivity too structural changes, etc.). So it is good to formulate the test, which is consistent under null "stationary" hypothesis versus a wide range of non-stationary reasons. A test with such properties is the KPSS test. KPSS test suggests non-stationarity for 7 of 40 Baltic firms' quarterly earnings, whereas ADF test suggests unit root for 19 of 40 Baltic firms (see calculations in Appendix 3).

Building on the prior literature we employ four benchmark expectation models: random walk (RW), random walk with drift (RWD), seasonal random walk (SRW) and seasonal random walk with drift (SRWD) and 3 premier ARIMA family models that include Foster (F), Brown-Rozeff (BR) and Griffin-Watts (GW) models. Appendix 4 presents the regression parameters and their significance level for premier ARIMA family models. The regression coefficients of Foster model were economically and statistically significant for 55% of all firms. When exploring the regression coefficients of Brown-Rozeff model, we find that the autoregressive parameter was significant for 60 % of firms and the seasonal moving average parameter was significant accordingly for 77.5% of firms. When exploring the regression coefficients of Griffin-Watts model, we find that the regular moving average parameter and the seasonal moving average parameter were significant for 82.5% and 62,5% of all firms respectively. Appendix 5 summarizes the forecasted earnings four-quarter ahead for each firm. Using earnings for the period of 2000 Q1 through 2008 Q3 we forecast quarterly earnings of the subsequent period of 2008 Q4 through 2009 Q3 using time-series models. Appendix 6 provides the forecasting errors across all firms in the sample for the forecasted period. We observe the high diversity in forecasted errors across firms/quarters, that affect the MAPE metrics for the four-step-ahead

quarterly earnings predictions (see Appendix 5) across the seven expectations models for each individual quarter (1st, 2nd, 3rd, 4th), as well as on a pooled basis across all quarters and years. Table 2 also summarizes average ranks for each individual quarter and on a combined basis.

**Tab. 2: Summary statistics on forecasts errors and average ranks**

<i>Panel A: Summary statistics on forecast errors: 2000-2009</i>										
Model/quarter	All quarters		Q1		Q2		Q3		Q4	
	MAPE	Average rank	MAPE	Average rank	MAPE	Average rank	MAPE	Average rank	MAPE	Average rank
Seasonal random walk (SRW)	370.66	3,969	276.63	3,950	370.93	3,875	597.05	4,050	238.03	4,000
Simple random walk (RW)	293.71	3,769	353.06	4,025	308.98	3,800	271.10	3,250	241.69	4,000
Seasonal random walk with drift (SRWD)	353.78	3,663	266.17	3,700	347.95	3,625	572.88	3,900	228.13	3,425
Simple random walk with drift (RWD)	292.46	3,688	351.04	3,925	309.31	3,600	272.09	3,350	237.40	3,875
Foster model (F)	458.27	4,308	365.01	4,359	483.74	4,359	721.24	4,564	263.10	3,949
Brown-Rozeff model (BR)	423.77	3,619	314.05	3,450	463.15	3,400	652.65	3,475	265.23	4,150
Griffin-Watts model (GW)	713.93	4,919	532.12	4,525	696.95	5,275	1150.34	5,350	476.30	4,525
<i>Panel B: Paired comparisons – all quarters</i>										
	SRW (3,969)	RW (3,769)	SRWD (3,663)	RWD (3,688)	F (4,308)	BR (3,619)				
RW (3,769)	RW									
SRWD (3,663)	SRWD	SRWD								
RWD (3,688)	RWD	RWD	SRWD							
F (4,308)	SRW	RW	SRWD	RWD						
BR (3,619)	BR	BR	BR	BR	BR					
GW (4,919)	SRW	RW	SRWD	RWD	F	BR				

**Note:** Forecasting performance of naïve and premier ARIMA family models is presented in Appendix 5, and Appendix 6 summarizes the forecasts errors across the firms listed in Baltic stock market. Appendix 7 summarizes pair comparisons of average ranks of each time-series model for each quarter separately running Bonferonni test.

Panel A summarizes MAPE metrics and average ranks for the four-step-ahead quarterly earnings predictions across the seven expectation models for each individual quarter (1st, 2nd, 3rd, 4th), as well as on a pooled basis across all quarters and years. The prediction model yielding the smallest absolute percentage error was given a rank of one; the next smallest error was given a rank of two and so on until the model yielding the largest error was given a rank of 7. On the basis of the given MAPE and average ranks we make conclusions on the accuracy of forecast for each time-series model.

Consistently with Bathke and Lorek (1984), we prove that Brown-Rozeff model outperforms the remaining models for all quarters, for 1st, 2nd and 3rd quarters but not for the 4th quarter in terms of average ranks. However, we get the rank of 3,619 for all quarter across firms, which is higher than in Bathke and Lorek (1984). They got 2,55 for all quarters across all sample firms. For the 4th quarter RWD and SRWD outperform Brown-Rozeff model. However, RW and SRW models outperform the remaining Foster and Griffin-Watts models. We document the highest average rank for Griffin-Watts model (4,919), whereas in Bathke and Lorek (1984) and Lorek and Willinger (2006) this model performs well in terms of average ranks. RW, RWD,

SRW, SRWD appear to be a quite accurate forecasting models for Baltic firms' quarterly earnings, as average ranks are significantly lower than using Foster and Griffin-Watt model, that is in contrast with the prior research. However, we think that in Baltic market investors act as if they aware of existence and form serial correlation, that is consistent with Ball and Bartov (1996). To summarize, naïve models perform quite well for each quarter and for all quarters and this evidence suggests that investors in Baltic stock market resemble less accurate naïve models to form their expectations rather than more complicated.

In terms of forecasts errors, we observe that naïve expectations models outperform the premier (ARIMA family models) models for 1st, 2nd, 3rd and 4th quarters. For the 1st quarter the best performing model is SRWD model and the worst is GW model (inconsistently with prior research). For 2nd, 3rd and all quarters RW and RWD models produce the smallest MAPE. This finding is consistent with Lorek and Willinger (2006). They find that RWD outperform the remaining models for 2nd, 3rd 4th and for all quarters. We find that for the 4th quarter, SRWD outperforms the remaining models. However, Lorek and Willinger (2006) find that SRWD produce the highest MAPE among the abovementioned models on a pooled basis. We argue that for the 1st and 4th quarters the best performing model is SRWD and the worst is RW model among naïve expectations models. It should be noted that for the 2nd and 3rd quarters SRW and SRWD models perform significantly worse than RW and RWD models, as their forecast errors are significantly higher. Griffin-Watts model produces the largest errors in quarterly earnings forecasts. Our findings are inconsistent with prior empirical studies (Lorek and Bathke, 1984).

In spite of the fact that prior research reports strong predictive power for GW model in forecasting quarterly earnings, for our data it is the worst performing model across all quarters. In general we find that benchmark models, defined as short-memory models, show better performance than premier or long-memory models for each quarter and on the pooled basis.

It also should be noted, that for the 4th quarter forecast errors are significantly lower compared to those for remaining quarters and for all quarters. The differences across the forecasting modes are the smallest in these quarters, which is in line with Lorek and Bathke (1984). They find RWD outperforms SRWD, Foster, and GW models despite the fact that it completely ignores seasonal relationships. However, in our study these seasonal relationships seem to be taken into account and, therefore, SRWD outperforms the remaining models.

MAPE for all models are quite large when compared with forecast errors in prior research, but we can explain that by the large deviations of quarterly earnings of some analyzed firms during the last 2 years due to worsening economic conditions in the Baltic market and due to the dominant pessimism in the market. The same tendency was proved in prior literature. Lorek and Willinger (2006) also report much higher MAPE than reported in previous empirical studies. The early research mostly explored the data before 1974. Quarterly earnings were not so much volatile during this period and, therefore, the forecast errors are relatively low.

Panel B contains pair comparisons of average ranks of each time-series models for all quarters in terms of their predictive ability. Given that lower rankings imply a lower MAPE and greater predictive ability we find that GW model was outperformed by all models. RWD outperforms all but BR and SRWD models. SRWD outperforms all naive models, which is consistent with prior research and consistent with the idea that the majority of firms exhibit a seasonal component in their quarterly earnings series. Foster model also shows a poor predictive ability. However, it is better when compared to GW model. This finding is in a marked contrast with Foster (1977), who proves Foster's model to have the lowest rank and, therefore, the best predictive ability among other time-series models. BR model exhibits the best predictive ability for all quarters. This is because it supplements autoregressive process with a seasonal moving-average parameter and tracks the adjacent quarter-to-quarter serial correlation in the quarterly earnings series which is ignored by SRWD. This finding is consistent with Bathke and Lorek

(1984). They also argue that BR outperforms GW and Foster models.

In general, the more sophisticated models do not perform well in Baltic market. Our findings suggest that investors use naïve models to form their expectations. They are not sufficiently sophisticated to use premier models.

Pooled results across all quarters and years differ from those for individual quarters. Therefore, on the later stage of research, it is necessary to compute the average ranks for each quarter individually and perform Friedman two-way ANOVA to check for accuracy of results. Table 3 summarizes ANOVA Friedman test results.

**Tab. 3: Friedman Test Results**

ANOVA						
	<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>Prob&gt;F</i>
1th quarter	Between Groups	32.068383	6	5.34473049	1.35	0.2363
	Within Groups	1078.89936	272	3.96654176		
	Total	1110.96774	278	3.99628684		
2th quarter	Between Groups	98.668383	6	16.4447305	4.42	0.0003
	Within Groups	1012.29936	272	3.72168882		
	Total	1110.96774	278	3.99628684		
3th quarter	Between Groups	136.202998	6	22.7004997	6.33	0.0000
	Within Groups	974.764744	272	3.58369391		
	Total	1110.96774	278	3.99628684		
4th quarter	Between Groups	25.845306	6	4.30755101	1.08	0.3748
	Within Groups	1085.12244	272	3.98942072		
	Total	1110.96774	278	3.99628684		

**Note:** we test if there are significant differences in average ranks of 7 time-series models across all firms/quarters. We reject the null if there is a 5% chance that at least one of the post tests will have  $P < 0.05$ . P-value will be very small, if the sums are very different. The 5% chance does not apply to each comparison but rather to the entire family of comparisons.

The performed ANOVA two way Friedman test shows that for 1st and 4th quarters there are no significant differences across applied time-series models in predicting quarterly earnings in Baltic stock market. However, for 2nd and 3rd quarters the differences are significant at 0.01% significance level. We report significantly lower values of F statistics, compared to ones reported in prior research. Appendix 7 summarizes pair comparisons of average ranks of each time-series model for each quarter separately running Bonferonni test. We also did Sidak and Scheffe tests (not reported), but they show basically the same as Bonferonni test. Each cell in the tables of Appendix 7 contains the p-values of compared prediction models for the particular row-column comparison (a row model p-value on upper level, a column model p-value in lower level). After performing pair comparison of average ranks of time-series model for the 1st quarter we find significant differences in predictive ability of RW and RWD. They outperform SRW at 0.1 and 0.05% significance level respectively. We do not find significant differences in the forecasting performance of the remaining models for the 1st quarter. For 2nd quarter we report significant superiority of RW, RWD, SRW, SRWD over GW model. RW and SRW outperform GW model at 0.05% significance level, and RWD and SRWD outperform GW at 0.01% significance level. GW exhibits significantly (at 0.01% significance level) higher predictive ability than BR model for 2nd quarter. Comparing naïve expectation models forecasting ability we prove RW outperform SRW and RWD outperform SRWD at 0.1% and 0.05% significance level. For 3rd quarter we also find that GW outperforms BR model at 0.01%

significance level. RW and RWD exhibit significantly higher predictive ability than Foster at 0.05% at 0.1% respectively. All naïve models significantly outperform GW model for 3rd quarter. We find that there are no significant differences in forecasting ability among naïve models. For 4th quarter we find that RW, RWD, SRW significantly outperform a predictive ability of Foster model. Although we find almost no differences in forecasting performance of naïve models, for 2nd and 3rd quarters, for 4th quarter we report the significantly better performance of SRW over RW, that is suggestive of the presence of a seasonal component in firm quarterly earnings series.

## 5 Conclusions

Before discussing our conclusions, we detail the limitations related to the research framework that we employ. First, our sample for the period of 2000–2009 is subject to a survivorship bias that is present in most of time-series research. Second, we explore a wide range of ARIMA family models and naïve expectations models. However, the other expectations-based models can provide different results.

This paper explored the time-series properties of the quarterly earnings of forty firms over the period from 2000 through 2009. We examined the forecasting ability of seven time-series models for quarterly accounting data of Baltic firms. We employed four naïve (simple and seasonal random walk with and without drift) and 3 premier ARIMA family (Foster, Brown-Rozeff, Griffin-Watts) models to analyze their forecasting performance. We conclude that quarterly earnings follow simple and seasonal random walk processes that appear to adequately describe quarterly earnings in Baltic stock market. Consistently with Foster (1997) we find, that each quarterly earnings series proves to have a seasonal and adjacent quarter-to-quarter component. We derive this conclusion from the inspection of four-step-ahead forecasting results. We prove that Brown-Rozeff model, which supplements an autoregressive process with a seasonal moving-average parameter, accounts for the seasonality and exhibits the best performance for Baltic firms data set on a combined basis. Based on goodness-of-fit statistics we compare the selected models forecasting performance and find that naïve time-series models outperform premier ARIMA family models in terms of mean absolute percentage errors and average ranks. Our findings suggest that investors use naïve time-series models to form their expectations. They are not sufficiently sophisticated to use premier Box Jenkins ARIMA family models.

This paper focuses on the univariate analysis, when each firm's earnings were examined separately. The natural extension of the current research will be a jointly quarterly earnings analysis. It would allow comparing the forecasting accuracy of the individually identified and the generally identified models. This research can be extended by exploring how time-series models approximate stock market expectations that are highly dependent on the accuracy of time-series predictions. Therefore, the next step in our research is to use the abovementioned models to explore the market responses to quarterly earnings. Following Lorek and Willinger (2006) methodology, we could also examine contextual nature of predictive power of time-series models in forecasting quarterly earnings of firms with different characteristics. However, in this case we will inevitably face the small sample problem, which needs careful thinking in order to address it.

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## ***Time-Series Models Performance in Forecasting Quarterly Earnings in Baltic Stock Market***

### **Summary**

Some earlier papers explored the forecasting performance of time-series models for quarterly earnings and found consistent evidence that both simple and sophisticated time-series models perform quite well in terms of forecast errors. The further research switched to the forecasts based on experts' predictions, as several studies proved them to be superior to time-series forecasts. This resulted in certain shortage of papers devoted to further analysis of time-series models. This paper aims to explore the time-series behavior of quarterly earnings for 40 Baltic firms over the 2000-2009 period. Quarterly earnings are analyzed by time-series models including simple and seasonal random walk models with and without drift, Foster, Brown-Rozeff, and Griffin-Watts models, aiming to explore their forecasting performance. We adopt a firm-specific Box-Jenkins time-series methodology to perform time-series analysis for individual firms. Motivation for times series models rather than analysts' forecasts is the lack of sufficiently large panel of analysts' forecasts for Baltic firms, and, more importantly, recent research reports time-series forecasts to be superior to analysts' forecasts in predicting quarterly earnings for longer periods. Based on goodness-of-fit statistics we compare the selected models forecasting performance and find that naïve time-series models outperform premier ARIMA family models in terms of mean percentage errors and average ranks. Our findings suggest that investors use naïve models to form their expectations. They are not sufficiently sophisticated to use premier models.

**Key words:** Time-series models; Forecasting; Forecast errors; Quarterly earnings.

**JEL classification:** M41.

### **Editorial note:**

Due to restrictions on a paper's extent in the hard copy of *Conference Proceedings*, the appendices, which are referred to in the paper by author, are published on the attached CD medium *Conference Proceedings* only.



# The Importance of Management Accounting in Financial Performance Measurements<sup>#</sup>

*Zbyněk Halíř\**

## 1 Introduction

Ensuring a satisfactory performance level is one of the fundamental prerequisites for the successful development of each company. Securing abundance of high quality information, which reflect the level of business performance and help all involved bodies to understand in what direction and why the performance is developed, as well as the possibility of controlling the way they should develop, requires the existence of quality and complex information system and management control system. Under the terms of such a corporate information system, particularly in matters relating to financial performance, an accounting subsystem plays an important role. Accounting is always associated with decision-making tasks of various subjects and therefore it should enable them to take the right decisions related to the company.

This paper is a follow-up to an earlier one. The core of an earlier output (Halíř, 2010) was measuring and assessing financial performance by external users of financial information. This paper focuses on performance management from managers' viewpoints, thus enriches the previous output with a new perspective on the issue of performance measurement. The paper simultaneously tries to compare both approaches, if it is desirable.

On the other hand, it should be noted that although the financial performance seems to be a key factor in the management control, it is still only a partial aspect that affects more complex performance at a broader level of understanding. The relationship between generally conceived performance and financial performance of the company (primarily from manager's point of view) will be an issue of further research and conclusions will be published in subsequent papers.

The paper discusses the role of management accounting in performance management. It seeks to clarify the relationship between management accounting system and performance management system. Both of them can be understood as subsets of management control system in general, but they perform different roles within it. Then the paper deals with a dual concept of measuring and managing financial performance. It emphasizes different information needs of different groups of users with key regard to managers (internal users of management accounting information).

In this regard, the paper (and the related research) focuses mainly on the following objectives:

- to analyze the role of management accounting in performance management system and to assess its importance, but also highlight areas where management accounting suffers from its limitations,
- to assess to what extent the information needs of managers are compatible with the information needs of external users, and consequently to consider whether it is better to design two separate information systems for external and internal users or prefer the pursuit of their unification.

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## 2 Content definitions

Fulfilment of the stated aims of the paper requires the definition of content of the issues studied.

### 2.1 Management accounting

Management accounting is a very important tool for measuring and subsequently managing the financial performance of an entity

Management accounting is “the application of the principles of accounting and financial management to create, protect, preserve and increase value to the stakeholders of profit and not-for-profit enterprises, both public and private. Management accounting is an integral part of management, requiring the identification, generation, presentation, interpretation and use of information relevant to:

- formulating business strategy;
- planning and controlling activities;
- decision-making;
- efficient resource usage;
- **performance improvement** and value enhancement;
- safeguarding tangible and intangible assets;
- corporate governance and internal control” (CIMA, 1982).

Management accounting has undergone continuous development during recent years. One of its key features is the fact that it has been increasingly extending beyond the principles of double-entry accounting. That is because of the requirements for timeliness and originality of various reports and other information. Other methodological elements are often applied in a modified form. Management accounting is thus understood as a system of value (financial) information aimed at purposeful selection of both accounting information and information from other subsystems of the information system of an enterprise as well as from the surrounding environment. The motivation of carrying out such special-purpose selections of information is to provide as wide range of information for decision making as possible.

### 2.2 Performance of an enterprise

Business performance can be generally defined as the characteristic, which assesses whether the business process helps to achieve business goals within a defined time period. If so, this characteristic should also measure the extent it occurs and assess what factors contribute to it. According to Wagner (2005) the above definition implies the following context: The objectives of an enterprise are resultant of objectives of all subjects that enter into a relationship with the company. The assessment always depends on the questions for whom and for what purpose is the performance assessed (assessment of performance is a purpose-oriented evaluation).

*In my opinion, this observation is very closely tied to a dual conception of the financial and management accounting. This issue will be discussed in chapter 4 of this paper.*

Other sources characterize performance measurement as “the process of assessing the proficiency with which a reporting entity succeeds, by the economic acquisition of resources and their efficient and effective deployment, in achieving its objectives” (CIMA, 1982).

Determination of these targets and objectives is crucial for the interpretation of performance. The traditional determination of the objectives of an enterprise was historically oriented primarily to maximizing value for business owners. This concept is based on shareholders theory. The performance is then understood primarily as increasing the value of capital invested by the owner of the company. This kind of performance can be suitably described by the

financial measures, which results in understanding the performance only as its financial component.

In the course of time stakeholders theory has more and more forcefully come in useful. It assumes that the goal of an enterprise is to fulfil not only the company's owner's expectations, but also the expectations of other interested subjects in the company's surroundings. For some of these subjects many aspects are more important than the company's financial results. Performance is then to be understood more broadly. The assessment is no longer possible only through financial measures, indicators and benchmarks.

High-quality and sophisticated performance measurement system is one of the fundamental prerequisites for the successful business process management. While managing performance the managers strive to influence the economic subjects' development by a rational way – so that they would be able to fulfill the aims they have been founded for (Král, 2008).

### **2.3 Financial performance of an enterprise**

Only a comprehensive and complex performance reflects how the firm leads in a competitive environment and what its future growth prospect is like. Financial performance, which is based on traditional accounting data, is hierarchically subordinated item of a complex evaluation of company's performance. It is “only” a subset of such holistically understood performance.

From the managerial point of view the fundamental problem is the fact that financial performance needs to be, of course, assessed by financial measures. The future potential of the performance has been increasingly emphasized. The main importance of information on company's performance is not in the retrospective assessment of the economic events, but in providing a basis for deciding on options for future development. The main task of measuring performance is to help to find answers to questions how our present and future decisions and actions contribute to the future benefit (Wagner, 2005).

The source of data for financial performance measures is an accounting system. However, accounting is tactically and operationally oriented tool and sometimes fails to reflect and satisfy the requirements for information support of strategic management. The financial performance measures and benchmarks are in accordance with the usual traditional business objective of raising the value for the owner of the company, but if we emphasize the potential of strategic business performance, many effects are proved in a way, that financial measures are not able to capture, or even in the opposite way, than the accounting shows them.

*Many analytical performance measures are based on this criticism. They are based on the idea that the performance of the company can be better described by a wide range of indicators that are directly tied to the level of future economic benefit, rather than by the general estimate of future benefit, that is expressed by one comprehensive (synthetic) measure. Systems of analytical performance measures<sup>1</sup> are definitely much more suitable tools for the assessment and management of comprehensively understood and strategically oriented performance. That is, especially, for the following reasons:*

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<sup>1</sup> Perhaps the best known and the most sophisticated system of analytical performance measures is the concept of Balanced Scorecard (BSC), which integrates criteria and tools that were previously used mostly in isolation. It identifies relationships between four major prospects and links them with business vision and business strategy. A major contribution of this approach is a new understanding of the financial perspective. It is the attempt to create a more comprehensive measurement system of company's performance. Traditional measures considered the level of financial indicators as a determining factor in business performance. Thanks to the BSC concept much greater attention to the scales and measures, which are an important indicator of business performance in strategic time horizon, began to be given. The level of care for employees began to be taken into consideration as well as the way the company appears to its customers; it is also possible to express how important are the innovative activities, etc. Only as the impact of reaching the desired level of so-called value drivers, the objectives in terms of financial performance measures (so-called value results) can be met.

- *system contains natural criteria and measures, which have essential significance for assessing the financial performance in the long (strategic) run;*
- *wide range of indicators allows their decomposition into sub-indicators, which are better understood by responsibility centres, which stand at a lower hierarchical level of organizational structure; it has a positive effect on their motivation, working moral and mutual communication and integration;*
- *every company can create a system of measures and benchmarks, which will support its strategy and ensure its linkage with top objectives of the company;*
- *for all the above-mentioned reasons a comprehensive system of indicators is more effective management tool.*

Now, let me get back to the financial performance, which is one of the components of the above mentioned complex performance. Whatever activity people are engaged in, they always consider what has to be sacrificed on one hand and what does the activity bring them on the other hand. By mutual comparison of sacrifices and benefits the individual comes to the conclusion on what level of performance he or she has acted.

Such a general view can also be applied to business activity. The essence of business process is always the transformation of inputs to outputs. Inputs that were incurred in business process correspond to sacrifices that were mentioned above and outputs, which are gained thanks to the business process, then correspond to benefits that were mentioned above. In order to reach the desired level of financial performance, it is necessary that the value of total output exceeds the value of total input. The main motive of business is a general appreciation of inputs by gaining a higher output value.

From the relationship between costs incurred and economic benefits gained some important criteria for the rational development of the business process can be derived. The most important of these are measurements of economy, efficiency and effectiveness. Economy is rationality in the use of economic resources. The aim is to achieve desired outcomes at minimum cost. The effectiveness balances incurred costs against achieved economic benefits. This disparity is usually quantified by profit. Finally, efficiency is the ratio of effectiveness (i.e. profit) related to the total of economic resources employed.

### **3 The relationship between management accounting and financial performance management**

Performance management can be considered as a primary goal of managers. Managing business performance means influencing the development of the company that was entrusted to manager's care in order to optimally fulfil the objectives which the company has been founded for. Such a responsible task can be performed only with a sufficiently wide range of adequate source information.

Performance management should necessarily integrate all the functions of a high-quality management control system, which means organizational function, planning function, controlling function, motivation function and last but not least, the information function, which penetrates all the above mentioned. Management accounting can be considered as an information tool of performance management system, so it can be characterized as an information-oriented performance management subsystem.

Management accounting variables are only financial measures, while the measures of performance are often based as well on natural measures. That is why the management accounting as an information support for the performance management system plays only a partial role.

The fact that the role of management accounting in performance management system is only partial, however, does not imply that management accounting, which has traditionally focused rather on operational and tactical level of management control, is not an appropriate management tool. The possibility of effective strategic performance management must necessarily be supported by effective operational and tactical procedures. In this regard, the role of management accounting is important. It is necessary to become aware of its proper linking to strategic objectives.

The mutual hierarchy makes clear that both management accounting and performance management system are influenced primarily by demands for efficient management control. However, this relationship should be also seen in reverse order. A prerequisite of effective management control is that both the performance management system, as well as management accounting system operate in conformity with each other and provide high-quality information to enable appropriate assessment of reality. That is the irreplaceable function of both these systems.

## **4 Dual concept**

The company must be seen as component of a complex network of relationships. Each entity that is part of this network, aims primarily to meet its own goals and achieve its own economic benefit. However, it is also important to highlight that the issue of meeting different objectives naturally brings the need to make different decisions and consequently the need for differentiation of source information. One and only economic reality must be examined from different perspectives. Narrow specialization and disciplinary perspective, which enabled a rich analysis of the economic situation from a specific point of view seems to be insufficient. The present development requires an interdisciplinary perspective; the reality needs to be explored inclusive all the linkages and causalities.

Performance evaluation is also dependent on questions for whom and for what purpose the performance is assessed. From the managers' perspective performance is generally regarded a very broad-based characteristics, which assesses the extent the subject fulfils its objectives. On the contrary, external users' perspective on the financial performance is limited by the financial accounting regulation or in many countries (including the Czech Republic) by the legislation.

### **4.1 User differentiation of performance measurement**

The very first question that should always be related to performance measurement is: "For whom do we actually measure the performance?" In general, it is possible to answer: "For anyone who has something to do with the company and therefore needs to be informed about its performance. On the other hand, not all stakeholders perceive and understand the performance in the same way. This is because each of them uses the information obtained by other means.

It is purposeful to divide all the involved subjects into two groups according to whether or not they have the opportunity to directly influence the activities, whose performance is under consideration. External users have many reasons to be interested in business performance. Wagner (2009) summarizes the most important of reasons as follows (Wagner, 2009, pp. 55 – 56):

- they need to reach a decision about their relationship to the organization;
- they need to enforce their rights to the organization;
- they need to influence the direction of development of the organization;
- they need to regulate performance and behaviour of agents;
- they need to compare the performance of the organization to other subject's

performance.

Internal users may have even more reasons to be interested in the company's performance. The essence of all the reasons is conception of performance measurement, which is understood by the internal users not only as a desire to obtain "mere" information about the performance, but especially as high-quality information support for management control. In order to have good business prospects for survival in the long run, it is necessary to look far enough into the future when managing and influencing business activities to achieve a satisfactory level of performance. Factors that determine the long-term growth potential (employee skills, customer satisfaction and loyalty, corporate databases, etc.) are either very difficult measurable or not measurable at all in the accounting system. The only financial measures have already ceased to reflect the evolution of this dimension of performance and should be enriched with non-financial, especially strategic oriented criteria. On the other hand, financial measures have a kind of sovereign status. Fulfilment of the objectives of the company and all stakeholders is eventually just the proper way to achieve good financial results (financial performance) in the strategic time horizon.<sup>2</sup>

In the context of the above-mentioned differentiation of decision-making tasks of individual subjects that are interested in the business, it is necessary to adequately distinguish the data within the accounting system. The natural result of these claims is the separation of accounting designed for external users (i.e. interest groups outside the enterprise) from accounting designed for internal use (accounting as an information support of management control).

All the above manifestations of duality in the concept of financial and management accounting are also reflected in the performance measurement, of course.

From the mutual status of the owner and the management of a company four basic functions of performance measurement can be derived. Performance measurement can be understood as:

- information support of management control;<sup>3</sup>
- information support of owners' decision-making tasks;<sup>4</sup>
- information support of decision-making tasks of other interest groups (stakeholders);<sup>5</sup>
- information support for the assessment of managerial performance.<sup>6</sup>

The first mentioned function relates to the comprehensive (managerial viewed) performance with all its specifics. Management accounting system with its tools and outcomes is the data source for assessing the performance of this type. The remaining three functions bind to the financial performance, which assessment is based primarily on data provided by the financial

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<sup>2</sup> More detailed analysis of this issue is beyond the scope of this paper. However, it will be one of the key issues of follow-up research and subsequent outcomes.

<sup>3</sup> The information on the financial performance helps managers to verify, if the required level of performance corresponds to the expected. Then, managers should identify and analyze any deviation and identify the causes of their origin. Significant deviation is desirable to examine in more detail. It is suitable to examine the factors that contribute to its formation and trace its implications for the business process. Quality analysis helps to assess the prospects of future performance and to correct identified negative deviations.

<sup>4</sup> Information on the financial performance of the enterprise should help the company's owners to answer the question: "What development can be expected in future periods?". The owner must be able to use this information to make an informed decision about their future relationship with the company. We can therefore say that the owner is interested mainly in the performance of the business process as a whole.

<sup>5</sup> As in the case of the first mentioned function in this case it is the performance of the business process itself. The other interest groups are interested in future business prospects and they need to decide on its future relationship with the company.

<sup>6</sup> Thanks to information on the performance of the company its owner is able to determine whether managers are acting as expected. Following these findings the owner makes the decision to reward managers and to delegate their powers for the future periods. Performance measurement has then especially criterial and incentive function.

accounting system. This way the performance is understood by external subjects standing outside the company.

## **4.2 Content and structural differences in financial and management accounting**

As already mentioned, the primary cause of different content and structural concepts of financial and management accounting are different requirements of internal and external users of accounting information. Financial accounting system provides information support primarily for external users, who are business owners, investors, employees, business partners, stock exchanges and other interested parties, while the management accounting system provides information support for internal purposes and management control. This information constitutes the basis for decision-making tasks of the managers.

The fact that each of these two systems reflects the needs of different group of users of accounting information results in their dual conception. This comes through especially by:

- different recognition of assets and liabilities;
- different recognition of costs and revenues;
- different measurement (valuation) principles;
- different structure and detail of information displayed.

All these symptoms are very closely related and intertwined with each other, thus they cannot be seen as mutually separated consequences.

In management accounting assets – especially intangible assets – and liabilities can be perceived and recognized differently than in financial accounting. The economic nature of transactions is much more substantial for solving managerial decision problems than their legal form that plays an important role in the financial accounting system.

These differences result in different definition and recognition of costs and revenues in both accounting systems. It may lead to the different levels of profit / loss for the period measured, which means the differing level of financial performance achieved. Revenues and especially costs are in management accounting differently defined in terms of value expression and measurement, as well as the structure and frequency and moment of their detection and evaluation.

Within the management accounting system a much wider range of measurement is applied. A number of pricing models based on the expected future development are applied, while financial accounting is linked to demands for reliability and verifiability.

As a demonstration of the above, we can use a closer look at the income statement, which measures the level of financial performance achieved when combined with the balance sheet. Various demands of users of accounting information lead to the differences between revenues, costs and profit in both accounting systems. It must necessarily be reflected in the structure and content of the income statement. While the financial accounting strives to hide many important details (for example particular factors influencing the gross profit), management accounting, on the contrary, provides very detailed and carefully structured information on these issues. Nowadays, many companies budget and sequentially evaluate this information in five aspects:

- product aspect provides information on how sales from individual products or from groups of products contribute to the performance achieved;
- customer aspect shows how individual customers or customer groups influence the gross profit;
- territorial aspect shows how the profit is influenced by the sales in different territories, where the firm sells its output;

- distribution aspect provides information on how the profit is influenced by the sales via different distribution channels, which the company uses to meet its customers;
- responsibility aspect shows how the individual sellers contribute to the overall profit.

#### **4.3 Diminishing manifestation of duality as a consequence of financial accounting development**

Financial accounting in its traditional form is mainly focused on the past, while management accounting provides data for comparison the actual state with the intended one and especially for assessing the alternatives of future development. On the other hand, it should be noted that the financial accounting has experienced continuous development and recent trends aim to capturing the transactions in the context of future benefits.

Development of International Financial Reporting Standards (IFRS) and especially U.S. Generally Accepted Accounting Principles (US GAAP) takes place in accordance with the tendencies above. It is not legitimate to assume that the systems of financial and management accounting lead to mutual fusion, but it can be argued that the development of IFRS and US GAAP weakens the causes of a dual concept in a range of areas. What is more, it encourages mutual convergence of both accounting systems (i.e. financial and management accounting).

This tendency can be documented for example by an effort to separate the transactions related to ordinary activities (operating activity) from peripheral or incidental transactions (non-operating activity).

Another example is the possibility to present the income statement in accordance with US GAAP only with classification of expenses by function. This kind of classification provides better<sup>7</sup> information on company's performance. Managerial income statement should always be classified primarily by function of expenses, which provides much better information support for management control. The information about nature of expenses is rather complementary and serves as a basis for ensuring proportions, stability and balance between the need for resources and external business environment which is able to provide them (Král at el., 2010, pp. 70).

Another example is the requirement of IFRS and US GAAP for displaying of lease transactions, which is based on reporting, measuring and depreciating of long-term leased fixed assets by the lessee.

Information needs of managers, however, will always be specific and will stem from very different motives than from the effort to distinguish the information required from the data from financial accounting system. "As traditional view on the management accounting aims, content and structure comes from contrast to financial accounting, recent stage is more characteristic by values whose effort is to overcome its narrowly disciplinary orientation and to find interface to principle question how to incorporate management accounting information into performance management systems by the most effective way (Král, 2008).

## **5 Developmental tendencies of performance measurement and management accounting**

Requirements on management (and therefore necessarily also the measurement) of financial performance as a major factor in future growth potential of the business have evolved over time. The evolution, of course, must be reflected by appropriate development of management accounting, as the central instrument of management control. This development causes deepening and strengthening of the dual conception of financial and management accounting.

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<sup>7</sup> Better quality of information about the performance results from the need to recover the factors that influence gross profit.

A number of developmental tendencies pervaded the text in previous chapters of the paper. At this point I consider it appropriate to summarize and organize these tendencies into a list. However, it does not pretend to be a complete listing, but rather strives to highlight the most important trends in measuring the financial performance and in the development of management accounting, which is an important tool for this measurement.

### **5.1 Developmental tendencies of financial performance measurement**

The performance of the company has been increasingly perceived as a **potential for future success and growth**, rather than as a simple glance in the past. The main task of measuring performance is to help to find answers to questions how our present and future decisions and actions contribute to the future benefit (Wagner, 2005, pp. 47).

The first mentioned tendency is closely tied with the second one, which lies in the perception of **performance as strategic parameter**. An important amount of economic resources is spent during the innovation part of product lifecycle. The benefit of these resources, however, is approved by the revenue recognition much later than the expense had incurred. The matching of realized revenues and incurred costs should be based on the length of product lifecycle, rather than on traditional fixed (usually shorter) period. Then it brings much higher information potential (Král et al., 2010).

Increasingly there has been a tendency to **overcome the discontinuity of performance measurement**. This limitation stems, inter alia, from performance measurement based on a fixed time period, for which the desired parameters are planned and budgeted. However, the final comparison may be made only when the evaluated process itself and all its direct consequences had been completed.

Another trend identified by Wagner (2005) and Král (2007), means the perception of performance as an **internal source of the ability to achieve success in the external (market) environment**. The objectives of the company and the chosen ways to achieve them, are usually formulated by managers of the company, however, the final performance recognized is always up to the external environment.

### **5.2 Developmental tendencies of management accounting in relation to financial performance management**

Changes in business environment are accompanied by development in the understanding, perceiving and measuring of performance. These changes must be, of course, reflected in the management accounting to be able to respond in a flexible way.

Many current trends stem from effort to highlight the strategic perspective and its information support. In this context, however, the performance should be seen in broader concept than just as financial performance. These issues go beyond the orientation of this paper, and therefore at this point we list the trends that are directly connected to shift in perception of the financial component of performance. These may include in particular (see Král, 2007):

**Management accounting as a financial (value) information system.** Management accounting is still linked to traditional concepts of accounting information, however, especially the pressure on the timeliness, richness and originality of the information for future decision-making makes it necessary to abandon the strict application of all elements of the accounting methodology. The information are often transformed beyond the double-entry accounting principles (such as product costing).

**Financial and non-financial management integrity.** There has been an increasingly strong pressure on linkage financial information with the natural (material) aspect of the business process.

**Change in time parameters of accounting information for operational and tactical management.** Pressure on the speedy presentation of accounting information is evident. Management accounting is abandoning the principles of reliability and relevance, because they necessarily imply a rigidity and delay of information. Management accounting focuses on providing a variety of reports reflecting the managerial needs with minimal time delay.

**Multidimensionality of management and its information support.** Manager, who manages business in today's complex and aggressive business environment, requires good information on the development of relevant variables in many aspects (points of view) simultaneously. These days it is standard practice to monitor information in the management line (aspect) of products, activities, sub-processes, processes, responsibility centres, customers, sales territories, distribution channels and even others.

## 6 Conclusions

Turbulent and aggressive competitive environment of today's world increasingly forces organizations to understand business performance rather as a future potential ability to succeed in the marketplace than as plain view on the present or the past. One of major components of this broadly understood business performance is financial performance. In today's business environment an increasing emphasis is therefore placed on finding high-quality information about financial performance. A high-quality information system becomes a necessity. Accounting subsystem includes financial information, which creates conditions for effective management of financial performance. Such information helps all interested parties to understand the direction and causes of company's development.

While managing performance the managers strive to influence the economic subjects' development by a rational way – so that they would be able to fulfill the aims they have been founded for. Financial performance, which is based on traditional financial indicators, is a hierarchically subordinated item of complex evaluation of business performance. It is just one – albeit important – part of the performance.

Performance measurement is significantly affected by user dimension. From the perspective of business management performance is a very broad-perceived characteristic, which reflects whether the company meets its objectives or not. From the perspective of external users performance is narrowed to assessing the financial performance and is limited by the accounting regulations.

Many financial variables are in management accounting differently defined in terms of value expression and measurement, as well as the structure and frequency and moment of their recognition and evaluation.

Managerial perceived comprehensive performance management system requires besides financial criteria also a number of natural criteria. Performance management system goes far beyond the management accounting itself. Management accounting can be considered as an information tool of performance management system, so it can be characterized as an information-oriented performance management subsystem. The role of management accounting in performance management system is only partial, but still crucial.

The duality of financial and management accounting has been weakened by developments in two of the world's most notable financial systems - IAS / IFRS and US GAAP. It is possible to observe the tendency to capture the transactions in the context of future benefits. Examples of these trends can be strict separation of transactions connected with major (operating) activities, classification of expenses by their function (at least under US GAAP) reporting leasing transactions and others.

On the other hand, the demands for performance measurement as well as for management

accounting as a tool to meet these demands, has been developing very dynamically. It results in strengthening of manifestations of duality and the widening differences between the systems of financial and management accounting.

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## ***The Importance of Management Accounting in Financial Performance Measurements***

### **Summary**

Currently, increasing emphasis is placed on performance measurement and management. Within performance measurement and management in general the role of financial performance is becoming increasingly important. The paper is concerned with measuring and reporting of financial performance of an enterprise primarily from managers' points of view.

In its first part it deals primarily with the connection between the performance of an enterprise in general and its financial performance. In subsequent part it is about the relation of performance management and management accounting. The next chapter of the paper is devoted to the dual concept of financial and management accounting and to causes and consequences of

the duality.

**Key words:** Financial Performance; Performance Management; Management Accounting;  
Dual Concept.

**JEL classification:** M41.

# Offshoring of the Financial and Management Accounting Services

*Barbora Janasová\**

## 1 Introduction

Offshoring and outsourcing of various services are on the recent agenda of many, mostly multinational companies. The common trend is to re-allocate some organizational activities to another countries.

The aim of this paper is to cover basic aspects concerning the offshoring of the financial and management accounting services. I would mention the different approaches to decision, what to offshore and what rather not to. Also, I will focus on the split of activities within the financial and management accounting department in order to make the offshoring working.

I will also mention, why it is important to measure quality of services provided by the offshore centre.

In addition, I will dedicate one part of this paper to issues related to the selection of country, where we would like to offshore.

In the last part I will briefly mention some aspects of the activities migration process from the onshore to the offshore itself.

Bearing in mind the size of the paper, only basic information could be covered without going to details.

## 2 Offshoring and outsourcing in context

The aim of the whole offshoring or outsourcing process generally is to gain more value at the lower cost.

Outsourcing is defined, as contract with a third party to receive the management and completion of certain tasks, for specified length of time, cost, and level of service.

Offshoring refers to the relocation of organizational activities (eg. IT, finance and accounting, back office, human resources) to allied subsidiary or an independent service provider in another country. This definition illuminates the importance of distinguishing, whether the offshored work is performed by the same organization or by a third party.

The most common approach is to focus on the so-called „core business“ of the company and outsource the supporting services which company needs to use. Typical example would be outsourcing of the distribution services (for a trade company) or outsourcing of the office services, resulting in a fact that the company does not own tracks, office buildings etc. and concentrates all the effort to its core business.

One step further would be outsourcing or offshoring of the IT (infrastructure technologies) services, HR (human resources) services, and/or financial services. This is also the trend of recent years.

Due to the fact that finance services work with very sensitive information and any leak of such information could seriously harm the company, finance services are usually not outsourced but rather offshored to a fully owned daughter company.

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### **3 What to offshore**

As for the financial services within the multinational companies most commonly offshored part is the financial accounting. By financial accounting in this context I mean accounting for the purposes of the Group accounting (accounting in each individual daughter company in order to provide data for the consolidation to the mother company). This would typically be accounting based on IFRS or mother company GAAP. In the multinational companies such accounting usually takes priority since it serves to owners of the company and to other important stakeholders. Typically, these accounting data are provided on a monthly or a quarterly basis.

On the other hand accounting based on the local GAAP needs to be provided only once a year. Therefore, it makes sense to follow accounting standards of mother company primarily, and then make the appropriate adjustments to the statutory figures only once a year at the local statutory year end. Additionally, similar adjustment would need to be performed for the tax purposes and also would make sense to provide them only once a year at the tax year end.

Such approach would also make a space for offshoring of the accounting services which might not be possible or efficient if the accounting would have to be based on the each country individual GAAPs. This also implies that the statutory or the tax accounting is very rarely offshored.

Also the offshoring of some parts of the management accounting is also the recent trend. Similarly to the financial group accounting, management accounting is driven by the Group requirements as well as by the business requirements. Within the global companies such requirements are usually highly standardised which is a big help to the offshoring of such services.

### **4 How to offshore**

#### **4.1 Financial accounting**

For an efficient offshoring of the financial accounting services those are typically broken into several separate processes. Typical process split is the following:

- Order to cash (sales orders, sales invoice, payment allocation)
- Purchase to pay (purchase orders, purchase invoice, payment)
- General ledger (incl. general ledger accounting, fixed assets accounting, other)

The alternative split of the financial services would be based on the individual countries or the individual businesses (e.g. accounting for Czech Republic, accounting for Germany, or accounting of the business A, accounting of the business B). This alternative approach would only be necessary to take if the businesses within one company are very different in their nature or the business is performed very different way across the countries. Normally this is not the case within the multinational companies. Common trend is to harmonise the way the business is done across the world.

#### **4.2 Management accounting**

The other part of financial services being offshored in some cases is the management accounting. In my eyes the management accounting is much less straightforward than the financial accounting. Activities within the management accounting could be split for the offshoring purposes into the routine ones and non-routine ones.

In practice the routine ones are typically the subject to offshoring whilst the non-routine ones, usually more complicated or local specific business related or the once-off activities would typically stay on shore. Example of the split could be:

- Offshored
  - Preparation of the monthly reports
  - Data checks (coding etc.)
- Onshored
  - Analysis of the reports
  - Commentaries
  - Planning&Appraisal

## 5 Quality versus measurement

One of the weakest links of the whole offshoring program is the fact that people working in the offshoring centres are far away from the business itself. They are usually very well educated people with the relevant background, however, they cannot see the real business behind the numbers. And as a consequence, they are not able to judge, if numbers make sense or not. The high risk is that the quality of information provided by financial or management accounting would drop down dramatically.

Additionally, not being under direct pressure from the local business management, in other words from the main customer of the information provided, might also lead to a reduced quality.

To eliminate such risks there needs to be a very detailed system in place to measure the performance of the offshore centres. Specific KPIs (key performance indicators) needs to be established in order to monitor the effectiveness. In practice a wide variety of the KPIs would be used and many KPIs for each process. Examples of such KPIs could be find bellow.

- Order to cash
  - Number of non-matched cash items
  - Number of invoices billed per employee
  - Percentage of accuracy of manual billing
- Purchase to pay
  - Percentage of late payments to 3rd parties
  - Number of manual payments
  - Percentage of non-matched purchase orders
- General Ledger
  - Closing at certain WD
  - Percentage of manual vs automated entries to general ledger
  - Percentage of fixed assets not transferred from WIP on time
  - Number of Intragroup transaction processed per employee
- Management accounting
  - Percentage of reports not submitted on time
  - Number of post close adjustments
  - Number of resubmissions of reports
  - Percentage of time spending to prepare the reports versus checking the reports

In my opinion even the most detailed systems of the KPIs cannot completely compensate for the risks mentioned above. Natural tendency in the offshored centres would be to concentrate all the effort to the KPIs rather than solving the real issues. Also the quality of data is extremely hard to measure.

### 6 To which place to offshore

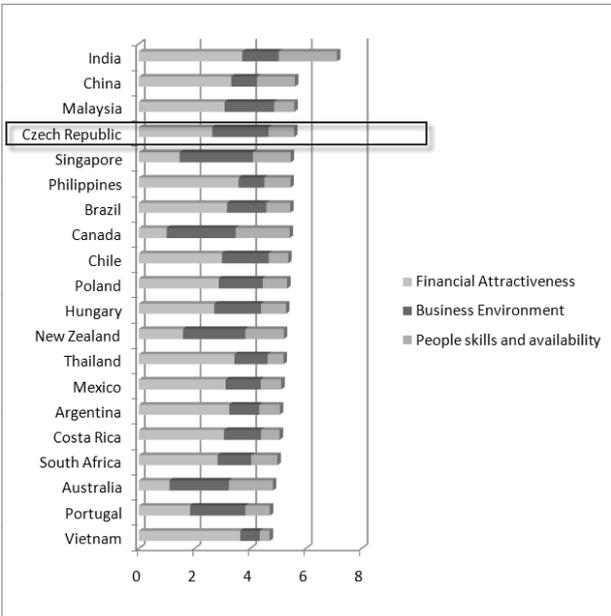
This is one of the most important questions in the whole offshoring process. Very thorough investigation needs to be done before any decision is made.

There are analyses available in the market offering possible destinations of the offshore centres. The tricky part of such analysis is that they might recommend several very good places but by the time the migration to them is completed many other companies might have decided to place their offshore centres there as well. The consequence of such parallel decisions would be higher than originally expected costs, typically office rent rates, staff related costs etc., due to the increased demand in the particular place.

Example of such development is the Czech Republic. According to the A.T.Kearny Global Service Location Index Czech republic was the 4th most attractive country for the offshoring in 2004. Six years later the Czech Republic was on the 35th position. A.T. Kearny defines its index as: *„Established in 2004, the GSLI analyzes and ranks the top 50 countries worldwide as the best destinations for providing outsourcing activities, including IT services and support, contact centers and back-office support. Each country’s score is composed of a weighted combination of relative scores on 43 measurements, which are grouped into three categories: financial attractiveness, people skills and availability, and business environment“.*

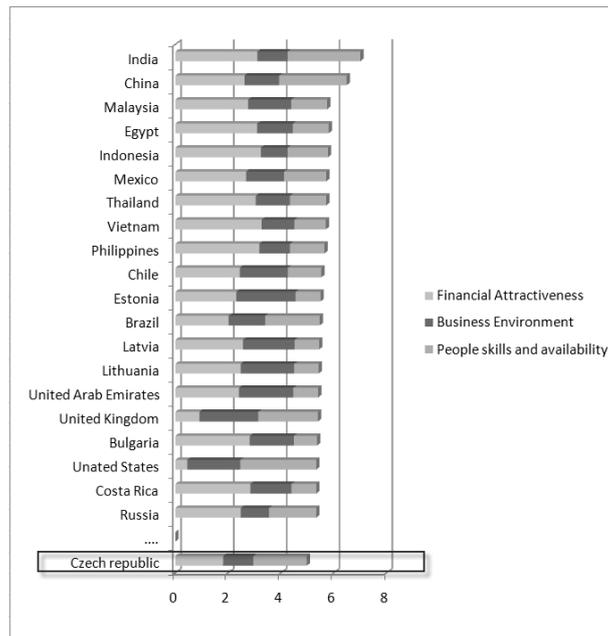
Development of the Czech Republic as a potential place for the outsourcing is shown at the Figures 1 and 2.

**Fig. 1: Global Service Location Index 2004**



Source: Kearney, GSLI report.

**Fig. 2: Global Service Location Index 2011**



Source: Kearney, GSLI report.

In my opinion such analysis should be taken into the consideration only as a rough guidenance. I would recomment to perform own very detailed analysis and emphasise the importants of the factors relevant for the specific conditions of the company, type of business, location of the onshore establishments etc.

Examples of factors to be taken into the consideration when offshoring accounting services could be the following:

- Unit salary costs including all tax related or social contributions
- Sufficient number of people with the required professional skills, education etc. in the area or nearby
- Language knowledge
- IT infrastucture, availability of the communication means
- Transporation (e.g. airport nearby)
- Time zones (in relation to the onshore teams)
- Job fluctuations, typical staff turnover
- Working habbits (effectiveness during the working hours)
- Cultural differences (society values etc.)

## 7 Process of migration to the offshore centres

To migrate the activities from onshore to offshore could be quite a long process. In practice usually a project is set up with its various phases.

At the beginning the scope of the activities to be migrated needs to be decided. Also the project team monitoring the progress need to be established. Additionally, detailed project timeline with the critical milestones is also crucial to the success.

In my opinion the most difficult part of the whole migration process is the motivation of the onshore staff. They are key to the success. They would need to put in place very detailed work

instructions, provide relevant training to the offshored staff, while at the same time knowing that they or their colleagues will most probably lose their jobs after the migration.

The other important part is the onboarding of the new offshored staff. This would involve hiring, training etc.

Also setting up the proper IT infrastructure with all the communication means is very important.

## 8 Conclusions

The fact that offshoring and outsourcing is starting to be a very common feature of the most global companies is a consequence of the natural development and globalisation itself. In some of the literature it is called the „service shift“.

The globalization of services is not simply a story about jobs being moved offshore. It is about a fundamental reorganization of the work, in which different tasks are being carried out by different individuals in different locations. Recently, forward-looking managers are actively evaluating tasks, processes, and functions inside their companies to determine the most cost effective and highest quality location to carry out these activities.

The paper covered the various aspects of such offshoring programs. I have defined how processes and activities within financial and management accounting could be split in order to offshore some of them. I have also mentioned the potential risks associated with the quality of the services provided and suggested possible KPIs to measure it. Additionally, I have described several key steps in the migration process from onshore to offshore teams.

I have defined some of the factors to be considered while selecting the offshore location. My focus was on the factors I believe are relevant for the accounting services. As it could be understood throughout the paper, offshoring is not just about finding a low cost location. It is about gaining access to the best combination of talent (quality of people), resources and local markets. And naturally, this all has to be individually considered for each type of the services to be offshored, inclusive of financial and management accounting.

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## *Offshoring of the Financial and Management Accounting Services*

### Summary

The paper covers various aspects of the offshoring of the financial and management accounting services. Firstly, I have suggested how to split the activities within the financial and management accounting in order to offshore most efficiently. I have also mentioned the difficulties in the

measurement of the quality of the service provided by the offshore teams. Secondly, I have covered the process of the selection of the best location for the offshoring and suggested some of key factors to be considered when offshoring the financial and management accounting. Lastly, I have mentioned some of the aspects of the migration of activities from onshore to offshore.

**Key words:** Offshoring; Financial accounting; Management accounting..

**JEL classification:** M49.



# Conformity with “High-Quality Accounting Standards”: Preliminary Content Analysis of Revenue Recognition from Contracts with Customers Exposure Draft Comment Letters

*Kalin Kalev\**

## 1 Introduction

As one says high quality accounting standards are critical to the development of a high quality global financial reporting structure and adoption a single set of high-quality global accounting standards is in the best interest of investors, issuers and regulators. On September 18, 2002 FASB and IASB acknowledged their commitment to the development of high-quality accounting standards.<sup>1</sup> But James J. Leisenring<sup>2</sup> said<sup>3</sup> that he had some disagreement with other members of IASB regarding the meant of “high-quality standards”. “Some consider high quality accounting standards can be standards that are unambiguous, such that a practitioner “can't fail to comply with them”. An unambiguous standard, however, could still allow “for implicit alternatives” to the standard”, Leisenring argued. This colourful statement of a well-known personality in the convergence process stands to mean that members of IASB are still trying to figure out for themselves what constitutes the “high-quality standards”, especially if it will be used as a benchmark against which to judge the outcome of IFRS / US GAAP convergence. Further, these standards must be principle based. On 24th August 2010, SEC reaffirmed its longstanding commitment to the goal of a single set of high-quality global accounting standards and expressed its continuing support for the convergence of US Generally Accepted Accounting Principles (US GAAP) and International Financial Reporting Standards (IFRS).<sup>4</sup> The stakes to the Boards are high as never before. How the objectives of the convergence process can be achieved by no definition or simple understanding of the meaning of “high-quality accounting standard”? Does SEC or other regulatory body supervise the conformity of the standards to the stated qualities of the objective-oriented standards? In searching for the features of “high-quality accounting standard” the aim of the paper is to analyze the comment letters in respond to ED 2010/6 Revenue from Contracts with Customers as a preliminary content analysis. This analysis is performed under the one and only understanding of the demanded qualities of the objective-oriented accounting standards which are stated by SEC. Whether the standard-setters conform the content of its standards to these qualities is questionable. As convergence is long-awaited goal for IASB and FASB, the boards are on urge to issue more standards which jeopardize the qualities of the future accounting standards.

The paper does not purport to present exhaustive analysis of the comment letters due to some limitations as author has restricted the observed area for reaching the paper target. In a comprehensive overview this common analysis is preliminary study of a standard setting process and can complement the literature that investigates the incentives of companies to lobby

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<sup>1</sup> Memorandum of Understanding (MOU).

<sup>2</sup> James J. Leisenring, board member, International Accounting Standards Board (IASB). Leisenring was appointed a member of the IASB in January 2001, and in July 2000, was appointed the first director of international activities at FASB.

<sup>3</sup> 2010 International Business, Accounting Auditing and Tax Conference, presented by the American Institute of Certified Public Accountants, June 23-24 at the JW Marriott in Washington, D.C.. James J. Leisenring delivered an update on issues with the convergence of U.S. and international accounting standards.

<sup>4</sup> SEC Release No. 33-9109, Commission Statement in Support of Convergence and Global Accounting Standards.

IASB and FASB and on the other hand the studies that investigate the impact of social norms on the accounting regulation because “footprints” of social norms can be found in ED discussion process. The uniqueness of the paper is under no doubt because of the unknown volume of literature in determination and searching the issue for the qualities of accounting standards in the years of harmonization while the stated goal on paper is setting a set of accounting standards from high-quality for global marketplace. Thus maybe there are mismatching of the stated goals / quality characteristics and the real standards in practice?

The reminder of this document is organized as follows. First, I provide overall background information about the standard setting and expose some key history moments in this process. Then, I discuss the overall revenue recognition case and the reasons for revisiting them by the boards. In the section are compared the general quality requirements for “high-quality accounting standards” and the results of preliminary content analysis of the comment letters as discussion for accomplishment of these general quality requirements. Finally, I draw a conclusion upon the observation of the above comparison and prescribe but not-entirely the qualities of the future accounting standards.

## **2 Setting Accounting Standards**

Up-to-date the accounting standard is a compilation of written principles, rules, and regulations used for performing accounting procedures. The regulation of accounting by standards or written rules began in the 70s years of the 20th century. In contrast, before that time, there is evidence that in the beginning of the 20th century social norms played dominant role in the accounting field. There are no written accounting rules. This is apparent in building the foundations of Special Committee on Accounting Terminology in USA on April 1909, which aim is to ” to collate and arrange accounting words and phrases and show in connection with each the varying usages to which they are put. . . This committee will not attempt to determine the correct or even the preferable usage where more than one is in existence” (Zeff, 1971, p.45-p.56) . In 1918 republishing memorandum on auditing practices titled “A Tentative Proposal Submitted by the Federal Reserve Board for the Consideration of Banks, Bankers, and Banking Associations; Merchants, Manufacturers and Associations of Manufacturers; Auditors, Accountants, and Associations of Accountants” have the purpose to coordinate the efforts to evolution accounting norms and to abstain from setting standards. The page of Journal of Accountancy and CPA Journal were used as place for ardent debates for various accounting and auditing issues. In 1931 American Institute of Accountants published 129 pages book, Accounting Terminology, a compilation of accounting terms and definitions, as a matter of advice, not authority.<sup>5</sup> However, the market crash in 1929 was a crucial circumstance in regulating accounting profession. Including the followed recession in USA precipitated the gradual crash in the trust in the norms of accounting and not last in the formal and informal mechanism by which these norms were developed and sustained. In the absence of authoritative written standards does not mean that the world was in a total disorder. Quite contrary is the issue with the modern accounting thought?

On 25th March 1957, a treaty was signed in Rome that gave birth to the free movement of persons, capitals and services in Europe known as "Common Market". The “common market” has demanded an evolvement of the harmonization of the national regulations, including accounting regulations. In 1962 on the 8th International Accountancy Congress participants conclude in majority that there is a need for comparable financial statements.<sup>6</sup> In addition, Wilkinson (Wilkinson, 1965, p.3-p.4) and Morgan (Morgan, 1967, p.21-p.28) discuss the

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<sup>5</sup> In his review of Costing Terminology, Kitchen (1954) provides a masterful argument for resisting the temptation to issue official definitions, especially in accounting. See also Baxter (1953).

<sup>6</sup> Sacho & Oberholster Meditari Accountancy Research Vol. 16 No. 1 2008: 117-137 119.

requirement for accounting harmonization in the light of the growing number of multinational companies. These ideas were materialized in foundation of IASC in 1973. Since early 70th it has been dating the vigorous producing of accounting standards.

Firstly, the IASC was a private body which aim was to introduce international accounting standards that were capable of being recognized and observed worldwide i.e. setting standards with some indefinite quality. Its adolescent experience in setting any accounting standards without possession of any reputation were obstacles in achieving this objective. The gathering momentum of monetarism theory of Friedman and the spreading around significance of the capital markets without any doubt have to blaze a trail on the accounting regulation. Therefore, not by chance, to reach a level of international recognition and gain a legitimate for its own standards, the IASC have tried to bring around IOSCO – the worldwide regulator of financial markets. They have reached an agreement which constitutes that if IOSCO endorses IASC standards it will permit listed companies all around the world to prepare their financial statements on the base of IASC standards. But as secondly, the IASC should amend the accounting standards to an admissible quality. On the early stage in 1994 these standards were not endorsed, but in 2000 IOSCO recommended around 30th standards of IASC known as “IASC 2000 standards”. Consequently, the European Union required that European companies listed in European securities markets must use IFRSs to prepare their consolidated financial statements starting 5 years later. But the most crucial step for the harmonization of the accounting which will officially legitimate the former IASC as a global standard setting body is forthcoming. That is the so called convergence with FASB.

The aim of IASC to develop global standards was partly promoted by parties in USA. Perhaps the response of the American Institute of Certified Public Accountants (AICPA) best summarises the USA’s view of the IASC at the time (Melancon & Eliot, 2000, p.2-p.4):

*“Although individual IAS may be of high quality, we do not believe the body of IASs is of sufficiently high quality to be used without reconciliation to US GAAP in cross-border filings in the US at this time ...The existing Core Standards contain significant recognition and measurement alternatives and are, as a whole, written generally and are susceptible to varied interpretation. As a result, different companies following IAS might apply IAS differently for similar transactions.”*

Definitely, at that time the American accounting society was concerned with the quality of the existing IAS. To gain some support from American constituents under the FASB influence in 2001 the IASC was restructured as IASB. The Enron bankruptcy in December 2001 and other accounting scandals that surfaced in 2002, following the bursting of the late-1990s stock market bubble have raised concerns about the complexity of the so called “rule-based” accounting standards. In response to such concerns, in 2002, the FASB (FASB, 2002a) published a proposal entitled “Principles-based approach to US accounting setting”, in which it requested comments on whether the USA should move to a more “principles-based approach” in order to remove the detail, complexity, numerous implementation guidelines and exceptions to principles that are inherent in current US GAAP. Many respondents were in favour of such an approach and in October 2002, the IASB and the FASB signed the Norwalk agreement which committed the boards of the two bodies to remove differences between IFRS and US GAAP and encourage coordination of their respective activities (FASB, 2002b). And thirdly:

*“At their joint meeting in Norwalk, Connecticut, USA on September 18, 2002, the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) each acknowledged their commitment to the development of high-quality, compatible accounting standards that could be used for both domestic and cross-border financial reporting.”*

In the essence of the above, in interdependently way is apt to place the following underlying

facts:

- The Securities and Exchange Commission (SEC) is the first institution in USA introducing securities laws, including accounting ones. The SEC relies on the AICPA and FASB to regulate the accounting profession and develop and enforce accounting standards;
- SEC is the regulator of the “most important market in the world”. As a most powerful member of IOSCO which initially earned some legitimate to IAS and IASC. Under the influence of SEC, in 1994 IOSCO did not approve the core standards of IASC. Hence this meant retention of the Form 20-F reconciliation requirement and demonstrated the significant influence the SEC had on the IOSCO;
- In shaping the IASC future structure, SEC played significant role as replaced the proposed structure contained of IFAC member with a 19 member Board of Trustees. It closely resembled the structure of the FASB.

Originally proponent of accounting standards different of US GAAP, but in service of capital markets there is no other way for SEC other than to support and influence concurrently on the work of IASC. Otherwise, as globalization and merger mania increased SEC would close access to USA market of foreign companies. To what extent it can influence to the quality of the future standards?

As Whittington (2005, p.129) characterizes the development of the international accounting standards “as product of the marketplace”, I can argue that future accounting standards are produced by IASB/FASB but shaped by SEC. It has been a long way since accountants began to shift their allegiance and attention away from norms. Demands for, setting and promulgation of more written accounting standards (the graduation from some standards, admissible standards to high-quality standards) is often assumed to be synonymous with progress. Whether is easy to identify the history of particular rules and standards because of documentary traces, social norms are hard to be observed and even widely accepted norms leave a nary footprint in the public record. One can find evidences in science.<sup>7</sup> This replacement is also reflected in the increasingly assertive nomenclature of the (past and present) private sector institutions created to write accounting rules, and how they labeled their pronouncements: The Committee on Accounting Procedure’s Accounting Research Bulletins (1939–1959), the Accounting Principles Board’s Opinions (1959–1973), the FASB’s Financial Accounting Standards (1973 to present) and the IASB’s International Financial Reporting Standards.

Namely, SEC will use its own judge where IASB/FASB standards to be permit for the American constituents by assess of the quality of these standards:<sup>8</sup>

*“And out staff must gather information to aid the Commission as it evaluates the impact that the use of IFRS by US companies would have on our securities market”*

Since the accounting standards have affected different parties like the management, accounting profession, the investors and etc. there is always certain amount of concern among the interested groups about the manner in which standards are established. Because of these interests, the standard setters established a well-known public process. The most important stage of this process is the invitation of the setter for comments of its Exposure Draft, Discussion Paper and etc. But, of course, the so called “lobbying” for a benefit of an interested party is not limited only to the process of the producing or amending a standard i.e. they can lobby the IASB/FASB during the due process, after the implementation of the new rule or if these two fail to produce

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<sup>7</sup> For examples of accounting and commerce in Chaucer and Goethe and other German literature, see Russell (1986), Gallhofer and Haslan (1991), Jackson (1992), Ganim (1996), Maltby (1997), Parker (1999); Evans (2009).

<sup>8</sup> Mary L. Schapiro, SEC Opening Meeting – Global Accounting Standards, 24.02.2010.

favorable results, they can continue to complain and seek the assistance from politicians to get the accounting rule changed. So inevitably standards involve trade offs (Rapport, 1978, p.97). This view has been shared by many authors. For instance, Horngren (Horngren, 1973, p.64) argues that “setting of accounting standards is a social decision” and that “all interested parties should have ample chance to voice their views as issue arise”. However, the standard-setting process can never be limited in the technical level, it depends on political consideration.

### 3 Revenue Recognition case

For my case in the present paper, I examine the comment letters in respond to ED 2010/6 Revenue from Contracts with Customers. Revenue recognition is a crucial point for the future of convergence between IFRS and US GAAP. Revenue recognition is one of the cornerstones of that project, including fair value accounting. In a search for a set of unified accounting standards, the standards setters are in a real mess in regard to this issue. The amount of the American standards that regulate revenue recognition is about a hundred. Not only, but there are inconsistencies among them as the following example taken from a 1999 SEC Staff Accounting Bulletin (No. 101):

*“A registrant sells a lifetime membership in a health club. After paying a nonrefundable “initiation fee”, the customer is permitted to use the health club indefinitely, so long as the customer also pays an additional usage fee each month. The monthly usage fees collected from all customers are adequate to cover the operating costs of the health club. ... Question: when should the revenue relating to nonrefundable, up-front fees in [this type of an arrangement] be recognized?”*

If all you knew about accounting was that "assets" are what you have and "liabilities" are what you owe, then you should respond that the revenue should be recognized "when cash is received"; the health club has received an asset (from a non-owner), and it has no obligation to return cash at a later date, or even to provide services, under any circumstances.

The SEC, however, enunciated a different point of view in SAB 101, which can now be found in Topic 13 of the SAB Codification:

*"Unless the up-front fee is in exchange for products delivered or services performed that represent the culmination of a separate earnings process, the deferral of revenue is appropriate. ... [T]he staff does not view the activities completed by the [registrant (i.e., selling the membership) as a discrete earnings event.]"*

The implication of this illustration is that revenue recognition under GAAP involves more than just the receipt of assets that you don't have to pay back; an implicit performance obligation to provide the customer with future services is deemed to exist, even though the customer has *no legally enforceable* right to receive the services.

In other words, current revenue recognition practices are dependent on factors that don't play into whether or not the definition of an asset or liability has been met for recognition, its subsequent measurement, or conditions for its derecognition. This disconnect of revenue recognition from the balance sheet, has led to a jagged path of positions hatched industry-by-industry, over decades of political wrangling with issuers and auditors. The resulting complexities, subtleties and inconsistencies within the revenue recognition rules are, at their very best, second only to the tangled web that is financial instruments accounting.

On the other hand, IASB poses IAS 11 and IAS 18. The main problem of IAS 18 is so called reliability issue exposed in para 14 and examples set out in the standard's appendix; the revenue recognition principle for services in para 20 is not the same as the revenue recognition principle for sales of goods. In other words, the existing IASB's revenue material is not internally consistent and is also incomplete. Regarding the issue of revenue recognition is just one of the

cases. But when we consider the convergence of IASB / FASB this revenue recognition case can shed some light comments received to the ED in the due process as well as to the concept of building of high-quality accounting standards. As FASB/IASB argue the high-quality accounting standard should satisfy the main objectives in front of convergence:

- remove inconsistencies;
- provide a more robust framework;
- improve comparability;
- simplify preparation of financial statements.

But high-quality accounting standard is never been tried to be defined neither by IASB nor by FASB. But SEC will reaffirm its commitment to support convergence only if the both boards produce high-quality accounting standards. This view is expressed by the Chief Accountant of SEC, James Kroeker who has stated that “One will be continue to work closely with FASB and the IASB to facilitate not only getting converged solutions, but to make sure those converged solutions are recognizably higher quality than the solutions that we have in place today”. Leaving aside that “recognizably higher quality” is neither specified nor indeterminate, the SEC’s view showed that they care about the convergence and has clearer notion of what is high-quality accounting standard. This standpoint is supported by the congressionally mandated report (Study Pursuant to Section 108(d) of the Sarbanes-Oxley Act of 2002 on the Adoption by the United States Financial Reporting System of a Principles-Based Accounting System) on the feasibility of "principles-based" accounting standards in August 2003. According to the SEC, the "objectives-oriented" standards they are looking for from a standard setter should possess the following qualities:

- “Be based on an improved and consistently applied conceptual framework;
- Clearly state the accounting objective of the standard;
- Provide sufficient detail and structure so that the standard can be operationalized and applied on a consistent basis;
- Minimize exceptions from the standard;
- Avoid use of percentage tests (“bright-lines”) that allow financial engineers to achieve technical compliance with the standard while evading the intent of the standard.”

### **3.1 Overall Content Analysis / comment letters /**

In the paper are analyzed 971 comment letters, comprising approximately 5000 pages of comments, written in response to ED. The average letter is approximately 5 pages.

For the purpose of the paper and because of the great amount of received comment letters I have restricted the observed data via answering the questions: Do all respondents answer to the questions in the ED? How many respondents answer to at least a question?

In this way I restricted the observed area because there is as shown in Fig.2 and Fig.3 particular group of respondents that explained their opinion in the same stylistic and structured way, and truly defend their own industry i.e. is an example for lobbying activity on the first stage of commentary. As we know lobbying of this kind is not costly, and for the researchers in this area is interesting to what will be the final effect to the standard. The motive in doing so is a comment in a letter (Gordon Marshall, Comment Letter No.188): *“For me address particular question is would be equivalent to endorsing the overall concept”*

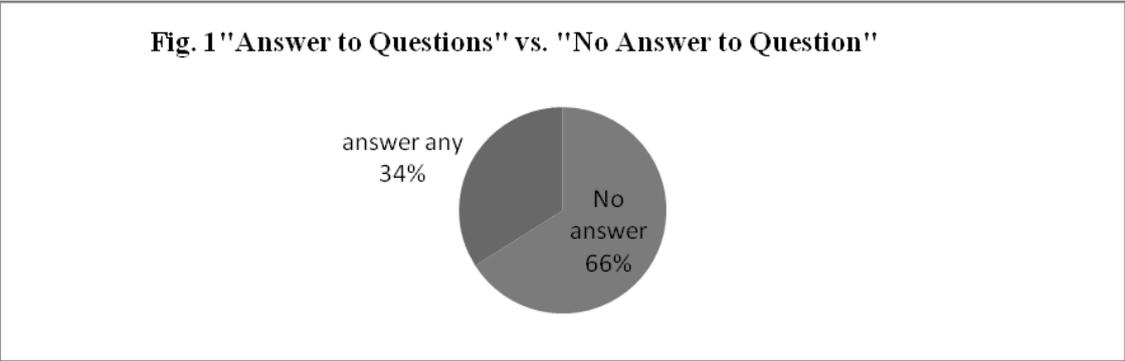
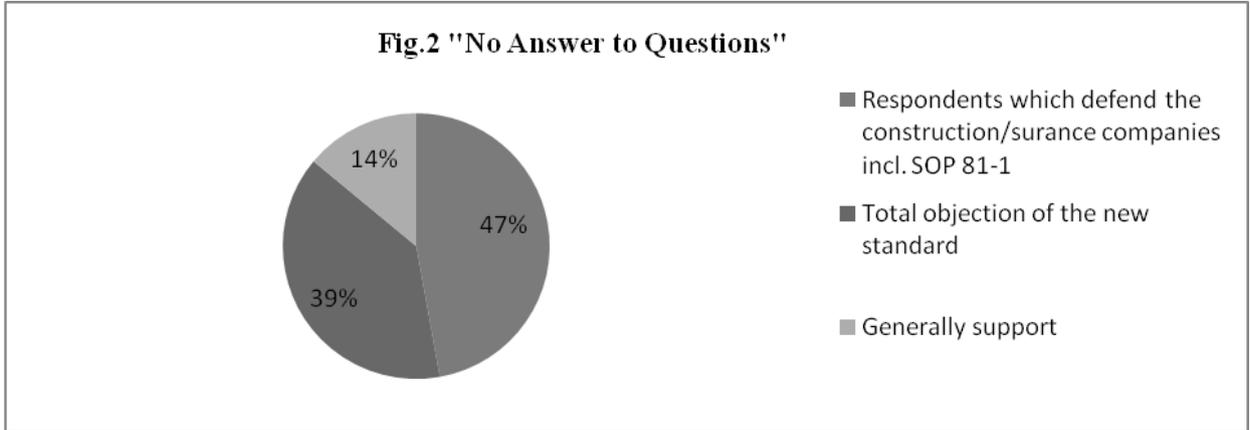
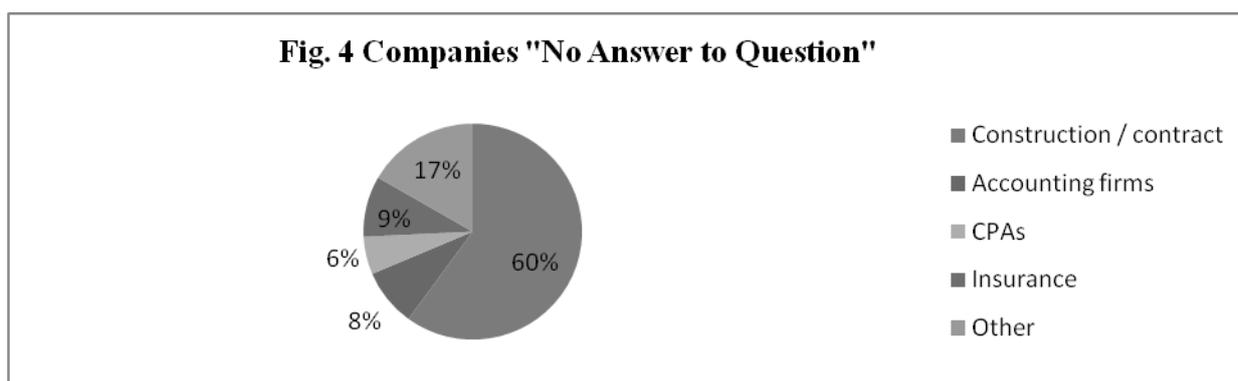
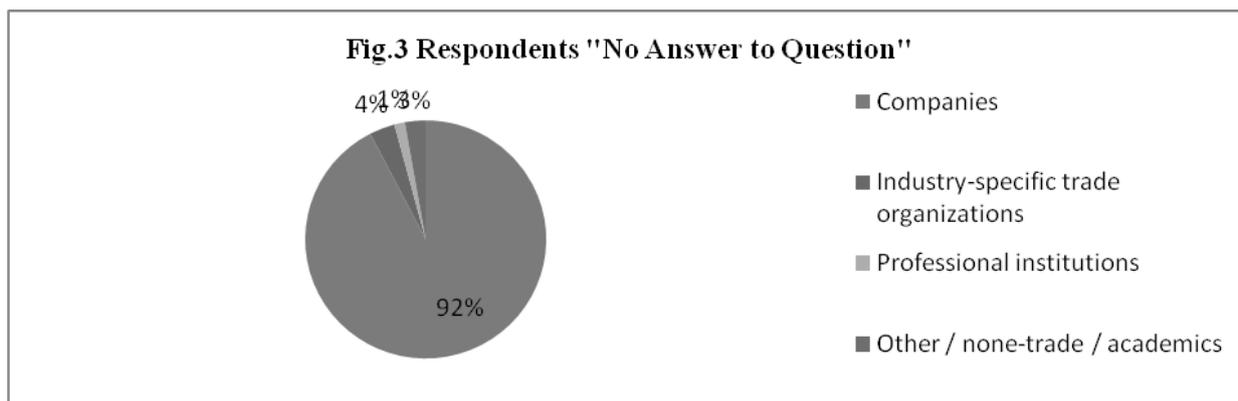


Fig. 1 shows that 34% answer to at least one question and the rest of the 971 respondents show 66% that did not answer even to one of the 18 questions in Exposure Draft. The “66%” are determined by the massive inflow of letters defending basically construction and insurance companies in USA. Fig. 2 will introduce the following features of the received comments - 39% total objection, 47% support the draft, but “lobbying” for exclude construction industry from the standard, and the 14% support the principles and the aim of the future revenue recognition standards.

Notably to say is that most of these respondents were construction, contract, insurance companies, CPAs, accounting firms from USA mostly (see Fig. 3 and Fig. 4). The “Respondents which defend ...” are 47%. It’s important to say that as it is not shown in numbers in the paper, construction industry attitude in the category “No Answer to Question”: the prevailing proportion lobbying the boards, do not include explicit objection i.e. refer to “Respondents defend construction companies”. The arguments for the objection can be found in words as: “significant judgement, mismatching revenue/cost, add costs, increased work load, software costs, personnel, requirements will demand companies to keep 2 sets of books; significant undesirable impact on our contracting business; un-necessary, confusing, expensive, and will not improve the uniformity, accuracy and reliable utilisation of the industry's financial reporting; firmly opposed to the changes that are being proposed; we are concerned that the control-based revenue recognition model set out in the Proposed ASU may entice some companies to backslide to “form over substance”; do not agree with "one size fits all"...”. But probably the most descriptive one explaining the objection of new revenue recognition standards by the USA companies is (Mel Stein, 2010):

*“Thirty-years of consistency and the universal acceptance of the percentage of completion method under SOP 81-1 should not be ended because there is a desire to achieve a “one size fits all” approach that does not consider the end users of our financial statements.”*





### 3.2 "Answer to Question" Category

From 971 letters, only 330 comments contain answer to at least one question of the ED. Para 5 states: "The objective of this (draft) IFRS is to establish the principles that an entity shall apply to report useful information to users of its financial statements about the amount, timing and uncertainty of revenue and cash flow arising from contract with customer."

The proposed standard states more clearly the objective in compare to the IFRS 3R for example:

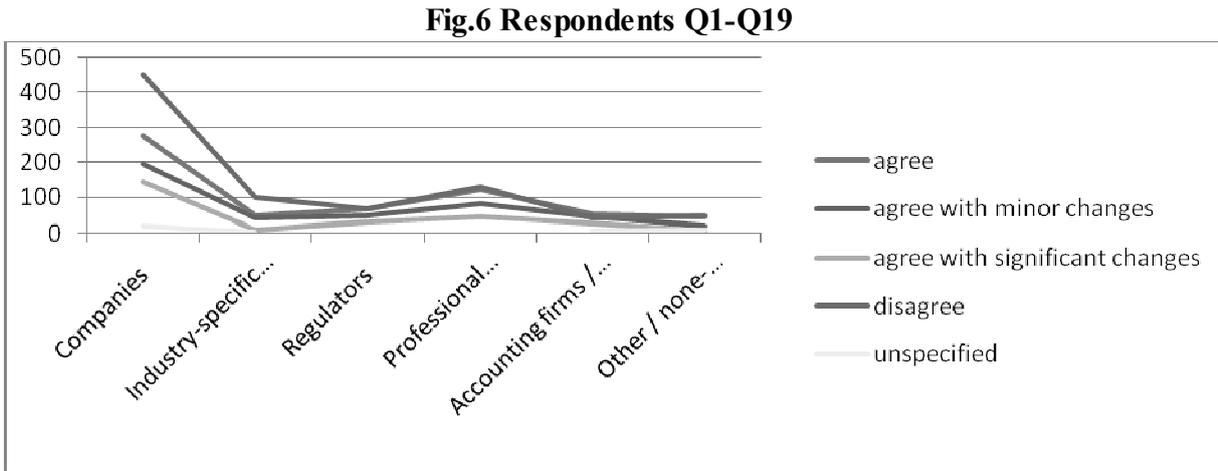
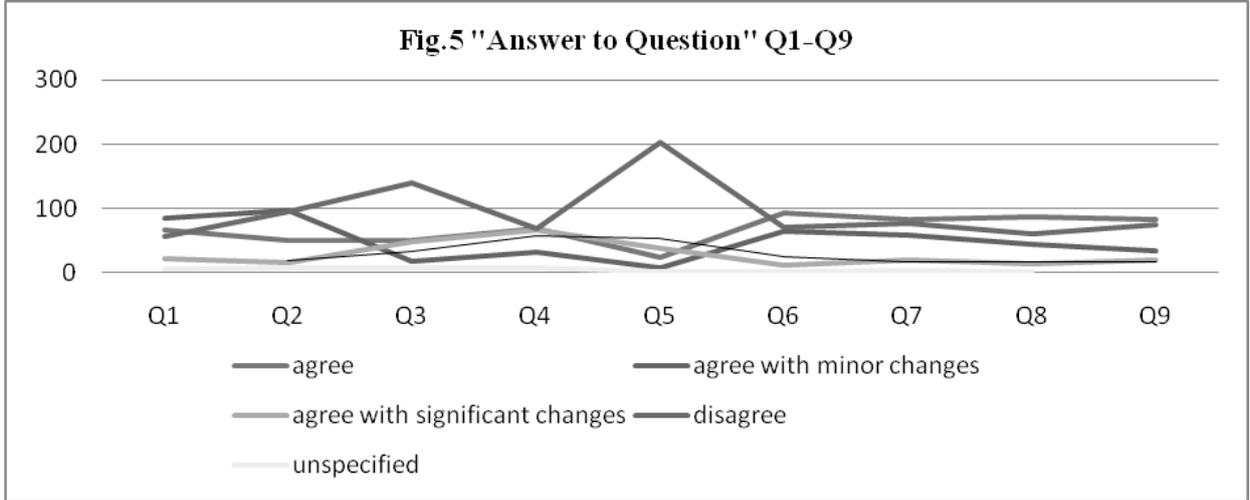
*"The objective of this IFRS is to improve the relevance, reliability and comparability of the information that a reporting entity provides in its financial statements about a business combination and its effects. To accomplish that, this IFRS ... [establishes a bunch of new rules]."*

Apparently every new or future standard should "improve the relevance, reliability and comparability". But what are the contributions to high-quality accounting standards from a simple statement of what should be the objectives for all accounting standards? In our case is important to analysis the perception of the respondents in two directions:

- Is the ED establish clear principles?

The main principle require the entity to identify the contract(s) with customer, separate performance obligation, determine the transaction price, allocation of the transaction price to separate performance obligations and to recognize revenue when the each performance obligation is satisfied. Those are contained in Q1 to Q9. Due to the results shown in Fig.5 can be concluded that disagreement line is obvious above the rest from Q3 to Q5. The peak is Q5 where the respondents have totally object the proposal in the ED customer credit risk to affect how much revenue the entity will recognize. Answers Q1 and from Q7 to Q9 depict the level of agreement with the ED proposals. Q2 and Q6 are the confrontation point - agree with minor changes cross disagree and respectively agree cross the disagree line. The next Fig.6 shows the answers to Q1-Q9 by type of respondent. As it is shown the most respondents are in two poles –

agree and disagree. In all 9 answers disagree line is above or nearly the agree line. Without necessary to count the respondents to these 9 questions is obvious that the impact on the result is primarily from companies' letters. The subcategories "agree with..." are formed because in the comments is often place the word group "Generally we agree, but / however practically / operationally" or "We do not support / agree, but it is useful ..." which respectively are named "...minor changes" and "...significant changes".



It is safe to add that principles are not stated clear by many of the constituent. This is supported by demand for "more guidance", "more examples" and "more clarifying" which stand to mean that many of the respondents do not understand clearly the principles of the standards and even more how they will be applied in reality. The majority of the respondents stating that segmenting is not appropriate in Q1 and the application of probability-weighted method in regard to Q4. Another interpretation of the above results is that details are not sufficient and subcategories present an impediment for the operability of the rules in the practice. Furthermore as FinREC (2010) stated:

*"We agree with the theoretical merit of many of the concepts included in the proposed standard...We believe also, however, that certain principles...may be neither practical nor operational..."*

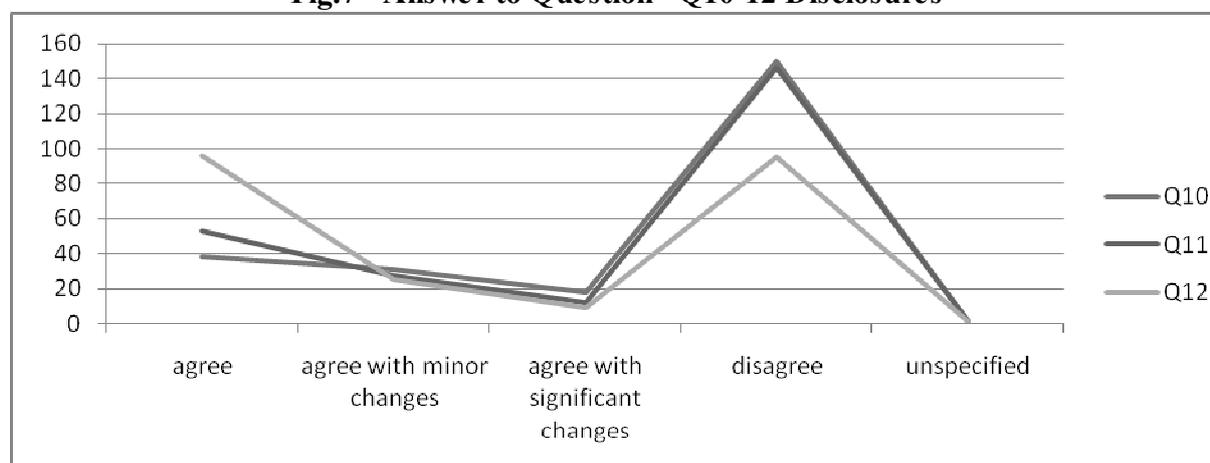
Question 10 states that "the objective of the boards' proposed disclosure requirements is to help users of financial statements understand the amount, timing and uncertainty of revenue and cash flow arising from contracts with customers". This statement is in fully conformity with the global initiative for increase the transparency of companies, especially in the financial sector. A

push toward more disclosure of information in published accounts has been prominent. Thus increased disclosure requirements are already a policy of the IASB and FASB.

- Can disclosure achieve the boards' objective?

Disclosure questions range from Q10-Q12. Fig.7 shows the respond to the category “Answer to Question” of the participants:

**Fig.7 “Answer to Question” Q10-12 Disclosures**



Q10, Q11, Q12 in their best part received the “disagree” answer. To Q12 the level between “agree” and “disagree” is nearly equal. Q12 reflects an agreement opinion because as respondents said these requirements were demanding information as IFRS 8 and that’s a new issue. Perceptions of the rest of the respondents are that the requirements of Q10 and Q11 are too onerous, prescriptive, overly extensive, and burdensome. However, minority of respondents refer to subcategories “agree with...” answering that such disclosure can be useful but again conjecture the practical problem.

#### 4 Conclusions

The preliminary content analysis is a subject to indefinite risks and interpretations. But in the paper case the merits are supervision of the correspondents' responses in a perspective of the achieving “objective-oriented” accounting standards and compliance of the responses to the qualities of such standards. As IFRS stated in the case of convergence and setting a common Conceptual Framework “overall objective is to create a sound foundation for future accounting standards that are principles-based, internally consistent and internationally converged”. So it’s not the first by nature, but a Conceptual Framework needs to be established before to step into creation of principle-based accounting standards. Because as we shown principles are not stated clear and usefulness of the disclosure requirements are with unproven benefits, there is doubt of meet the objectives of revenue recognition standard. Statements as “Generally agree...but /however operationally/practically (disagree)” prevailed in most of the answers so the quality of “operationalized” in the ED must be upon revision in the sake of the economic logic of the proposed standard. Because to be a higher quality accounting standard, there must be higher "earnings quality" defined as the strength of association between reported earnings and economic earnings. Higher earnings quality can, and must, be established from standard economic logic.

As to "minimize exceptions to the standard," why did the IASB propose to exclude insurance companies from the scope of its putatively "principles-based" revenue recognition exposure draft (at earlier stages of the project, insurance was not excluded). Furthermore, if a standard must exclude certain transactions (“long term contracts”) or industries from its scope,

justification for a scope limitation should be based only on a comparison of the cost of producing information to its value. Why are derivatives contracts with physical settlement provisions ignored, but net-settled derivatives are recognized and measured at their fair values? Why should there be different revenue recognition rules for construction/software/insurance companies than for companies that issue product warranties? I believe these are examples of political tradeoffs, as opposed to tradeoffs made with the interests of investors in mind and heart. Promoted transparency and comparability issues in the context of “bright-line” rules are none the last. Realize, amend and implement the above qualities that I consider the ED Revenue Recognition does not satisfy inevitably will result in high-quality accounting standards preventing “bright-line” options and simultaneously prevent the comparability and transparency of the financial statements. Nonetheless, raised one major concern for myself contained in the comment of FEE (2010):

*“Application guidance is not an appropriate means to address lack of clarity in the principles. We believe that the IASB should endeavor to establish clear and robust principles.”*

Demand more guidance or rules upon specific terms of the future is impossible and unwarranted if IASB / FASB work on development on objectives-oriented standards as SEC defined them. Because of that the recipe for high quality accounting standards doesn't have to be complicated. But, it's more like baking a cake than making sausage: if you skimp on key ingredients, it will fall flat.

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## ***Conformity with “High-Quality Accounting Standards”: Preliminary Content Analysis of Revenue Recognition from Contracts with Customers Exposure Draft Comment Letters***

### **Summary**

The paper seeks to analyze the content of the comments letters in response to ED 06/2010 Revenue from Contracts with Customers in order to contribute to determination of “high-quality accounting standards”. The content analysis is performed under the one and only understanding of the demanded qualities of the objective-oriented accounting standards which is stated by SEC. Whether the standard-setters conform the content of its standards to these qualities is questionable. The uniqueness of the paper is under no doubt because of the unknown volume of literature in determination and searching the issue for the qualities of accounting standards in the years of harmonization while the stated goal on paper is setting a set of accounting standards from high-quality for global marketplace. The subject in my study is definitely interesting because the proposal for a common revenue recognition standard will affect all industries. Setting one standard for all parties is without doubt a challenging job. In case the standard is approved by all somehow it can be considered to be from high-quality. But as convergence is long-awaited goal for IASB and FASB, the boards are on urge to issue more standards which jeopardize the qualities of the future accounting standards. “High-quality accounting standards” should not be complicated but practical. Thus the arguments of the respondents have to be considered but not all, because the ED discussion process is crucial for standard-setters as well as opportunistic for lobbying activities. Because of that the author has restricted the observed area of content data.

**Key words:** Accounting standards; Comment letters; High-quality.

**JEL classification:** M41, M48.

# Fraudulent Financial Reporting (FFR) Detection: A Perspective from Turkey

*Burcu Nazlioglu, Yıldız Özerhan\**

## 1 Introduction

In the wake of globalization, removing borders of financial markets increased the need of trustworthy of financial statements gradually. The rising tide of corporate scandals and audit failures has shocked the public, and the integrity of auditors is being increasingly questioned (Firth, Mo and Wong, 2005: 367). These scandals encountered by using the fraudulent financial reporting (FFR) bring the importance of deception and FFR to corporate dimensions. The Enron financial scandal is perhaps the most discussed case of fraudulent reporting revealed in late 2001 which led to its bankruptcy. This scandal also caused the dissolution of Arthur Anderson (the accounting firm of Enron which at the time was one of the world's top five accounting firms) when it discovered that they had destroyed important audit documents. Recent discoveries of FFR - WorldCom, Enron, Xerox, Waste Management and others - have put the spotlight on the financial decision making of corporate managers (Carpenter and Reimers, 2005: 115).

With the high amount of reported fraud cases and the damages it causes to companies and investors, it becomes increasingly more important to detect such fraudulent activities. Fraud is one important reason for the failure of many companies and it especially causes damage in capital markets because investors, creditors and financial analysts base their decision on the publicly available financial statements. In capital markets, the existence of fraudulent financial statements causes a big threat to investors' trust to companies and affects their investment decisions (Ata and Seyrek, 2009: 158).

According to Hussain, Kennedy and Kierstead (2010) and Ata and Seyrek (2009), fraud can be defined as intentional misstatements that can be classified into two types; the first is misstatements arising from FFR and second misstatements arising from misappropriation of assets. Misappropriation of assets involves such things as outright theft, embezzlement, padding of expense accounts, misuse of company assets, etc. On the other hand, FFR involves an intentional distortion of the financial statements such as reporting sales that did not happen, reporting income into current year that actually belongs in the next year, capitalizing expenses improperly or reporting an expense in the next year that should be reported in the current year (Ata and Seyrek, 2009: 158). The importance of auditing in financial reporting process is underscored by the fact that financial statements are joint products of audit firms and company management. Audit's effectiveness to enhance financial reporting quality depends partly on auditor's ability to detect material misstatements and partly on the auditor's behavior subsequent to the detection of such misstatements (George, 2009: 55).

The fundamental function of accounting is to provide accredited and truthful information about the entity to individuals and institutions who are concerned with the entity heading shareholders and investors through the medium of financial statements. The information users make their decisions about the entity in accordance with the information that is transferred to them. But, the information transferred to the users can be false because of both lack of knowledge and carelessness, and by knowingly and willingly. Giving false and deficient information advisedly can be defined as fraudulent financial reporting.

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The 2006 Association of Certified Fraud Examiners' Report to the Nation on Occupational Fraud and Abuse estimates that 5% of the annual revenues of all United States organizations are lost to fraud. Consistently, PricewaterhouseCooper's fourth biennial Global Economic Crime Survey (2007) reveals that fraud is a global concern in that for the 40 countries and 5,428 companies for which data was obtained, over 44% reported one or more significant economic crimes involving fraud during the preceding 2 years (Kaplan et al., 2009: 15).

When accountants (including auditors) fail to provide investors with reliable information that is relevant to their capital allocation decisions, investors and all citizens with stakes in the success of the economic system suffer. Accounting failures are failures of individuals to perform their fiduciary duties, to fulfill their responsibilities, to behave ethically. Corporate accountants, financial officers, and top managers accept responsibility for reporting aspects of the financial affairs of the entity that investors can use in making their decisions, including evaluating the performance of management. Auditors accept responsibility for examining financial statements prepared by corporate personnel and attesting to their conformity with reporting standards. Accounting academics accept responsibility for contributing to the body of knowledge that can provide a basis for such financial reporting standards and for teaching that body of knowledge. Standard setters accept responsibility for propriety of those standards as guides to financial reporting that can serve investors and society. Some members of all of those groups have failed to fulfill their responsibilities in recent years. A few of those failures have received so much attention that they have been recognized as scandals, often involving frauds; others appear as restatements of financial statements to correct reporting errors (Staubus, 2005: 5).

While a great focus in the accounting literature has been on frauds occurred in the U.S., corporate scandals and audit failures are not the sole preserve of the U.S. Due to the rapid globalization of business and investment, it behoves to examine audit failures in other countries. In this paper, the situation of Turkey under the subject of FFR is handled with this aim.

Fraudulent financial statement detection and the effectiveness of this process is certainly an important issue for all entities and the importance of that issue provided the basis for the present paper. The remainder of the paper is organized as follows. In the next section, the relevant literature will be reviewed. After the comprehensive literature review, the concepts are explained severally for supporting the framework, and the developments and embodiments from Turkey are mentioned. In the final section, the paper is concluded, the limitation of the study is identified and suggestions are offered for the future research.

## **2 Literature review**

Financial scandals and financial statement frauds have long been a major concern to the investors worldwide. Many studies have examined various methodologies used by auditors to detect fraudulent financial reporting associated with corporations. For financial fraud detection purpose, both empirical and theoretical techniques have been used. On the other hand, much as has been written and done to detect FFR practices but FFR still exists in the global arena. Most of the previous studies on FFR were about fraud risk factors known as red flags in the literature. Grove and Basilico (2008) consider both types of factors using experiences of FFR companies as a learning opportunity for management, government regulations, investors and auditors to develop early warning systems or red flags for FFR. A recent study (Moyes, Shao and Newsome: 2009) has examined how effective red flags are in detecting FFR during audits of financial statements. A survey approach was used to determine the level of effectiveness of 42 individual red flags in determining FFR, and the findings showed that the effectiveness of fraud detection is influenced by many factors including income, level of education, type of firm, years of experience and certifications. Murcia and Borba (2007)'s work seeks to contribute the financial statement fraud area, by constructing a framework of red flags to detect such fraud

and they concluded that the existence of an inadequate system of internal control is not the only element responsible for the occurrence of fraud in the financial statements.

Effective detection of FFR requires an integrative accounting/auditing conceptual framework. Smieliauskas (2008)'s paper is as much about accounting theory as it is about auditing. To simplify the development such an integrated framework, the paper uses an expanded risk model, this effectively results in a risk perspective on FFR. Similar to Smieliauskas (2008), Bai, Yen and Yang (2008)'s paper tries to investigate the main financial factors in China's FFR cases and find an effective approach to detect FFR, which aims at classify the 'good' and the 'bad' firms. They survey financial statements manipulation tricks, FFR indicators and FFR detection techniques from both domestic and international literatures.

In detection of FFR, ethics is an important factor (Schaefer and Cassidy: 2006; Norman, Wier and Achilles: 2008). But the ethics is handled with its different two dimensions in the mentioned two studies. In Norman, Wier and Achilles (2008)'s study, it is predicted that an individual's ethical position can contribute to our understanding of fraud detection. To examine this prediction, 290 internal auditors completed a case study that contained varying numbers of fraud risk factors and results of their study suggest fraud-specific knowledge can be helpful to internal auditors in making a fraud risk assessment. On the other hand, Schaefer and Cassidy (2006) review the need to examine corporate ethics and the current approaches to financial reporting, consider the various reasons inaccurate numbers are often supplied and demonstrate how a positive, proactive approach, addressing the lack of personal ethics, can significantly reduce the situations that allow for fraudulent reporting and theft.

There are many examples of companies, both public and private, which have suffered due to fraud committed by finance or related departments in the company. In Ata and Seyrek (2009)'s paper, a set of data mining techniques not widely known to auditors are used to help the detection of FFR. Data mining is the term used to describe the analysis of data to discover previously unknown relationships that provide useful information. As mentioned below, FFR is a major subject not only in public sector but also in private. According to Hussain, Kennedy and Kierstead (2010), it is common to think about FFR practices in large companies for its greater amount of consequences, though such practices have negative consequences in small companies, as well.

In detecting FFR, analytical procedures have been used extensively. Lee and Walker (2007) conducted two experiments to assess the ability of prospective accountants (upper-level accounting majors) to detect intentional financial misrepresentations in audit inquiries. These accounting majors served as proxies for entry level accountants. Their results indicate that participants have poor deception detection ability in evaluating a response to an inquiry, even when they receive deception detection training prior to the inquiry, and when repeat questions are added to the inquiry to heighten the level of stress with which interviewers must cope. According to Firth, Mo and Wongs (2005), regulators believe auditors have the responsibility to detect and report frauds that are egregious, transaction-based, and related to accounting earnings. Their study analyzes enforcement in respect of FFR committed by listed companies in China. They find that, auditors are more likely to be sanctioned by the regulators for failing to detect and report material misstatement frauds rather than disclosure frauds.

As stated with the numerous examples stated above, FFR concept handled with its different dimensions. Lendez and Korevec (1999)'s paper discusses important lessons learned from widely publicized financial fraud cases. It provides information on ways to detect financial statement fraud and describes some of the schemes often used to perpetrate such fraud. It also provides suggestions on how to prevent FFR. Church, McMillan and Schneider (2001)'s paper investigates internal auditor's consideration of FFR as an explanation for an unexpected difference in operating income. Beasley et al. (2000) provides insight into FFR instances

investigated during the late 1980's through the 1990's within three volatile industries – technology, health care and financial services – and highlights important corporate governance differences between fraud companies and no-fraud benchmarks on an industry-by-industry basis.

After touching the fringes of the studies in the literature relevant to the subject of this paper, now the key concepts which are in the framework of the subject will be explained in the extension of the study.

### **3 Discussion**

#### **3.1 Fraud**

Expectations of security analysts in the market have generated pressure on corporate management to achieve earnings targets. Missing these targets can result in significant declines in the stock price of the manager's firm, ultimately reducing compensation for these managers, as their income may rely in large part on achieving earnings or stock price targets. The "tone at the top" that has been set by several top executives of companies accused of fraudulent financial reporting has been unduly aggressive and dishonest, thus fostering unethical reporting at all levels of these companies. The intolerant nature of the market when companies fail to achieve projected earnings or other targets has stimulated unparalleled pressures on corporate management to "make the numbers". This has frequently led to fraud (Carpenter and Reimers, 2005: 116).

Norman and Achilles (2008) define fraud as the use of one's occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization's resources or assets.

The frauds committed in entities can be classified in three groups. These are employee frauds (misapplication of the entity assets by employees), fraudulent financial reporting and corruption and without moral behaviours. Frauds of financial statements are generally tools of argue from effect to the cause instead being a result itself. Financial statement fraud can be often seen as over announcement of assets, revenues and profits or defective announcement of liabilities, expenditures and loses, or vice versa. One another version of fraud can be suppression of profitability information considering the profitability situation of the next periods (Çıtak, 2007: 23-24).

#### **3.2 Fraudulent Financial Reporting (FFR)**

In 1939, James Sutherland coined the term "white collar crime" to describe criminal acts involving individuals within organizations who act in their own benefit to the organization's detriment. Since then, this term has gained force, and now white collar crime can be said to take in any financial fraud. Fraud is a planned malicious act aiming to obtain personal advantage by causing harm to others (Murcia and Borba, 2007: 165).

To fully understand the rationale for the fraud detection and prevention techniques, a basic understanding of the characteristics of financial statement fraud is necessary. In Statement on Auditing Standards (SAS) 82, Consideration of Fraud in a Financial Statement Audit, the American Institute of Certified Public Accountants (AICPA) defines fraudulent financial reporting as "intentional misstatements or omissions of amounts or disclosures in financial statements to deceive financial statement users" and this can involve (Lendez and Korevec, 1999: 47);

- The manipulation, falsification, or alteration of accounting records or supporting documents used to prepare financial statements
- Misrepresentations or intentional omissions of significant events or transactions from the

financial statements

- The intentional misapplication of accounting rules

Individuals who perpetrate financial statement fraud typically seek to enhance the company's (1) earnings by overstating revenues and/or understating expenses or (2) financial position by overstating assets and/or understating liabilities. Surprisingly, greed is not always the motivating factor. Often it is senior management's overwhelming desire to report financial results that meet or exceed Wall Street's expectations. Regardless of the reason, the end result is the same—false financial reporting (Lendez and Korevec, 1999: 47).

Fraudulent financial reporting is adducing an entity's financial statements better or worse than as is, as a result of conscious accounting process by not creating a discrepancy in deed (by balance sheet window dressing methods) on the assets and liabilities of the entity.

### **3.3 Detecting Fraudulent Financial Reporting**

Fraudulent financial reporting can be difficult to detect, but not impossible. While it is generally more cost-effective to prevent fraud, companies should also consider employing proactive measures to help them detect fraud. Internal auditors or other personnel with similar responsibilities can carry out these measures. Procedures that might help management detect possible financial statement fraud include (Lendez and Korevec, 1999: 51);

- Periodic reviews of ledgers and records for transactions that do not appear to make sense, such as erroneously recorded transactions, transactions recorded late, partially recorded transactions, unsupported or unauthorized transactions, and numerous adjusting journal entries
- Investigations of suspicious activity, such as large, unexplained, or stale items on reconciliations, unusual personal relationships between key personnel and customers or vendors, and seemingly unbelievable explanations from personnel regarding certain transactions
- Periodic application of analytic procedures to search for unusual financial trends, such as unexpected increases or decreases in expenses, cost of sales, receivables, and inventories or for changes in key ratios, such as inventory turnover and sales returns as a percent of total sales
- Performance of fraud assessment questioning in which employees are asked whether they are aware of any accounting practices that might be considered improper.

By its very nature, fraudulent financial reporting is difficult to detect. The increasingly complex computerized accounting systems found in most large companies, coupled with the complex schemes used to perpetrate this crime, make it even more difficult to detect (Munter, 1995: 39).

At the detection of fraud point, Hussain, Kennedy and Kierstead (2010) mentioned education as one way of preventing fraud by making those who are responsible for the everyday accounting duties and making aware of how fraud is committed and then educating them about detecting procedure.

#### **3.3.1 The Committee of Sponsoring Organizations of the Treadway Commission (COSO)**

The Committee of Sponsoring Organizations (COSO) of the National Commission on Fraudulent Financial Reporting, also known as the Treadway Commission was formed in 1985 to identify causal factors leading to fraudulent financial reporting upon the heels of the savings and loan debacle. The committee is a voluntary private sector group supported by major professional organizations dedicated to improving the quality of financial reporting through business ethics, effective internal controls, and corporate governance.

The National Commission on FFR (US Treadway Commission) did an in depth study on FFR in 1987. The report outlined ways to prevent and detect FFR. “The prevention and detection of fraudulent reporting is important because the financial reporting process relies on the integrity of the reported information.” (Hussain, Kennedy and Kierstead, 2010: 66). COSO issued its second report after FFR report the “Internal Control Integrated Framework” report which includes determinations and suggestions concerning establishing effective internal control systems in entities in 1992 (Çıtak, 2007: 123).

Through the project was underway prior to the 2002 reports on the corporate financial scandals, the COSO released an exposure draft of its risk management framework in July 2003. The enterprise risk management (ERM) framework builds on COSO’s 1992 release on Internal Control-Integrated Framework. Thus the ERM framework has been dubbed COSO II. The current chair, John J. Flaherty, has stated that the goal is to provide organizations “ ... a commonly accepted model for discussing and evaluating an organization’s risk management efforts.” The framework identified five interrelated components (Schaefer and Cassidy, 2006: 62);

- The control environment – the tone at the top;
- Risk assessment – the identification of relevant risks in order to plan the management of them;
- Control activities – procedures in place to carry out management directives;
- Information and communication – the identification and dissemination of data to management to enable it to meet its responsibilities; and
- Monitoring – reviewing and evaluating the functioning of the internal controls.

Point at issue report, also designates the responsibilities of the management and administrative board.

### **3.3.2 Statements on Auditing Standards (SAS)**

In October 2002, the Statement of Auditing Standards No. 99 (SAS 99) was issued by the Auditing Standards Board of the American Institute of Certified Public Accountants (AICPA). SAS 99 was designed to consider fraud activities as it relates to financial statement audit and analysis. After the financial collapse of many seemingly prominent corporations, stricter auditing standards were needed to protect the interests of corporate shareholders. SAS 99 is specific and more encompassing than the previous requirements established in SAS 82. SAS 99 defines fraud as a deliberate act that results in a material misstatement in financial statements. Fraud can be considered either misstatements that result from fraudulent financial reporting or misstatements that occur from misappropriation of assets. According to SAS 99, the three conditions (fraud triangle) must be present for fraud to exist include the incentive to commit fraud, the opportunity to commit fraud and the ability to rationalize fraud (Moyes, Shao and Newsome, 2009: 34).

Briefly, in terms of fraud, SAS 53 The Auditor Responsibility to Detect and Report Errors Irregularities Standard was issued in 1988. Then, in 1997 SAS 82- Consideration of Fraud in a Financial Statement Audit Standard was issued. Finally, in 2002, SAS 99 Consideration of Fraud in a Financial Statement Audit Standard was issued by AICPA Audit Standards Committee and this standard required handling fraud extensively and give the direct investigation right to the management in the possible occurrence of fraud. Moreover, SAS 99 rivets the SAS 82.

### **3.3.3 Sarbanes-Oxley Act (SOX)**

In July 2002, the Sarbanes-Oxley Act was enacted by Congress as a formal response to the corporate and accounting scandals. With this act, a series of rules for both entities’ and auditors’

tenancy are determined and the punishments are increased in order to prevent similar scandals and regain the trust of the society.

Provisions of the Act that are considered to be particularly relevant are certain of those related to auditors, senior management, and audit committees. It has been suggested that audit committee charters and institutional codes of conduct be evaluated in light of Sarbanes. Section 301 requires a confidential complaint mechanism to enable reporting of questionable accounting, internal control and auditing matters. This would include, of course, the follow-up of such complaints. Section 404 of the Act requires an annual certification of the internal control environment of public companies. This requirement re-emphasizes the need to evaluate risk and control, which is often difficult when there is a collection of fairly autonomous program units (Schaefer and Cassidy, 2006: 63). According to Section 406 of this legislation, publicly-traded companies must disclose whether or not they have adopted a written code of ethics. To meet SEC requirements, a company's code of ethics should be designed to prevent fraud or other illegal behaviour (Norman, Wier and Achilles, 2008: 136).

In an attempt to increase the reporting of fraud by individuals, the Sarbanes-Oxley Act of 2002 directs audit committees of public companies to establish and oversee procedures for anonymously reporting fraud-related concerns (e.g., questionable accounting, internal controls, or auditing matters) (Kaplan, Pany, Samuels and Zhang, 2009: 16).

As explained above, the Act ordered important and deterrent regulations with a view to set up more trustable financial statements.

### **3.4 The developments and embodiments in Turkey**

In Turkey, because the capital markets are astern of the developed countries, the social effect of FFR does not produce a reaction as much as the U.S. and the other developed countries. Nevermore, the actual crisis rose from the bank and brokerage scandals in which the public body assessed their savings. In conjunction with being a developing market, the examples of FFR in Turkey are not on the high ropes dimensions (Çıtak, 2007: 153). Nowadays Enron, WorldCom, Tyco that we first recall in the world and Imar Bank in Turkey scandals has shown how vital consequences the auditing and auditor brought about (Emir, 2008: 110).

Judging by the situation of forensic respect of Turkey, it can be seen that, by the mediation of Turkish Commercial Code (TCC), Capital Markets Board and Bank Legislation, different collocations are provided. The establishment of Turkish Accounting Standards Board (TASB) and the adaptation of International Financial Reporting Standards by this Board, and the necessity of these standards for banks and the institutions included in the capital markets legislation are the most important arrangements apparent in Turkey.

The scandals occurred in the U.S. evoked the rule makers like Capital Markets Board and Banking Regulation and Supervision Agency in Turkey, and new regulations are committed by the light of the developments. Capital Markets Board issued 'Declaration of Diversify about the Independent Audit in Capital Markets' numbered 24924 (Series: X, No: 19) in Official Gazette in 2002 on the basis of Sarbanes- Oxley Act, by taking lessons from the scandals chain which outbreak with the arise of Enron's financial reporting fraud. In consideration of 2003, Capital Markets Board issued the 'Declaration of Accounting Standards' for the purpose of equipping the accounting standards with international standards. In this declaration, lots of matters took place from how to prepare financial statements to which details must be included in footnotes. Moreover, it is tried to identify how to prepare the financial statements proper for the needs, apprehensible and represent the truth sincerely.

In Turkey, as a result of the deficiency or inefficiency of an internal control system in the 2000 and 2001 Banking Sector Crisis, in 2005, Banking Act numbered 5411 came into effect and according to this Act; establishment of an effective internal control in a bank became an

obligation. The aim of the Banking Act numbered 5411 mentioned in the first article that, arraying the procedures and principals about providing trust and stability in financial markets, the effective working process of credit system and maintaining the rights and benefits of investors.

On the other hand, the Turkish Commercial Code which is shaping the economic life since 1957 prepared a new Turkish Commercial Code Draft with the aim of updating the Turkish Commercial Code. The point at issue draft passed from several legal stages and then expedited to the Grand National Assembly of Turkey.

Turkey took its interest from the global scandals and all individuals and institutions of the society compensated a heavy bill because of the both national and international economic and financial crisis` effects. The governor institutions in Turkey made new regulations in accordance with the developments in the world, but it can be clearly seen that all this efforts are inadequate.

#### **4 Conclusions**

FFR has been a long-standing problem, but there are important lessons to learn from some recent cases. The Enron financial scandal is perhaps the most discussed case of FFR revealed in the late 2001 which led to it`s bankruptcy. This scandal also caused the dissolution of Arthur Anderson, when it was discovered that they had destroyed important audit documents (Hussain, Kennedy and Kierstead, 2010: 71). These discoveries have put the spotlight on the financial decision making processes and the trustworthiness of financial statements became a very important issue in the global arena.

Entities, investors and other interest owners have to find answers to such problems; What kind of efforts are needed to reduce the occurrence of FFR and ensure early detection by both independent and internal auditors when it occurs?, If FFR is difficult to detect, who is responsible for the detection?.. Moreover, knowing how to detect possible accounting irregularities can only solve part of the problem, the management of the entity must also be aware of the schemes used to perpetrate FFR.

Effective fraudulent financial reporting is certainly an important issue for all entities and provided the basis for the present paper. Recently, FFR have been gaining attention of Turkey, in both public and private sectors. It can be denoted that, the necessity of more trustworthiness is an on the agenda subject in Turkey. Therefore, the purpose of this paper is to contribute to the mentioned vital subject, still little discussed, by constructing a framework of FFR detection.

In Turkey, the academic studies concerning FFR are very limited and these limited studies especially consider the fraud cases from the U.S. The studies handling Turkey are only studies which base on assumptions, not current cases. The main reason of this situation is the limitation of data access. In conjunction with the mentioned limited academic research, although the regulatory institutions are following the developments in the world and making efforts to make new arrangements, they are still lack of a wide database.

The urgency of controlling fraud is increasingly being recognized in audit standards such as SAS 99, but not yet in accounting standards. It can be seen that, there are efforts in Turkey about an adaptation process with the world. This study is theoretical, it`s aim is to provide a framework about the leading subject FFR from a perspective of Turkey. It is the limitation of the paper. The future research must support the theoretical framework provided with this paper with empirical evidences.

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## ***Fraudulent Financial Reporting (FFR) Detection: A Perspective from Turkey***

### **Summary**

Fraudulent Financial Reporting (FFR) practices raise questions about the accuracy of financial reporting process, roles of auditors, regulators and analysts in financial reporting. With the high amount of reported fraud cases and the damages it causes to entities and investors, it becomes gradually more vital to detect fraudulent activities. In this paper, fraud, FFR and FFR detection concepts are investigated in detail, different approaches oriented the subject are bring into sharp relief with a strong literature review, and it is tried to develop a point of view about the Turkey-FFR interaction. In other words, the aim of the paper is providing a framework about the leading subject FFR, especially taking the limited academic studies consideration about FFR concept in Turkey.

**Key words:** Fraud; Fraudulent Financial Reporting; Fraudulent Financial Reporting Detection; Regulations.

**JEL classification:** M41, M42, M48.

# Related Party Transactions<sup>#</sup>

*Lenka Nováková\**

## 1 Introduction

Many high profile accounting frauds in recent years (e.g., Enron, Adelphia, Tyco, Refco, Hollinger, Rite Aid) have involved related party transactions in some way, creating concern among regulators and other market participants about the appropriate monitoring and auditing of these transactions.

Fraud is defined as in SAS 99 (AU 316): “an intentional act that results in a material misstatement in financial statements that are the subject of an audit.” Fraud includes “intentional misstatements or omissions of amounts or disclosure in financial statements designed to deceive financial statement users... and misstatements arising from misappropriation of assets” (AICPA 2002).

Loans to related parties are the most frequent type of related party transaction, followed by payments to company officers for either unapproved or non-existent services, relatively few cases involve direct loans to executives, the only type of related party transaction now specifically forbidden under the Sarbanes-Oxley Act of 2002 (Sarbanes-Oxley).

Frequent type of related party transaction in the enforcement actions is payment to company officers for services that were either unapproved or non-existent. Another frequent type of transaction is the sale of goods or services to related parties in which the existence of the relationship was not disclosed, and the sales were either fictitious or improperly accounted for (e.g., loan proceeds or contingent sales improperly recorded as revenue).

Many related party transactions are in the normal course of business. In such circumstances, they may carry no higher risk of material misstatement of the financial statements than similar transactions with unrelated parties. However, the nature of related party relationships and transactions may, in some circumstances, give rise to higher risks of material misstatement of the financial statements than transactions with unrelated parties.

For example:

- Related parties may operate through an extensive and complex range of relationships and structures, with a corresponding increase in the complexity of related party transactions.
- Information systems may be ineffective at identifying or summarizing transactions and outstanding balances between an entity and its related parties.
- Related party transactions may not be conducted under normal market terms and conditions; for example, some related party transactions may be conducted with no exchange of consideration.

## 2 Definitions

### 2.1 International Standard on Auditing 550 Related Parties

Arm’s length transaction is a transaction conducted on such terms and conditions as between a

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willing buyer and a willing seller who are unrelated and are acting independently of each other and pursuing their own best interests.

Related party is a party that is either:

- A related party as defined in the applicable financial reporting framework; or
- Where the applicable financial reporting framework establishes minimal or no related party requirements:
  - A person or other entity that has control or significant influence, directly or indirectly through one or more intermediaries, over the reporting entity
  - Another entity over which the reporting entity has control or significant influence, directly or indirectly through one or more intermediaries; or
  - Another entity that is under common control with the reporting entity through having:
    - Common controlling ownership;
    - Owners who are close family members; or
    - Common key management.

However, entities that are under common control by a state (that is, a national, regional or local government) are not considered related unless they engage in significant transactions or share resources to a significant extent with one another.

## **2.2 IAS 24 Related Party Disclosures**

A related party transaction is a transfer of resources, services or obligations between related parties, regardless of whether a price is charged.

Related party: A party is bound to the entity if such party:

- directly or indirectly through one or more intermediaries:
  - controls, is controlled by or is under common control with, the entity (including dominant, dependent and other dependents of the same dominant)
  - holds a stake in the entity that gives it significant influence over it, or
  - has joint control over the entity;
- is an associate (as defined in IAS 28 Investments in Associates) of the entity
- is a joint venture, where the entity is one of the participants (see IAS 31 -Interests in Joint Ventures)
- key management personnel of the entity or its dominant;
- is a close relative of a person in the cases
- is an entity over which a person who is in the cases (d) or (e) exercises control, joint control or significant influence, or has, directly or indirectly, with a significant voting power; or
- is a plan for post-employment benefits for workers, whether the entity itself or some other part that is linked to it

Transaction between related parties is any transfer of resources, services or obligations between related parties, regardless of whether it is loaded or not a price.

Close relatives of a person are those family members who could influence or be influenced by, that person in their dealings with the entity.

These may include:

- the spouse or person with similar respect and affection of children;
- the children of the spouse or person with similar relation of affectivity and
- the persons in charge or by the spouse or person with similar relation of affectivity

Close members of the family of an individual are those family members who may be expected to influence, or be influenced by, that individual in their dealings with the entity. They may include:

- the individual's domestic partner and children;
- children of the individual's domestic partner; and
- dependants of the individual or the individual's domestic partner.

Relationships between parents and subsidiaries shall be disclosed irrespective of whether there have been transactions between those related parties. An entity shall disclose the name of the entity's parent and, if different, the ultimate controlling party. If neither the entity's parent nor the ultimate controlling party produces financial statements available for public use, the name of the next most senior parent that does so shall also be disclosed.

An entity shall disclose key management personnel compensation in total and for each of the following categories:

- short-term employee benefits;
- post-employment benefits;
- other long-term benefits;
- termination benefits; and
- share-based payment.

Control is the power to direct the financial and operating policies of an entity, in order to obtain benefits from its activities

Joint control is the contractual agreement to share control over an economic activity.

Key management personnel are those persons having authority and responsibility for planning, directing and controlling the activities of the entity, either directly or indirectly, including any member (or non-executive) of the board or governing body equivalent the entity.

Significant influence is the power to intervene in policy decisions and financial exploitation of the institution, but not to have control of them. It can be obtained through participation in the property, by law or statute or by agreement.

In the context of this Standard, the following cases are not necessarily related parties:

- two entities have in common a board member or another key person in the right direction, just because of them, except the cases specified in paragraphs (d) and (f) of the definition of "party linked.
- two partners in a joint venture, by virtue of sharing control over the joint venture.
- providers of finance:
  - trade unions
  - institutions of public services and
  - institutions, bodies and agencies, simply by virtue of their normal dealings with the

entity (though they may condition the freedom of action of the entity or participate in the decision making process).

- any customer, supplier, franchisor, distributor or sole agent with which the entity operates a significant volume of transactions, simply by virtue of economic dependence resulting there from.

### **2.3 USA - Financial Accounting Standards No. 57 - Related Party**

Every transaction a company undertakes is with either a related or an unrelated counterparty, i.e., with a counterparty who has some extra-transaction relationship with the company through employment, ownership, or with a counterparty who has no extra-transaction relationship with the company.

For financial reporting purposes, it is not purely the “related party-ness” of a transaction that warrants particular attention, but rather the transaction’s potential effect on the company’s financial reporting.

Every payment to an employee or manager – salary, expense reimbursement, equity-based compensation – is a transaction with a party who is related to the company via employment. Financial accounting standards limit, which of these transactions require disclosure. Specifically, FAS 57 (FASB 1982) specifies that only material transactions outside the “ordinary course of business” need be disclosed. The issue is that in such transactions, shareholders’ interest may be particularly susceptible to being treated with lower priority than the manager’s personal interest. Every payment to a director – director fees, equity-based compensation, extra consulting fees – is a transaction with a party who is related to the company via board membership. The SEC requires non-financial statement disclosure of director compensation and of transactions meeting certain criteria, e.g., those in excess of \$120,000 in which a related person (directors or other related persons) has a direct or indirect material interest (SEC Regulation S-K; SEC 2006). Every transaction between a parent company and its subsidiaries or Statement of Financial Accounting Standards No. 57 (hereafter FAS 57) defines related parties as follows:

“Affiliates of the enterprise; entities for which investments are accounted for by the equity method by the enterprise; trusts for the benefit of employees, such as pension and profit-sharing trusts that are managed by or under the trusteeship of management; principal owners of the enterprise; its management; members of the immediate families of principal owners of the enterprise and its management; and other parties with which the enterprise may deal if one party controls or can significantly influence the management or operating policies of the other to an extent that one of the transacting parties might be prevented from fully pursuing its own separate interests. Another party also is a related party if it can significantly influence the management or operating policies of the transacting parties or if it has an ownership interest in one of the transacting parties and can significantly influence the other to an extent that one or more of the transacting parties might be prevented from fully pursuing its own separate interests” (FASB 1982).

Regulation S-K; in other words, related party transactions that should be disclosed. There is potential for confusion in this terminology since fraudulent related party transactions should not be undertaken at all, and it is somewhat inconsistent to say that a transaction that should never have occurred should be disclosed. So, more precisely, we use the term related party transactions to refer to both of the following:

- transactions which are not alleged to be improper, but which require disclosure as related party transactions; and
- improper transactions, which, if proper, would require disclosure as related party

transactions.

Another issue with terminology is the overlap between the term “related party transaction” and other terms including: “self-dealing,” “insider trading,” and “tunneling.” Self-dealing, as defined in Shapiro (1984), is “the exploitation of insider positions for personal benefit” where personal benefit is defined to include embezzlement or expropriation of funds, allocation of corporate contracts to businesses in which the insider has an interest, and the use of corporate resources for personal gain.

## **2.4 European Commission: Directorate-general Taxation and Customs Union – Related parties in Common Consolidated Corporate Tax Base**

Definition of related parties and closely held companies

Related parties are generally determined by

- direct or indirect participation in management, control or capital of another enterprise or by the fact that
- the same persons participate directly or indirectly in the management, control or capital. This framework for the common definition of related parties has been laid down by the Article 9 (associated enterprises) of the OECD Model Convention on Income and on Capital.

The national legislations give more details of what the direct or indirect participation in the management, control or capital shall mean and the CCCTB will have to as well. The objective is to cover situations where companies and their associates are potentially able to present and treat some transactions in a different way than such transactions would be treated and presented between independent parties. Many MS lay down the threshold for control that constitutes the control as a basic criterion and the most common threshold is 25% of the capital or voting rights. In addition to that companies may also be considered as related if it is proved that the decisive influence can be exercised, which may be determined by circumstances other than qualifying participation in the capital, such as contractual relationships, representation of the same persons in the boards of directors, family links and other forms of decisive influence. Although the OECD gives a framework definition it is currently applied differently in detail in different MS. Under CCCTB a greater level of commonality will be required.

The definition of related parties is often extended to relatives of individual shareholders and persons participating in the management (e. g. directors).

If a sub-category of related parties is defined as closely held companies it should cover companies controlled by a limited number of persons having a share or interest in the capital or income of the company or a person who is entitled to acquire share capital or voting rights (and their relatives) who are also directors. Control should be widely defined for this category to cover any kind of control or right to acquire control over the company's affairs as well as the right to the greater part of the share capital, voting rights or assets of the company available on distribution and on winding up. The rights of associates and relatives should also be taken into account in determining whether a person has control. Defining closely held companies would allow the CCCTB to keep the definition of a related party less complex.

## **2.5 IPSAS 20 Related Party Disclosures**

Related party are considered to be related if one party has the ability to control the other party or exercise significant influence over the other party in making financial and operating decisions or if the related party entity and another entity are subject to common control.

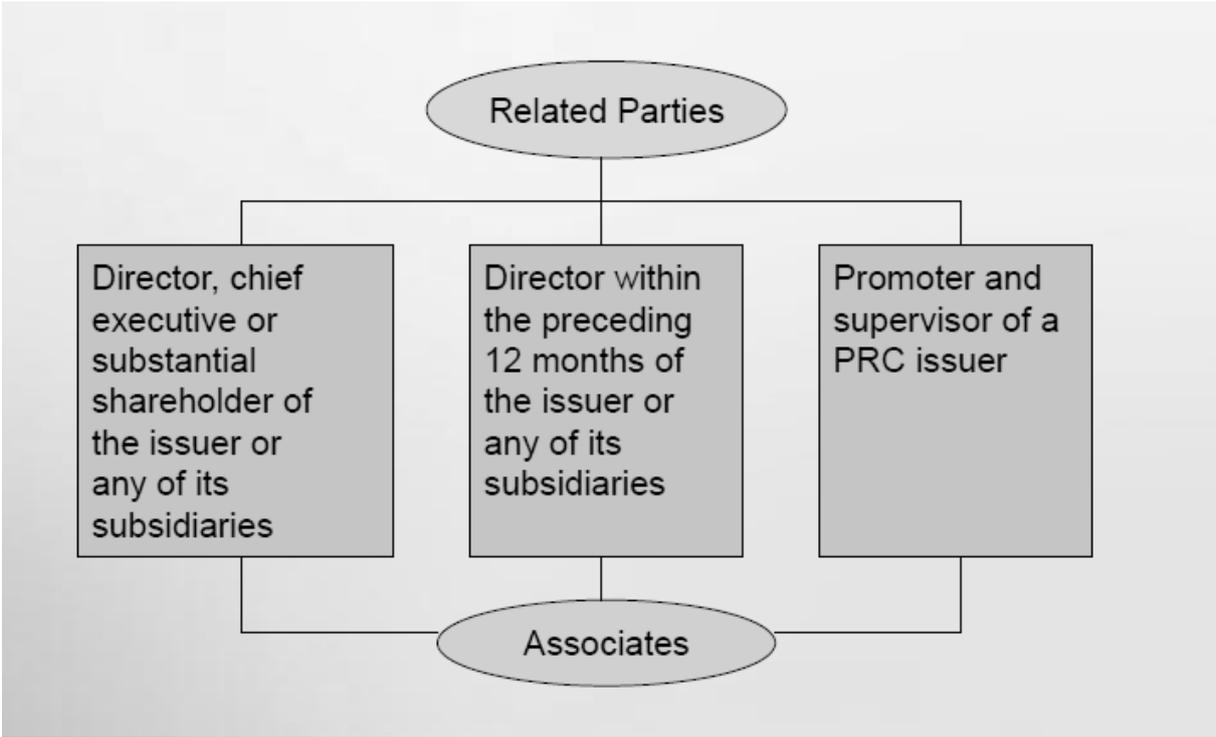
Related parties include:

Related parties include:

- Entities that directly, or indirectly through one or more intermediaries, control, or are controlled by the reporting entity;
- Associates (see International Public Sector Accounting Standard (IPSAS) 7, “Accounting for Investments in Associates”);
- Individuals owning, directly or indirectly, an interest in the reporting entity that gives them significant influence over the entity, and close members of the family of any such individual;
- Key management personnel, and close members of the family of key management personnel; and
- Entities in which a substantial ownership interest is held, directly or indirectly, by any person described in (c) or (d), or over which such a person is able to exercise significant influence.

Related party transaction is a transfer of resources or obligations between related parties, regardless of whether a price is charged.

**Fig. 1: Related parties diagram**



Source: OECD, available at <http://www.oecd.org/dataoecd/55/55/42195962.pdf>

### 3 Related party transactions

#### 3.1 Introduction

If there have been transactions between related parties, an entity shall disclose the nature of the related party relationship as well as information about the transactions and outstanding balances necessary for an understanding of the potential effect of the relationship on the financial statements. These disclosure requirements are in addition to the requirements to disclose key management personnel compensation.

At a minimum, disclosures shall include:

- the amount of the transactions;
- the amount of outstanding balances and:
  - their terms and conditions, including whether they are secured, and the nature of the consideration to be provided in settlement; and
  - details of any guarantees given or received;
- provisions for doubtful debts related to the amount of outstanding balances; and
- the expense recognised during the period in respect of bad or doubtful debts due from related parties.

The disclosures shall be made separately for each of the following categories:

- the parent;
- entities with joint control or significant influence over the entity;
- subsidiaries;
- associates;
- joint ventures in which the entity is a venturer;
- key management personnel of the entity or its parent; and
- other related parties.

Items of a similar nature may be disclosed in aggregate except when separate disclosure is necessary for an understanding of the effects of related party transactions on the financial statements of the entity.

#### Examples of Related Party Transactions

The following are examples of related party transactions with a related party that should be mentioned in your email:

- purchases or sales of goods (finished or unfinished)
- purchases or sales of property and other assets
- providing or receiving of services
- leases entered into
- transfers under finance arrangements (including cash, loans or equity payments)
- provision of guarantees
- settlement of liabilities on behalf of the related party

To better understand the role of related party transactions in uncovered fraud, there is established a framework organized according to the following types of transactions: (a) sales to (purchases from) related parties of goods and services; (b) asset sales to (purchases from) related parties; (c) borrowings from (loans to) related parties; and (d) investments in (sale of equity stake to) related parties. Within each type of transaction, the feature or features of a related party transaction that would lead to misstatement and/or misappropriation are highlighted.

### **3.2 The role of related party transactions in fraudulent financial reporting**

*Potential role of sales to (purchases from) related parties of goods and services to misstate financial reports or to misappropriate assets*

Fictitious sales to a related party and mischaracterizing receipts as revenues overstate revenue. A corollary is that non-reported purchases from a related party understate expenses and thus overstate income. The opposites of these transactions (non-reported revenue and fictitious purchases on account) are conceivable but would understate income. While such outcomes are possible and might serve to smooth income, we presume in this framework that the use of related party transactions in fraudulent financial reporting aims to inflate reported income.

Genuine sales to a related party at below-market prices can transfer wealth to the related party. A corollary is that purchases from a related party of non-existent or unnecessary goods or services, or purchases at above-market prices can transfer wealth to the related party. Again, the opposites of such transactions (actual sales to a related party at above-market prices and actual purchases from a related party at below-market prices) are conceivable and would transfer wealth from the related party to the company. Such outcomes are possible and would serve some interest in shoring up an otherwise failing company.

There is brief descriptions of representative cases in this section and the sections that follow.

- **Livent, Inc.** (Livent) mischaracterized certain receipts as revenues, when in actuality; side agreements obligating the company to repay the funds meant that the receipts were actually borrowings. The counterparty-companies on these transactions were related parties because Livent's top executives served on their boards.
- **Humatech, Inc.** (Humatech) improperly recognized revenue for sales to a foreign distributor secretly controlled by the CEO and CFO, also without disclosing that they were related party transactions. The sales had been made contingent on the distributor reselling the product, which did not occur.

*Potential role of asset sales to (purchases from) related parties to misstate financial reports or to misappropriate assets*

Sales of assets to a related party at below-market prices, or purchases of non-existent assets or over-priced assets can transfer wealth to the related party. Over-valuing assets sold to related parties (more relevant in non-monetary exchanges, where there is no cash price benchmark) overstates reported gains. In purchases of assets, over-valuing the purchase inflates assets, but under-valuing the purchase could also serve to inflate future reported gains.

Many of the Enron related party transactions involved sales of assets to non-consolidated special purpose entities to report gains and avoid reporting losses. The sales typically did not transfer risk of ownership. To the extent that the assets were "warehoused" for later repurchase, the Enron transactions also involved repurchasing the assets, however the only purpose of the repurchase was to facilitate the sale. Enron also sold certain assets to non-consolidated special purpose entities.

*Instances from sample involving borrowings from (loans to) related parties*

Certain of Enron's transactions (the Mahonia transactions) disguised \$2.6 billion of borrowing from a financial institution as forward contracts. In these transactions, Mahonia, a special purpose entity controlled by the financial institution was employed to achieve the disguise. The transaction structure was circular movements of cash and commodity price risk. At inception of the disguised-loan, cash flowed from the financial institution to Mahonia and then to Enron. Subsequently, payments that were in essence interest and principal flowed the other direction. The transactions were seemingly forward commodity transactions, but the price risk passed in a circle – from Enron to Mahonia to the financial institution and back to Enron – and thus played no economic role in the transaction.

### 3.3 Types of related Party Transactions

- One-off nature
  - Acquisition or disposal of assets
  - Writing, accepting, transferring, exercising or terminating an option to acquire or dispose of assets or to subscribe for securities
  - Entering into or terminating finance or operating leases
  - Granting an indemnity or a guarantee or providing financial assistance
  - Forming a joint venture, partnership or other joint arrangement
  - Issuing new securities
- Continuing nature
  - Provision or receipt of services
  - Sharing of services
  - Supply or purchase of raw materials, intermediate products and finished goods

## 4 Related party report

There is an example of Related Party Report of the company G4S Secure. This report is sent to its entities each half-year.

### Related Party Transactions, Legal Matters and Contingent Items 2010

Please supply the following information that applies to your Entity (or Country) at 31 December 2010:

1. Related Party Transactions
2. Legal Matters - With claims over £100,000 GBP
3. Contingent Items - Assets and Liabilities over £100,000 GBP

Please email your information to [gfq@g4s.com](mailto:gfq@g4s.com) by close of business, local time, on Monday, 31st January 2011.

Please DO NOT send any information concerning inter-company trading balances or inter-company loan balances.

Please remember to indicate which Entities you are sending a reply for.

If you do not have any of these items, please send a quick email indicating that you have ‘nil’ response.

#### 1. Related Party Transactions

Please mention if your Entity has entered into a relationship with a “related party” (a business or person who is closely linked to your Entity) AND:

- a) Your Entity has made a financial transaction with the other party, e.g. where a sale has taken place and you have given a financial guarantee for them or provided them with a loan etc.

OR

- b) Your Entity has made a financial transaction with the related party in the past and there is an outstanding balance with them, or an outstanding agreement / contract from the relationship that is still in place at the 30th June 2010.

OR

- c) If an ongoing financial transaction, guarantee or other agreement has changed significantly since 31st December 2009, e.g. a related party was declared bankrupt while your Entity is guaranteeing their loans then please also tell us about that.

Please mention:

- The value of the transactions or outstanding balance; and
- What the relationship is.

There is more guidance on page 2 of this document.

## 2. Legal Matters

- Material Litigation

Please give a BRIEF statement on the facts relating to any litigation with a disputed value in excess of £100,000 GBP, e.g. is there a provision, has legal advice suggested what the outcome will be?

- Investigations

Please give a BRIEF statement on any investigations, either threatening or pending, initiated by governmental agencies, regulatory bodies or other public offices, that have a relation to the business.

We may contact Entities for further information in respect of legal matters.

## 3. Contingent Items

Please tell us the value of any contingent Assets or Liabilities over £100,000 GBP.

*Examples of Related party transactions:*

- a personal loan has been made to a manager from a G4S business, or a member of their family
- a G4S business has made payments on a loan to a bank, where the loan is held by a customer or an employee
- sales of goods / services between an associate and a G4S business, or sales of goods/ services with a joint venture and a G4S business
- a G4S business has made sales to a pension company that also administers that businesses' pension scheme
- a G4S business has made guarantees on behalf of a G4S customer so that the customer can obtain credit

## 5 Conclusions

In this study, I document the role of related party transactions involving such transactions. Related party transactions can be categorized according to the following framework: (1) sales to (purchases from) related parties of goods and services; (2) asset sales to (purchases from) related parties; (3) borrowings from (loans to) related parties; and (4) investments in (sales of equity to) related parties.

Overall, related party transactions are not necessary as mechanisms for fraud, and their presence need not indicate fraudulent financial reporting. An implication is that it is important for the auditing profession to understand the benign nature of most related party transactions, the differentiating features between benign and fraudulent transactions, and the importance of

evaluating a company's related party transactions in light of its broader corporate governance structure. For instance, a company that engages in related party transactions faces governance challenges.

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- IAS 24 Related Party Disclosures
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- IPSAS 20 Related Party Disclosures
- Statement of Financial Accounting Standards No. 57 Related Parties
- <http://www.wisegeek.com>

## ***Related Party Transactions***

### **Summary**

Related parties transactions are the business deal between two parties, who are joined by a special relationship. Transactions are legal, but they can create conflicts of interest. Companies that are publicly traded are required to uncover related party transactions on their financial statements. For companies with a legal requirement to uncover, a related party transaction can occur between a company and a major shareholder, officer, director, or family member. This means that the type of discounts or special offers that are employed will be the same kinds of offers that would be extended to any potential customer.

**Key words:** Related party transaction; Fraud.

**JEL classification:** M41.



# **Impact of Management Accounting Information Provided in Making Decisions: Case Study Ice Cream Industry in Romania**

*Alina Puțan; Ioan Dan Topor\**

## **1 Introduction**

„Manager will never be able to take all the facts he need. Most decisions are based on incomplete knowledge - both because the information is not available, and because it costs too much time or money. There is nothing more insidious and more painful, more common than the presumption to expect precise justification of decisions based on rough and incomplete information”

Activity of information is effective! This premise finds its foundation in the existence of specialists in the production and use of information. Management accounting and cost calculation represents the lever in making correct and relevant decisions.

The objective of this paper is to contribute to a better understanding of the role of information in the entity's management in its decision making to achieve the desired performance. We talk about the economy, efficiency and effectiveness of all activities.

In our study, we attempted to highlight the need to improve methods of management accounting and cost calculation in manufacturing industry, ice cream and ice cream specialties that require the adoption of systems, methods and techniques of budgeting, collection and distribution of production costs and costing, enabling efficiency, simplicity, economy, states are the result of analysis of actual real situation and with the prospect requirements. This improvement of methods derived from the need of accurate, relevant, true, relevant information necessary to the management entity.

We focused, with preference on the scope of practice and concrete. We watched through a major player in the market of ice cream and assortments of ice cream, costs, namely the time of occurrence, registration, settlement and ways to reduce them. Cost analysis has allowed us, in some measure, to present possible future managerial decisions that are founded on costs calculated.

In terms of research tools used, we urged in the first phase of the research at documentation, because any research work has a theoretical foundation. We consulted papers from the literature of authors such as Briciu S., H. Bouquin, Căpușeanu S., Drury C., and databases provided by the university. But most part of the work is a practical study. Through the analysis and synthesis, we have formulated a series of personal views on the causes of deviations from the standard cost method.

Managerial accounting has as primary objective the cost calculation, modeling the formation of value inside the establishment. It presents information expressed in financial terms, but also non-financial, for operational decisions.

Accounting of an entity must be organized so as to provide useful information for all categories of users, depending on the usefulness of information. Imperfect information can lead to adverse selection in decision making by the management of the entity.

From the perspective of the process of acquisition of information necessary to support decisions

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and to a better understanding of reality, economic manager must take into account the acquisition cost and time information which implies it. In this theoretical framework, pure and perfect information is perceived as a mere fiction, and traditional microeconomics appears overwhelmed in chapter about competition. Imperfect competition theory authors, including H. G. Stigler and Leibenstein exploit the traditional fundamentals of pure and perfect competition, but develop the imperfect information for a series of specific situations from economic reality and which many economists ignore.

For Stigler, searching for information will be prosecuted if the marginal cost of search is marginally lower than the yield obtained for finding the best situation. Marginal cost depends on the initial endowment of information, meaning the previous purchase of a stock of knowledge.

Agencies, having an informational advantage, enjoyed a gain situation in general. Information economy is not perfectly finished, or satisfactory (Z. Gregory, 2009).

## **2 Information in the context of ice cream production**

### **2.1 Ice cream manufacturing industry and assortment of ice cream in Romania**

Manufacturing industry and specialty of ice cream from Romania represents a sector which is rising, although its market is seasonal, but highly dynamic. This market does not let ice melted from the threat of crisis. Ice cream is taking the heat on the market whether it's economic crisis or not. The main players on the market are companies with Romanian capital: Betty Ice, Top Gel, Kubo Ice Cream Alpin 57 Lux. It is also joined by two multinational, Nestle and Unilever, the latter being a relatively new player entered the ice cream market by purchasing the brand Napoca. Note that in Romania, ice cream consumption has grown at 0.5 kg / inhabitant in 2000 to about 1.7 kg per inhabitant today.

In the ice cream industry and ice cream specialties, under current conditions, the efficiency of production depends, among other things, on the efficiency with which information about the conduct of production process reach management or the leadership skills that exploit those information in decision-making and in operational control of the production process.

Thus, their achievement is somehow required for the adoption of systems, methods and techniques of budgeting, collection and allocation of costs of production and cost controlling to enable efficiency, simplicity, economy.

### **2.2 Various options for obtaining accounting information in managerial accounting**

As a result, standard cost method, standard single cost we believe is appropriate in pursuing this line of business costs, on the grounds that mere operation method replaces the actual data collection and registration for comparison at the end of the reporting period, providing an analytical character, operational and forecast information, ultimately allowing growth.

This option allows setting the actual effective costs deviations from standard costs during production process, costs per items of calculation and on causes, which facilitates budgetary control of costs and decision making at all levels on management hierarchy line. Otherwise it eliminates the workload caused by the operation of production inventory in the calculation accounts obtained only at standard cost, it is allowed its determination through the method of accounting. Deviations of effective expenses from the standard ones, determined simultaneously with the process of production have a higher signification than the calculated deviation at the end of the reporting period, leading to late decisions.

One of the main players in the manufacture and marketing of ice cream, makes a wide assortment of products from ice cream and ice cream specialties. These products are made in a single production sector. Production is based on the raw milk powder, whey powder, sugar, Ingres, coconut oil, flavors, topping and other ingredients that vary from variety to variety

(toppings, peanuts, fruit pectin). In carrying out these products is respected a specific production cycle that is extended over a relatively long period of time. This refers to a mixing tank ingredients high capacity of 2400 kg. Every are being produced more varieties. The mixture of ingredients takes place in the same cell, is subject to the same job, but from the moment of dosage, in the freezer, is divided the mixture range. Thus, mixture is pasteurized to 63 degrees Celsius to 66 degrees Celsius for 20-30 minutes. Homogenization occurs at a temperature of 63-75 degrees Celsius. Following this operation, the material has cooled to 3 degrees and 5 degrees maturation at 0-4 for 3-4 hours. After maturing are being introduced colors and flavors. „Freezer” is the freezing operation (50-60% of water), ice cream temperature out of the freezer ranging between -5 and -6.5 degrees Celsius. After leaving the freezer, ice cream is portioned and packed. An important operation is hardening ice (deep freezing), which is done at -25 ...- 40 degrees for 24 to 30 hours. Storage takes place at a temperature of -25 degrees for 4-6 months.

In our study we present an example, the creation of three products, namely, super-premium milk Malgrat berry sorbet and chocolate and almonds, is an assortment of candy that weighs 60 grams each piece; Cornet premium vanilla ice cream peanuts and cocoa icing range weighing 70 grams, Snowflake Ice cream topping chocolate with cocoa-range weighing 100 grams.

Note that these are some of the products with a high percentage of the turnover of the entity, as such, production will not be done only on these products as I outlined above. Following careful analysis of data collected on them we obtained:

**Tab. 1: Three products cost analysis**

Nr.	Explanations	Product A									Product B						Product C											
		Standard cost			Cost effective			Deviations			Standard cost			Cost effective			Deviations			Standard cost			Cost effective			Deviations		
		Q <sub>S</sub>	P <sub>S</sub>	Q <sub>S</sub> P <sub>S</sub>	Q <sub>E</sub>	P <sub>E</sub>	Q <sub>E</sub> P <sub>E</sub>	+	-		Q <sub>S</sub>	P <sub>S</sub>	Q <sub>S</sub> P <sub>S</sub>	Q <sub>E</sub>	P <sub>E</sub>	Q <sub>E</sub> P <sub>E</sub>	+	-		Q <sub>S</sub>	P <sub>S</sub>	Q <sub>S</sub> P <sub>S</sub>	Q <sub>E</sub>	P <sub>E</sub>	Q <sub>E</sub> P <sub>E</sub>	+	-	
1.	Milk powder	0,0800	41,0	3,2800	0,0800	41,0	3,2800	0	0	0,0700	41,0	2,8700	0,0700	41,0	2,8700	0	0	0,0500	41,0	2,05	0,0500	41,0	2,05	0	0			
2.	Whey powder	0,0100	32,0	0,3200	0,0100	32,0	0,3200	0	0	0,0091	32,0	0,2900	0,0091	32,0	0,2900	0	0	0,0065	32,0	0,21	0,0065	32,0	0,21	0	0			
3.	Sugar	0,1400	3,2	0,4480	0,1400	3,2	0,4480	0	0	0,1260	3,2	0,4032	0,1200	3,2	0,3840	-	0,0192	0,1000	3,2	3,20	0,1000	3,2	3,20	0	0			
4.	Ingres	0,0048	18,0	0,0864	0,0040	18,0	0,0720	-	0,0144																			
5.	Vegetable fats (coconut oil)	0,0100	21,0	0,2100	0,0120	21,0	0,2520	0,0420	-	0,0085	21,0	1,7920	0,0085	21,0	1,7920	0	0	0,0072	21,0	0,15	0,0070	21,0	0,14	0	0,01			
6.	Flavors	0,0056	23,0	0,1288	0,0056	25,0	0,1400	0,0112	-	-	-	-	-	-	-	-	-	0,1100	23,0	2,53	0,1100	23,5	2,58	0,05	-			
7.	Topping	0,1120	25,0	2,8000	0,1120	25,5	2,8560	0,0560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
8.	Fruit Pectin	0,1600	28,0	4,4800	0,1600	28,0	4,4800	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
9.	Chocolate (30%)	0,2880	35,0	10,0800	0,2900	35,0	10,1500	0,0700	-	0,0420	35,0	1,4700	0,0420	35,5	1,4910	0,0210	-	-	-	-	-	-	-	-	-			
10.	Almond (4%)	0,0384	27,0	1,0368	0,0350	27,0	0,9450	-	0,0918	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
11.	Emulsifiers	-	-	-	-	-	-	-	-	0,0518	18,0	0,9320	0,0518	18,7	0,9687	0,0327	-	-	-	-	-	-	-	-	-	-		
12.	Stabilizers	-	-	-	-	-	-	-	-	0,0455	12,0	0,5460	0,0455	12,3	0,5597	0,0137	-	0,0450	12,0	0,54	0,0450	11,8	0,53	-	0,01			
13.	Peanuts	-	-	-	-	-	-	-	-	0,0210	24,0	0,5040	0,0200	24,0	0,4800	-	0,0240	-	-	-	-	-	-	-	-			
14.	Cocoa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,0300	18,0	0,54	0,0270	18,0	0,48	-	0,06			
15.	Cornet	-	-	-	-	-	-	-	-	0,1400	5,00	0,7000	0,1400	5,0	0,7000	0	0	-	-	-	-	-	-	-	-			
16.	Casserole	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,0100	0,09	0,90	0,0100	0,09	0,90	0	0			
17.	Teaspoon																	0,0100	0,02	0,20	0,0100	0,02	0,20	0	0			
18.	Total raw materials			<b>22.8700</b>			<b>22.9430</b>	0,1792	0,1062			<b>7.8960</b>			<b>7.9202</b>	0,0674	0,0432			<b>7.50</b>			<b>7.47</b>	0,05	0,08			

Nr.	Explanations	Product A									Product B						Product C											
		Standard cost			Cost effective			Deviations			Standard cost			Cost effective			Deviations			Standard cost			Cost effective			Deviations		
		Q <sub>s</sub>	P <sub>s</sub>	Q <sub>s</sub> P <sub>s</sub>	Q <sub>E</sub>	P <sub>E</sub>	Q <sub>E</sub> P <sub>E</sub>	+	-	Q <sub>s</sub>	P <sub>s</sub>	Q <sub>s</sub> P <sub>s</sub>	Q <sub>E</sub>	P <sub>E</sub>	Q <sub>E</sub> P <sub>E</sub>	+	-	Q <sub>s</sub>	P <sub>s</sub>	Q <sub>s</sub> P <sub>s</sub>	Q <sub>E</sub>	P <sub>E</sub>	Q <sub>E</sub> P <sub>E</sub>	+	-			
19.	Traming materials	0h10'	8,0	1,30	0h10'	8,0	1,30	0	0	0h5'	8,0	0,66	0h5'	8,0	0,66	0	0	0h5'	8,0	0,66	0h5'	8,0	0,66	0	0			
20.	Mixing materials	0h10'	8,0	1,30	0h10'	8,0	1,30	0	0	0h5'	8,0	0,66	0h5'	8,0	0,66	0	0	0h5'	8,0	0,66	0h5'	8,0	0,66	0	0			
21.	Pasteurization and homogenization	0h8'	7,5	1,00	0h8'	7,5	1,00	0	0	0h4'	7,5	0,50	0h4'	7,5	0,50	0	0	0h4'	7,5	0,37	0h4'	7,5	0,37	0	0			
22.	Cooling and maturation	0h7'	7,0	0,80	0h7'	7,0	0,80	0	0	0h3'	7,0	0,35	0h3'	7,2	0,36	0,01	-	0h4'	7,0	0,37	0h4'	7,2	0,42	0,05	-			
23.	Flavouring	0h5'	7,0	0,60	0h8'	7,0	0,93	0,33	-	0h3'	7,0	0,23	0h3'	7,0	0,23	0	0	0h3'	7,0	0,28	0h3'	7,5	0,37	0,09	-			
24.	Freezerare	0h7'	8,0	0,90	0h7'	7,5	0,88	-	0,02	0h5'	8,0	0,67	0h5'	7,8	0,65	-	0,02	0h4'	8,0	0,37	0h4'	7,5	0,50	0,13	-			
25.	Dosage	0h5'	7,5	0,62	0h4'	7,5	0,50	-	0,12	0h3'	7,5	0,38	0h3'	7,2	0,36	-	0,02	0h3'	7,5	0,38	0h3'	7,5	0,38	0	0			
26.	Hardening	0h5'	7,5	0,95	0h5'	7,5	0,95	0	0	0h3'	7,5	0,38	0h3'	7,2	0,36	-	0,02	0h9'	7,5	0,11	0h9'	7,5	0,11	0	0			
27.	Total Labor			<b>7,10</b>			<b>7,66</b>	0,33	0,14			<b>3,29</b>			<b>3,24</b>	0,01	0,06			<b>3,13</b>			<b>3,47</b>	0,34	-			
28.	Standard overhead expense budget share			<b>2,96</b>			<b>2,70</b>	-	0,26			<b>2,6</b>			<b>2,49</b>		0,11			<b>1,87</b>			<b>1,80</b>	-	0,07			
29.	Unit cost			<b>32,93</b>			<b>33,30</b>	-	0,37			<b>13,79</b>			<b>13,65</b>	-	0,14			<b>12,50</b>			<b>12,74</b>	0,24	-			

Note: We calculated the standard cost and effective cost, as well as deviations from the standard cost for a kilogram of ice cream in each product.

We believe that the case study allows the following conclusions.

**Tab. 2: Summary results for the three products study**

Study feature	Deviations		Causes	
	Quantity	Price	Objectives	Subjective
<i>Product A.</i>	+99,76	+ 1.155,84	- perishable raw materials, improper storage  - the current market situation determine the change (increase) in raw material prices	- recipe for failure by workers  - quick purchase orders to meet a loss of discount
Product B	- 7.310,00	1.190,00	- to supply raw material considered necessary to predict, because production is so varied, but this product is one of the "stars"  - the current market situation determine the change (increase) in raw material prices	- it was closely observed the compliance of the recipe by workers, directly productive workers are specialized for this product over time, there are no new recruits  - quick purchase orders to meet a loss of discount
Product C	- 240,80	+602,00	- compliance storage of raw materials  - the current market situation determine the change (increase) in raw material prices	- compliance of the recipe by the workers directly involved  - quick purchase orders to meet a loss of discount
<b>Total</b>	<b>7.451,04</b>	<b>2.947,84</b>		

Study feature	Deviations		Causes	
	Labor	Time	The tariff	
Product A	+3.784,00	+1.032,00	<ul style="list-style-type: none"> <li>- the framing of new staff employed in key points of the production process</li> <li>- increased tariff somewhat imposed by market prices and the specialization of staff</li> </ul>	<ul style="list-style-type: none"> <li>- using a different hourly rate for workers depending on the length of the production process</li> <li>- deviation derived from a policy that entity is using, to reward older employees</li> </ul>
Product B	0,00	-850,00	<ul style="list-style-type: none"> <li>- there were no deviations from the planned time because there were no workers or changed working conditions</li> <li>- although there has been a tariff increase, the deviation is due to employment in the production of new workers</li> </ul>	<ul style="list-style-type: none"> <li>- increasing employee motivation as a result of incentives received from the management</li> <li>- deviation derived from a policy that entity is using, to reward older employees</li> </ul>
Product C	0,00	+120,40	<ul style="list-style-type: none"> <li>- there were no deviations from the planned time because there were no workers or changed working conditions</li> <li>- increased tariff somewhat imposed by market prices and the specialization of staff</li> </ul>	<ul style="list-style-type: none"> <li>- increasing employee motivation as a result of incentives received from the management</li> <li>- deviation derived from a policy that entity is using, to reward older employees</li> </ul>
<b>Total</b>	<b>3.784,00</b>	<b>302,40</b>		

Study feature	Deviations			Causes	
	Volume	Capacity	Efficiency		
<i>Product A</i>	-15,37	+4,14	+11,84	-reduce the costs with electricity, equipment repairs, but only up to a point where a slight increase is known	increased costs with indirect productive staff
<i>Product B</i>	-4,77	+1,82	+5,18	scrap material losses, increase energy and water costs	yield reduction due to new employment (non-completer equals timely training courses)
<i>Product C</i>	-7,49	-3,29	-9,36	Cost reduction with energy, water equipment repairs	Cost reduction with indirect productive staff
<b>Total</b>	-27,63	2,67	10,33		

### 3 Possibilities to use information from standard cost method in management optimization

Although the concept is based on total cost of production using the classification of expenses in direct and indirect, standard cost method also uses the classification of production expenses in fixed and variable, which allows analysis of costs in relation to volume production. Analysis of deviations from standard costs is not sufficient for adequate management decisions. Thus, we can have Direct Costing method in question in this case the calculation of key indicators correlated with the identification of deviations and their causes. The two can be the basis for rational decisions adopted by the entity's management.

Direct Costing can provide entity manager information that is of particular importance in formulating decisions about future activities. This method provides a basis for cost projections for the study of the effects of planned changes in production volume, resulting from changes in economic conditions or certain management actions open, such as price changes, increasing or decreasing stocks or special promotional activities (Briciu S., 2006).

These indicators (Briciu S., 2006) are calculated as follows:

- Gross profit contribution:

$$C_{bu} = P_{vu} - C_u, \quad (1)$$

where  $P_{vu}$  = unit sales price,  
 $C_u$  = unit cost (total variable costs/quantity manufactured).

- Total entity gross contribution:

$$CBT = D - CVT, \quad (2)$$

where  $D$  = dissolution of the selling price,  
 $CVT$  = total variable costs.

- Equilibrium point:

$$P_e = CFT/C_{bu}, \quad (3)$$

where  $CFT$  = total fixed costs,  
 $C_{bu}$  = gross profit contribution.

This equilibrium point indicate the extent to which any sale of additional sales is bringing benefits, but also as a reduction in sales, generating losses in the same structures. It is the point where the economic and financial results are zero. Although the equilibrium point shows the time from where the business become profitable, we must not forget that a doubling of production capacity, for instance, will not lead to duplication of benefits as any excess of the optimum production capacity will lead to further growth benefits. However due to the fact that in economic practice, changes in production costs and sales volume are not carried out linearly, following the emergence of influential factors.

- Coverage factor:

$$Fa = CBT/D * 100. \quad (4)$$

The coverage factor expresses the percentage contribution of each product to cover fixed costs and obtaining the benefit of interest for current decisions on selling. The entity orients its policy by manufacturing and selling products with the highest coverage factor.

- Dynamic safety factor:

$$K_{sd} = (D-d)/D * 100 = B/ C_b * 100, \quad (5)$$

where  $d$  = sales volume at the equilibrium point,  
 $B$  = total benefit,  
 $C_b$  = gross profit contribution.

Dynamic safety factor shows with how much the sales are relatively lower for the enterprise to reach the equilibrium point. Any decrease over this coefficient will make the unit enter in the losses area.

- Dynamic safety factor:

$$I_s = D - d, \quad (6)$$

where  $D$  = sales volume at the equilibrium point.

Range safety represents in absolute size, the sales decline so far as they can not enter into the losses.

In this case SC Alpin 57 Lux Srl Sebes we already know the data presented in Chapter III, plus the following (numbers correspond to 1 kg of ice).

**Tab. 3: The situation of the analyzed products**

Elements	Products		
	A	B	C
Unit cost	2,08	0,98	1,27
Unit selling price	2,80	1,70	1,80
Gross contribution unit	1,04	0,1	0,63

**Tab. 4: Indicators provided by Direct Costing method**

Indicators	Total	Products		
		Malgra	Cornet premium	Snowflake
Equilibrium point (unit)	110.398	40.980	33.418	36.000
Coverage factor (%)	29,11	37,32	15,02	35,00
Dynamic safety factor (%)	52,5	51,23	55,8	50,47
Range safety	20.850	13.444	2.042	5.364

Thus, if we follow the data in the table, we find that the equilibrium point is at a sales volume of 110,939 units, the coverage factor is 29.11%, dynamic safety factor is 52.5% and range safety is 20,850 pieces.

Entity may take further decisions as to increase Malgra's production because it has the largest coverage factor. It may also consider selling price increases for some products, reducing both fixed and variable costs, etc. All these issues are addressed below.

### 3.1 Optimization of the results

Practical ways to maximize the profit within the entity, consists in taking appropriate decisions. In this regard, the entity used to establish methods for determining the organization's objectives to pursue, the financial impact monitoring activities and, ultimately, profit optimization.

Optimization must follow complex directions as: optimizing cost, production optimization, revenue optimization, optimization of employment costs, and optimization of logistics.

Assumptions on profit optimization are presented in the table below:

- We will consider reducing the retail price of 0.20 at Malgrat product because marketing studies found that similar products have a lower sales price. As a result, the coverage factor will decrease to 32.5%, dynamic safety factor will decrease to 45.27% and dynamic range safety is 12,347 pieces.
- Increase of the physical volume of production and distribution by 10%. In this case the coverage factor remains at its level of 29.11%, the equilibrium point remains unchanged at 110,398 units, dynamic safety factor increases to 53.52% and the range safety increases to 25 900.
- Reduce variable costs by 5% for each of the three products by reducing transport costs, staff dealing with certain phases whose work was taken over by machines, this will

change the coverage factor, dynamic safety factor, range safety increases and decreases the equilibrium point.

- Reducing fixed costs by 5% by reducing security personnel to replace them with staff from the entity and the reduction of employees from the administrative apparatus. The coverage factor will not change, but will increase the equilibrium point value, the range safety and dynamic safety factor.
- Change in the production and dissolution, the increase amount of product upwards by a higher coverage factor. Malgra product will increase production to 10%. The coverage factor will increase, sales volume will be greater, and the other two indicators dynamic safety factor and range safety will also increase.

All these changes are presented in the Table 5 below.

Optimizing the outcome is the cornerstone for any manager. Maximize profits, reduce costs of achieving the main activity, labour productivity growth is the way forward in any activity that is intended to be prosperous, the coordinates of the management of each entity.

On the one hand it comes to reducing consumption of raw materials while the material resources are increasingly fewer and secondly discuss the fierce market competition, under these circumstances entity must retain market position, at least, but also finding ways to improve its performance.

Savings are achieved through optimization of raw materials, fuels and energy, shortens the time for execution of various works, fixed costs are reduced, variable costs volume is closely followed etc.

**Tab. 5: Optimization assumptions**

Explanations	Initial situation	Optimization assumptions					
		Sales price fall	Increase physical volume of production and dissolution	Reducing variable costs	Reducing fixed costs	Change in the production and dissolution	Final statement as result of all the factors action
1) Dissolution volume sales price:							
a)Malgra	82.880	76.960	91.168	82.880	82.880	91.168	92.730
b)Cornet premium	41.194	41.194	45.314	41.194	41.194	39.134	44.210
c)Snowflake	30.960	30.960	34.056	18.920	18.920	30.960	32.880
Total:	155.034	149.114	170.534	142.994	142.994	161.262	169.820
2)Var. expenses:							
a)Malgra	13.472	13.472	15.116	12.798	13.472	14.819	15.254
b)Cornet premium	10.101	10.101	11.110	9.596	10.101	9.596	11.350
c)Snowflake	7.009	7.009	7.710	6.659	7.009	7.009	7.820
Total:	30.582	30.582	33.936	29.053	30.582	31.424	34.424

3)Contrib. cover:							
a)Malgra	7.733	6.583	8.506	8.382	7.733	9.805	9.870
b)Cornet premium	529	529	582	1.029	529	529	609
c)Snowflake	3.780	3.780	4.158	4.131	3.780	3780	4020
Total:	12.042	10.892	13.246	13.542	12.042	14.114	14.499
4)Coverage factor:							
a)Malgra	37,32%	34,22%	37,32%	40,51%	37,32%	43%	36,94%
b)Cornet premium	15,02%	15,02%	15,02%	19,03%	15,02%	15,02%	19,03%
c)Snowflake	35%	35%	35%	38,25%	35%	35%	38,25%
Total:	29,11%	28,08%	29,11%	32,60%	29,11%	31,01%	31,41%
5)Dynamic safety factor	52,5%	50,32%	53,52%	57.80%	56,30%	59,10%	60,04%
6)Range safety	20.850	19.752	25.900	22.955	21.890	29.840	34.672

## 4 Conclusions

SWOT analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business process. In our case study it involves specifying the objective of the management accounting process and identifying the internal and external factors that are favorable and unfavorable to achieve that objective of good and better information.

SWOT analysis of the process of reporting by management accounting and cost calculation in this case costing methods discussed in the above case study - Standard Cost and Direct Costing is the most important conclusions that we arrived on.

In the Strengths area to: provide a clear picture of fluctuations in costs of production, to identify causes of negative deviations from the expected cost, and could take the relevant decisions at the right time.

In what Weaknesses are concerned to our opinion: high workload, followed closely by the entire production process by dividing the full range of products and the insufficient training of human resources and insufficient professionalism from human resources are the main two.

We identify one important threat: the shortage professionalism of staff entity can touch credibility in the micro and macro information.

At last we concurred to the following opportunities: providing true, accurate and integrity information in decision-making in a entity first; and reducing the risk of bankruptcy, by pursuing operational costs and taking relevant decisions in real time.

Identification of SWOTs is essential because subsequent steps in the process of planning for achievement of the selected objective may be derived from the SWOTs. First, we have to determine whether the objective is attainable, given the SWOTs, but If the objective wil to be not attainable we will identify different objective to be selected and the process repeated.

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## ***Impact of Management Accounting Information Provided in Making Decisions: Case Study Ice Cream Industry in Romania***

### **Summary**

The issue of imperfect, incomplete and asymmetric information presents a research topic that is still looking for the answer. Scope of obtaining and providing information through the management accounting and cost calculation, followed by preference in this study is quite extensive.

Cost of production factors is the key to success or failure of an entity on the market; it largely depends on the size of a particular activity and size of profit that can be achieved.

Ice cream manufacturing industry in Romania is a fast-rising industry, although its market is seasonal, but highly dynamic. This market does not let itself melted from the threat of global crisis.

In the ice cream industry and ice cream specialties, under current conditions, the efficiency of production depends, among other things, on the efficiency with which information about the conduct of production process reach management or the leadership skills that exploit that information in decision-making and in operational control of the production process.

**Key words:** Management accounting; Optimisation; Decisions.

**JEL classification:** M41.



# Impact of Communication Problems on the Quality of Financial Reporting

*Jana Roe\**

## 1 Introduction

Financial reporting is a way of communicating company's financial and non-financial information to the public. In the past, when financial reporting functioned primarily internally, either within a company or within a country, senders and receivers of the information were relatively homogenous, therefore the quality of the communication was high. With increased globalization, all of the groups involved in the preparation and interpretation of financial reports increased in complexity, from companies becoming global in operations and investors participating in markets outside their home countries.

Many levels of communication are involved in financial reporting, with each playing out not only on local but also on an international plane. Communication with employees, managers, suppliers, customers, creditors, regulators, government, and other stakeholders occurs primarily during the following three phases of financial reporting:

- internal company communication of data during the preparation of the financial report,
- communication during the audit of the financial report,
- interpretation of the financial report by investment firms or individual investors and other stakeholders.

When two or more parties participate in accounting and financial reporting communication, misunderstanding can occur on three different levels: 1) translation of words; 2) translation of meaning; and the 3) interpretation of the translation. This paper shows that successful translation in the context of international financial reporting does not merely depend on the use of the correct language but also on professional and cultural familiarity with both original and target environments. Current literature focuses on the translation of standards and financial reports; I will discuss other opportunities for research in the area of professional and educational translation of accounting and financial reporting guidance.

Global accounting standards convergence is accelerating since the European Union's 2002 regulation mandating International Financial Reporting Standards (IFRS) for all public companies listed in the EU and the execution of the Norwalk Agreement between Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB). Convergence has been supported by the notion that a single set of high-quality global accounting standards is an important means of enhancing comparability of financial statements. Recent studies have shown that convergence has contributed to greater comparability in financial reporting; however, other research suggests that national culture could undermine a consistent application of IFRS across countries and convergence of standards may not automatically lead to comparability in financial reporting.

In this paper, I will first discuss how financial reporting quality, comparability and financial standard convergence are impacted by various cultural factors. The differences in financial reporting environments cause different results when applying seemingly same standards. Second, I will summarize recent literature on the role of language and translation in the application of IFRS. Current studies and reports describe various challenges to effective

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accounting communication and the consequences of English becoming lingua franca for financial reporting. In the concluding section, I will examine some examples of communication and translation issues identified in prior literature and suggestions for further research and solutions identified by authors, educators, and professionals. Generally, I will focus on the internal aspect of communication in financial reporting, which occurs during the preparation and audit of the financial report and will offer some suggestions for mitigating these issues based on personal experience.

## **2 Obstacles to Financial Reporting Quality and Comparability**

### **2.1 Concepts of quality and comparability in connection with convergence**

Financial reporting quality and comparability are concepts that have been hard to define. In this paper, I chose the same notion of quality as Hail, Leuz, and Wysocki used in his 2009 paper about the effects of IFRS and U.S. GAAP convergence on financial reporting quality and comparability: “We note that “reporting quality” is hard to define and a concept with multiple (possibly conflicting) dimensions. We use it as a placeholder for desirable properties of corporate reporting, in particular the usefulness of corporate information to outside investors for decision making and contracting.” The definition of comparability now widely used comes from Trueblood (1966) where comparability is achieved by assuring the “like things look alike, and unlike things look different”. However, in accounting, issues remain with the concept of “like and unlike things”. Leuz, et al. (2009) gives an example of improved financial reporting comparability as making it “easier to differentiate between less and more profitable firms or low- risk and high-risk firms, which in turn reduces information asymmetries among investors and lowers estimation risk.”

The 2009 Leuz et al. paper draws some conclusions about financial reporting quality, comparability and the role of accounting standards, together with convergence, including the following:

“The importance of accounting standards for the quality of corporate reporting is more limited than often thought. Other supporting institutions play an important role in determining reporting outcomes. Academic studies suggest that firms’ reporting incentives and enforcement of standards are at least as important as accounting standards in influencing reporting practices.”

“A single set of accounting standards by itself does not guarantee the comparability of firms’ reporting practices, neither within a country nor across countries. This applies to any set of standards (not just IFRS) and it is true even when the enforcement of standards is very high, indicating that reporting comparability is not only a matter of enforcement. Comparability in reporting practices is unlikely to occur as long as firms’ reporting incentives differ.”

“The effects of accounting standards cannot be viewed in isolation from other elements of a country’s institutional infrastructure. In well-functioning economies, the key elements of the institutional infrastructure fit and reinforce each other. Thus, changing one element of the institutional infrastructure (e.g., the accounting standards) can lead to undesirable outcomes for the economy as a whole, even if the change unambiguously improves the element itself.”

“There is mixed evidence on the capital-market and other effects around IFRS adoption by firms around the globe. Not all countries and firms see benefits and, more importantly, it is not clear that the documented effects can be attributed solely or even primarily to the adoption of new accounting standards per se.”

### **2.2 Differences in culture impact communication in financial reporting**

The conclusions of the Leuz paper point to important factors when considering the quality and comparability of global financial statements and accounting standards, all of which can be

traced to the particularities of individual cultures and countries where the standards are in use. The effects of culture on financial reporting have been studied in the past and cultural differences are an important consideration in global business practices. In the remainder of this section I will summarize the issues and literature on the cultural and environmental differences and their impact on communication in financial reporting.

All over the world stakeholders use the information provided by financial statements in their decision-making process and although the use of the information is more or less the same worldwide, the communication of that information can differ according to the location of the company (type of accounting standards used) or other influencing factors (for example legal system, development of the capital market, culture, etc.). Each country has a different mix of influences on financial reporting, which result from different environmental and cultural characteristics. The most important influences with differences that have been identified in literature and are included in financial reporting and accounting textbooks by Alexander et al. (2009) are the following:

- provision of finance
- existing legal system
- link between accounting and taxation
- cultural differences

### **Provision of finance**

The provision of finance refers to whether creditors (insiders) or equity (outsiders) is used to finance company operations. According to Alexander and Britton (2004), the following table presents several examples of shareholder versus debt-holder oriented countries:

<b>Shareholder oriented ownership</b>	<b>Credit, family, state oriented ownership</b>
United States	Germany
United Kingdom	France
The Netherlands	Belgium
Australia	Spain
Canada	Czech Republic

The main reason why the ownership structure has an impact on financial reporting is the character of insider versus outsider relationship to the management of the company, who communicates the financial information. The outsiders (shareholders) are in a weaker position to inquire about the company's financial data, therefore have to rely more heavily on the external reports issued by companies traded on capital markets, giving those firms incentive for high quality reporting. The conclusion is that in countries where companies rely on equity financing, the financial reports have creditor orientation and in countries with primarily debt financing, the reports have creditor orientation, which would for example have an impact mainly on reported debt to equity ratios of companies.

From the communication perspective, misunderstandings and unintended reporting practices occur where ownership concepts do not exist and are new to some environments, for example where accounting rules geared toward the shareholder-oriented structures such as IFRS are implemented in credit-oriented countries such as Germany or Czech Republic. In some cases even the subject matter is different, where some countries do not use pension plans or other forms of compensation or financing.

## **Legal system**

The two types of legal systems developed in the western world are common law and code law. Common law system is developed from case law instead of general rules applicable to various cases. In this system, accounting rules are prescribed by professional organizations and private sector, and generally company law is minimal. In contrast, code law system is characterized by many rules, often very detailed, which aim to prescribe guidance in all situations. This system developed originally in Roman law and is historically used in continental Europe. Code law system includes accounting regulation and financial reporting must comply with a set of detailed rules.

## **Link between accounting and taxation**

In some countries, a strong link between accounting and taxation exists, for example majority of countries will use some form of financial result as a starting point for figuring taxable amount. For example in Belgium, amounts can be tax deducted only if they are reported as a financial deduction. In such situations, financial reporting can become influenced by tax-related decisions. Financial reporting is most often influenced in countries with more debtor-oriented approach. In investor-oriented countries, the link is much weaker, the measurement and recognition rules and estimates used in the tax accounts can differ from the valuation rules used in the preparation of the financial statements published for all external stakeholders. The financial to tax link can also vary with time, as the fiscal policy of a country changes.

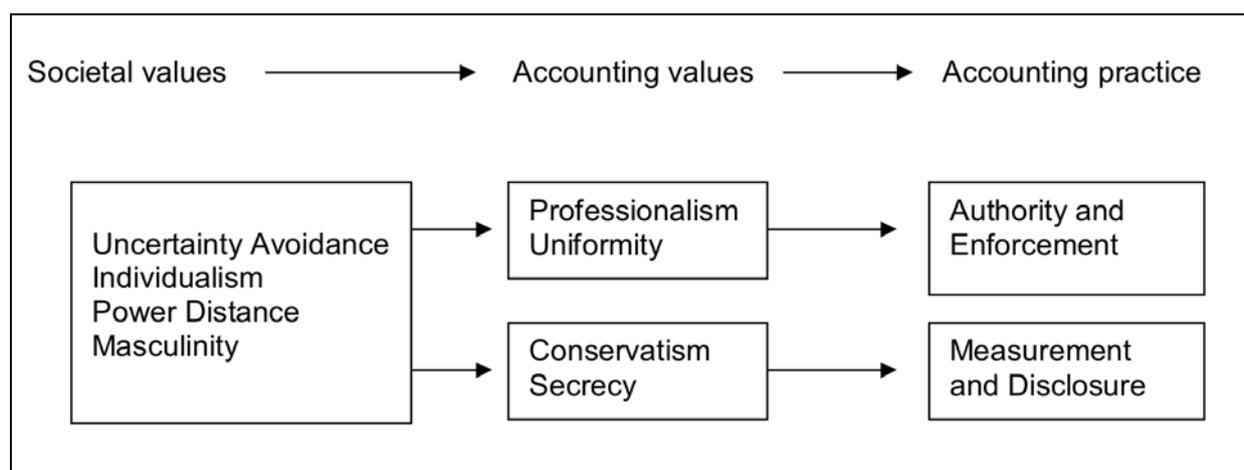
## **Cultural differences and accounting values**

According to accounting research, cultural differences play an important role in the reporting and disclosure behaviour in financial statements. One well-known way of analyzing human culture is that of Dutch anthropologist, Geert Hofstede, who developed his theories of cross-cultural communication through interviews with international business persons. According to Hofstede, each culture must deal with questions that can be resolved according to a series of dimensions, which results in a unique gestalt for each society, depending on the intensity of its tendency towards one or another end of each culture dimension spectrum. In 1984, Hofstede surveyed a multinational firm IBM and identified four characteristics, which determined differences in reporting: individualism, power distance, uncertainty avoidance and masculinity.

In contrast to collectivistic societies, where a tightly knit social framework provides resources for everyone, people in individualistic societies are expected to take care of themselves and their family independently. Power distance aspect considers how society handles inequality among people, where societies with large power distance accept a hierarchical order with no further justification. In societies with weak uncertainty avoidance exists a more relaxed atmosphere in which practice counts more than principles and deviance is more easily tolerated. Lastly, masculinity versus femininity refers to the values that society prefers: achievement and assertiveness versus relationships and caring for the weak.

Based on Hofstede's classification scheme, Gray (1988) defined "accounting values" which are formed and influenced by the different cultural values and outlined the following relationships between social and accounting values and accounting practice.

**Fig. 1: Relationships between social and accounting values and accounting practice**



Lastly, Zeff (2009) outlined the following four cultures that differ from one country to the next, which he identified as one of the factors that could impede or interfere with promoting genuine worldwide comparability:

- Business and financial culture
- Accounting culture
- Auditing culture
- Regulatory culture

Zeff (2007) concludes with interesting remarks, discussing the role of politics in relation to auditor and regulator strictness and its impact on principles vs. rules-based system. In general, the quality of IFRS is dependent on the amount of politics during the process of convergence and comparability of financial reports depends not only on the quality of IFRS but also on the translation of the words and the meaning of the standards.

### **2.3 Complex environment as cause of difficulties with comparability**

The biggest obstacle to obtaining financial reporting comparability is that IFRS impose one uniform and universal set of rules in a diverse environment. With all the cultural differences discussed above, one standard has the potential not only to be mistranslated but also misunderstood and misinterpreted. The environment and make up of each individual culture and country can be so unique that a simple solution to achieving a uniform application of the rules and comparable reports is most likely not available.

Communication, including translation of IFRS and supporting material into local languages, plays a crucial role in obtaining higher degree of uniformity. Other factors, such as the role of incentives in financial reporting, the auditing, regulatory cultures, etc. also contribute to problems with financial reporting comparability across countries.

## **3 The Role of Translation in Financial Reporting**

In the previous section, I explained that a specific accounting system in a particular country or a jurisdiction (by accounting system I mean the financial reporting standards and practices, type of accounting regulator and strength of the accounting profession) is a result of various local characteristics or influences. The problem arises when financial reporting rules such as IFRS do not result from national characteristics but are imposed on them from the outside. In the case of IFRS, the European Union requires these for all publicly traded companies since 2005. And in

the name of globalization and economic progress, IFRS is set to be used in most countries, including USA, by 2016. The question is whether all of the countries required to use IFRS have an accounting environment ready for these standards to be effectively imposed.

Communication and language are a crucial part of a country's accounting environment; the IASB operates and publishes its standards in English, although there are approved translations in several languages. Before I discuss the issue of translation, I would like to point out that even within English itself, same terminology is not always synonymous. For example, the IASB uses a mixture of UK and US terms (as shown in the table below) but the Fourth EU Directive tends to use UK terms.

<b>UK</b>	<b>US</b>	<b>IASB</b>
Stock	Inventory	Inventory
Shares	Stock	Shares
Own shares	Treasury stock	Treasury shares
Debtors	Receivables	Receivables
Creditors	Payables	Payables
Finance lease	Capital lease	Finance lease
Turnover	Sales (or revenue)	Sales (or revenue)
Acquisition	Purchase	Acquisition
Merger	Pooling of interests	Uniting of interests
Fixed assets	Non-current assets	Non-current assets
Profit and loss account	Income statement	Income statement

Evans and Baskerville (2010) have undertaken most recent research in the field of accounting language and translation. The authors concluded that enforcing IFRS may not be sufficient to ensure equivalent quality of financial reporting. Among others, they listed the following reasons: the remaining influence of local traditions and cultures, including legal and political systems; financial markets; corporate governance arrangements; and auditing and enforcement of regulation. An additional problem is the translation of IFRS from the original English into other languages. The report further identifies specific issues which arise in the translation of accounting terminology, explores the implications of these issues and makes recommendations for stakeholders in IFRS adoption and translation.

The report summarizes the survey results of authors and translators of textbook on financial reporting and finds the following four problem areas:

- Non-equivalence of terminology, mainly because accounting concepts in any language are part of that language community's accounting culture;
- Syntax and grammar, where subtleties may be expressed in different ways, and literal translation is usually not possible;
- Legal framework, referring to the common vs. code law system discussed in the second section, where for example the concept of substance over form is not common in the code law system countries;
- Underlying cultural differences, citing them to be among the strongest causes of accounting differences, including differences in concepts such as prudence, reasonable, and materiality.

Evans and Baskerville conclude that knowing and understanding the original wording of

accounting concepts and foreign languages are essential in appropriate translations. The authors shared several solutions to translation problems, including practical technical solutions, for example explanatory notes, paraphrasing, or retaining the English original term without translation. The most fundamental issue identified by the survey was translator's familiarity with the accounting cultures of both source and target language. Lastly, the report stresses that the standards themselves need to be worded so they lend themselves to easy translation.

Worth mentioning here are Evans' other works on the language of accounting, addressing not only issues with translation, but also history of accounting terminology, shedding light on the influence of syntax, grammar and terminology on accounting translations. In a paper submitted to the APIRA conference in 2010, Evans and Baskerville examine accounting translation problems from an intra-professional perspective, drawing similarities and lessons from translating texts in legal, medical, and other environments. Evans builds in her papers on her study from 2004, which focused on the language, translation and the problem of international accounting communication, where she concluded that the choice of an inappropriate label in the translation of accounting terminology is detrimental to international accounting communication and creates problems for users and preparers of translated financial statements as well as for researchers in, and students of, international accounting and for those involved in harmonization and standardization of accounting.

#### **4 Conclusions**

From the survey of recent literature on the subject is evident that, from language and communication perspective, many potential reasons for international accounting differences are still relevant under IFRS. As in any field, there is a risk that the process of translation will change or lose meaning from the original version, in this case English. Evans (2004) examines the major problems of accounting communication related to translation when more than one language is involved, giving two examples.

In the first example, cash flow statements are required by IAS 7, reconciling to "cash and cash equivalents". The term "cash equivalents" is defined in paragraphs 6 to 9, including:

*An investment normally qualifies as a cash equivalent only when it has a short maturity of, say, three months...*

This is an attempt to avoid writing a rule, as opposed to a principle. The Portuguese translation of IAS 7 omits the word "say". This improves the standard but does not translate it accurately. As a result, it would be more difficult in Portugal than in Ireland to argue successfully that an investment with a maturity of just over three months is a cash equivalent.

In the second example, IAS 41 (Para. 34) requires that an unconditional government grant related to a biological asset be recognized as income when the grant becomes "receivable". The Norwegian version translates this as "received", which could sometimes be an important difference.

IFRS themselves are aimed at being easy to translate, and their creators try to mitigate and prevent some of the issues with misunderstanding and translation. For example, the IASB is composed of members of various nationalities representing several languages.

Combine the IFRS translation problems with other communication issues such as understanding of underlying concepts and limited communication methods such as e-mail, questionnaires, etc., the potential for miscommunication is high. Significant problem with effective communication remains because in the case of international communication, the parties' background and understanding is different, which means that a good Czech accountant and an equally good U.S. accountant do not necessarily have the same background and therefore may not come to the same conclusion using the same standard. For continental Europe, IFRS is a different (Anglo-

Saxon) approach – emphasis on new concepts and the recognition, measurement and disclosure approach.

Business, demand and supply of finance are global and although communication problems do adversely impact the comparability of financial reports, the question remains whether this issue is material to the financial statements or not and what impact does it have on asset pricing; research in this area is almost nonexistent. Emphasis needs to be on the reasons and on general principles than on differences between local and foreign standards.

Application of IFRS will, a subjective process of necessity, will continue to be influenced by the context and environment in which the application takes place.

Many accounting professionals involved in either part of the financial reporting process need not only to master a subject new to them but also do so in a language that is not their first. One added difficulty is that there are several forms of the English language, particularly for accounting terms. UK terms and US terms are extensively different.

Language has two distinctive roles. The specific terminology in financial reporting calls for high quality translations of financial reporting rules in order for the rules to be applied consistently and accurately. However, language in financial reporting is not used only as written means of communicating the rules – it is also used as a spoken means to inquire, explain and convey information within

With the use of English as lingua franca for financial reporting being complicated, imagine how each local country will deal with translation and communication issues. The auditors and accountants in non-English speaking countries need to know not only the technical issues but also be able to understand and translate the terminology.

Crucial part of improving the effectiveness of IFRS will include training for people in the financial reporting language of the future. New is not so much that new standards are replacing old standards. New is that as a result of the political decision to use IFRS in the future accounting is no longer a national matter, which differs from country to country. The financial reporting language of the future is an international language and this requires an international approach in the teaching of that language.

In the world where globalization is causing merging of cultures and languages, where, like species, languages are also dying out, the topic of communication and translation may be irrelevant in the future. For now, though, it is an issue which impacts the quality of our inter-cultural communication in all areas, including financial reporting and accounting.

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## ***Impact of Communication Problems on the Quality of Financial Reporting***

### **Summary**

International financial reporting standards aim to provide unified guidance that would result in increased global comparability of financial reports. With English being the language in which standards are created and into which financial reports are frequently translated, the potential for mistranslation and miscommunication resulting due to cultural differences is high. Crucial for successful translation of accounting texts and reports is the translator's understanding of not only technical terminology but also the understanding of the underlying concepts of the original text and of the culture and social characteristics of the destination language.

**Key words:** IFRS; GAAP; Language; Communication; Financial reporting.

**JEL classification:** M40.



# Problems of Accounting Reform in Ukraine: Institutional Aspects

*Natalie Semenishena\**

## 1 Introduction

Today's Ukraine is the process of creating a unified national market topical problem of the unity of the information space. Accounting is an accounting system that can respond to institutional demands a wide range of institutions, allows the aggregate financial performance by creating a consolidated and consolidated accounting (financial statements). As the accounting system of micro-level, accounting is needed as a source of information for macroeconomic generalizations, in particular, for preparation of the SNA.

## 2 Accounting reform in Ukraine

Today the reform of the accounting system in Ukraine is in a revolutionary institutional changes. Accounting at the state level recognized as the official accounting system, which leads to the normative nature of its regulation.

Questions of theory, methodology and practice of accounting, investigated through the lens of institutional theory are reflected in the work of national scientists: Kireytsev G., Zhuk V. For the first time, the impact of institutional theory on the development and reform of accounting was covered in a scientific report by Professor G. Kireytsev "Economic globalization and unification of the accounting methodology [4,5]. Further, these problems are investigated in research papers V.M. Ghuk [2,3].

Without diminishing the importance of scientific developments of the above authors, one must admit there are a number of unresolved theoretical and methodological problems of accounting, in particular, no systematic analysis of the impact of institutional changes on the development of accounting.

In this regard, to date, remain quite relevant task learning and generalization of theoretical principles and develop practical recommendations to improve the institutional issues in the accounting.

The process of transforming the accounting system of Ukraine has begun, it can be said with the approved Program of Accounting Reform December 1, 1998. Ministry of Finance of Ukraine approved the "List of terms and statements and the introduction of regulations (standards) of accounting (P (s) A). Today operates 34 P (s) A. It should be noted that the national R (s) will not conflict with IAS, but have a narrower scope and are more policy (in cases where IAS allow multiple user approaches, FDR allowed only one).

In 2001, the Audit Chamber of Ukraine adopted the International Standards on Auditing (ISA) as national standards for Ukraine and approved the "Reform of accounting and audit in Ukraine" envisages the development of training programs for IAS and ISA. Ministry of Finance in its action plan to improve financial control in Ukraine, developed by the Cabinet of Ministers of Ukraine has proposed to implement 16 activities to bring the accounting system in accordance with international practice. These measures are included into the introduction of IAS, the revision of the certification program, adoption of best practices, the introduction of ISAs and auditing standards to ensure the introduction of the Audit Chamber and the Union of Auditors.

Thus, the IAS and IFRS are the basis of national regulations (standards) of accounting, however,

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despite having made significant strides in reforming the accounting system, the state of Ukraine's Institute of Accounting and Reporting in the public administration system is assessed as critical.

The problem is in the imperfection of the constituent elements of the domestic institutional environment and the manifestation of such rules legitimized in the accounting system as coercive isomorphism. In this regard, it should be noted that the policy of the state for bookkeeping can both contribute to its development, and hinder development.

In Ukraine, the issue is given low priority - regulation and accounting methodology, until recently, was held under the slogan of convergence of national accounting systems with IAS and IFRS, under the "patronage" of foreign consultants and are still not perceived practice.

Among the reasons are: a hasty implementation as a national of international standards of accounting and financial reporting by government agencies to impose the priority of tax accounting and statistical observations of the system of accounting, the removal of sectoral ministries on the formation and control compliance with the methodology of accounting and reporting, which in fact led to a lack State control of compliance with accounting standards, his conduct formal enterprises only to the financial statements of doubtful validity.

Analysis of regulations that determine the path of reforming the accounting as an information resource enables us to conclude that the legislation indicates a normative precondition of accounting information.

In order to clarify how regulatory preconditions accounting realizable in practice, it is necessary to analyze the conceptual framework of the accounting system of Ukraine (Table 1).

**Tab. 1: The conceptual basis of accounting in Ukraine**

<b>The conceptual basis</b>	<b>Accounting</b>
Determination	Process of identifying, measuring, recording, storage, collation, storage and transmission of information about the activities of the enterprise internal and external users for decision-making.
Objectives	Provide full, accurate and unbiased information to internal and external users to make certain decisions.
Objects of accounting	For assets, liabilities, equity, revenues, expenses, gains, losses and business operations.
Community Information	Internal users (managers, owners, participants and property owners of the organization), external users (investors, creditors, etc.) (Law of Ukraine "On Accounting and Financial Reporting").
Accounting Principles	<ul style="list-style-type: none"> <li>- Autonomy</li> <li>- Historical (actual) cost</li> <li>- Consistency</li> <li>- Completeness</li> <li>- Continuity</li> <li>- Priority economic substance over legal form</li> <li>- Charges and the related income and expenses</li> <li>- Caution</li> <li>- A single monetary measure.</li> </ul>
Qualitative characteristics of information included in reports	<ul style="list-style-type: none"> <li>- Clarity</li> <li>- Relevance</li> <li>- Reliability</li> <li>- Comparability.</li> </ul>

Indicators (elements) of financial reporting	Financial indicators and financial results at the microeconomic level: - Non-current assets - Current Assets - Liabilities - Capital - Income - Expenses.
Toolkit	International Financial Reporting Standards, The Program of Accounting Reform Act of Ukraine "On Accounting and Financial Reporting, Regulation (standards) of accounting, Strategy implementation of International Financial Reporting Standards, The concept of accounting systems in the agrarian sector of Ukraine, Guidance, other regulations.

Analysis of the conceptual framework of accounting in Ukraine can testify that the accounting - accounting system, goals and objectives which are consistent with international standards, it is defined tools and formalized, is available for study, but be aware that it contains, in case of insufficient in-depth study of the conceptual foundations of international accounting systems, the risks of distortion, incorrect interpretation and undervaluation of information emerging in a particular accounting system.

Unification, standardization, convergence with IAS accounting led to the loss of positions in the accounting industry perspective. Current Ukrainian legislation significantly limited the institutional requests for accounting, in particular, sectoral management.

In this regard, there is a real threat to the full expansion of the accounting principles as a prerequisite of perception and reflection of its objects, use methods, concepts and paradigms that are evolutionarily formed in countries with developed market economies and transferred to the domestic field unformed institutional market environment, regulatory bodies accounting Accounting in Ukraine.

Proceeding from this, in 2009 in Ukraine approved the Concept of the accounting system in the agrarian sector of Ukraine, which aims to address the following issues:

- You want to display in the accounting of the unique land, biological and intellectual capital.
- The need to strengthen information management system of sectoral governance associated with the loss of accounting positions in industry information system through legislative neglect the influence of industry accounting for the formation of accounting methodology and reporting in the agricultural industry.
- Failure and methodological developments for the economic work in the enterprises of the agricultural sector.

### 3 Conclusions

In conclusion, we note that the primary basis of changes in accounting institute in Ukraine should be no dogma about the global standardization of financial reporting and increase the role of accounting in the management system as micro-and makroinstitutions, strengthening of positions in the accounting industry perspective, adequate scientific support for regulatory methodology and accounting organization and provision of training of accounting personnel.

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## ***Problems of Accounting Reform in Ukraine: Institutional Aspects***

### **Summary**

Today the reform of the accounting system in Ukraine is in a revolutionary institutional change. However, the presence in the reform of a number of unresolved theoretical and methodological problems of accounting are caused by lack of a systematic analysis of the impact of institutional changes on the development of accounting. In this connection, quite topical task remains to the study and synthesis of theoretical principles and develop practical recommendations to improve the institutional issues in the Institute of Accounting in Ukraine.

**Key words:** National regulations (standards) of accounting; Accounting; IFRS Adoption; Institutional theory.

**JEL classification:** M41.

# Measurement, Capitalization and Auditing of Intangible Assets and Rights According to Turkish Commercial Law and IAS 38

*Utku Şendurur\**

## 1 Introduction

Intangible rights which occur from creativity and brain child are very important. Nowadays intangible rights play a important role in development of society both in economic and social ways committed to technology. In the world, production centres are changing continuously, idea becomes as valuable as production and economic branches are diversing by the day. Because of this, intangible rights become more valuable in the coming ten years.

Intangible resources range from the intellectual property rights of patents, trademarks, copyright and registered design; through contracts; trade secrets; public knowledge such as scientific works; to the people dependent, or subjective resources of know-how; networks; organizational culture, and the reputation of product and company.(Hall p135,1992)

Intangible resources may be classified as 'assets' or 'skills'. Assets, which are obviously things which one owns, include the intellectual property rights of: patents, trademarks, copyright and registered designs; as well as contracts, trade secrets and data bases. .(Hall p135,1992). The intangible resource of reputation may also be classified as an asset due to its characteristic of 'belongingness', and whilst it may be defendable to attack with respect to defamation and libel, it cannot be said to have the property rights of, say a trademark, which can be bought and sold. Skills, or competencies, include the know-how of employees (as well as suppliers and advisers), and the collective aptitudes which add up to organizational culture. (Hall p135,1992). When a company is taken over the acquirer can be confident that he has acquired the acquiree's intangible resources such as patents, but he cannot be certain that he will retain the intangible resources of know-how, culture, or Networks which can ultimately 'walk away' (Hall,1992, p136).

There are some difficulties about measurement of intangibles which have not been the subject of an exchange. (Barwise, 1989) raises the more fundamental question regarding the significance of any quantification of shareholders' funds which does not recognize the value of intangible assets. Handy (1990) suggests that businesses will need to become more like entities with respect to the emphasis which is placed on being information/knowledge positive as well as being cash positive. Itami and Roehl (1987) have argued that a characteristic of all successful organizations is the recognition that there is a learning process which runs in parallel to all operations, and that all activities present the potential to both enhance, or degrade, the know-how and reputation elements of the intangible resources. They also argue that at a strategic level this view leads to the selection of strategies which will enrich the 'know-how stock' of the core competencies of the business.

Auditors can be broken open againts intangibles under these conditions when they are making an audit. IAS 38 gives some clues, about these concerns, to auditors when they are making audit. In this paper, measurement, capitalization and auditing of intangible assets and rights to Turkish Commercial Law, Turkish Tax Law and Ias 38 are explicated. This paper's contribution to resarch development is to explain how auditor does his/her job due to Turkish Commercial Law and IAS38

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## 2 Categorization of intangible rights

We can classify intangible rights as intangible rights which do not need obligation to register and intangible rights which do need obligation to register. The reason for classifying intangible rights like this is the confirmation necessity of intangible rights. Obligation to register which mentioned in this paper means, affirmation by public authority to work has been created. Intangible rights which do not need obligation to register is product of two-sided contract. Because of this, there is no need to register by public authority again. But creator of intangible rights which do need obligation to register, to protect their rights, they have to prove that it is an original product and register intangible rights to a public authority.

### 2.1 Intangible Rights Which Do not Need Obligation to Register

*Franchising:* A form of business organization in which a firm which already has a successful product or service (the franchisor) enters into a continuing contractual relationship with other businesses (franchisees) operating under the franchisor's trade name and usually with the franchisor's guidance, in exchange for a fee.

*Leasing:* Arrangements, similar to rent agreements, for the use of property (buildings, cars, office equipment and other items) in return for payments to the owner. The lessee (person taking out a lease) agrees to pay a number of fixed or flexible instalments over an agreed period to the lessor, who remains the owner of the asset (item) throughout the period of the lease (AZN, 2).

*Goodwill:* Goodwill is seen as an intangible asset on the balance sheet because it is not a physical asset such as buildings and equipment. Goodwill typically reflects the value of intangible assets such as a strong trademark name, good customer relations, good employee relations and any patents or proprietary technology.

### 2.2 Intangible Rights Which Do need Obligation to Register

*Trademark:* A trademark is the identity of a specific product, service, or business. A trademark can take many forms, including a name, sign, symbol, color combination or slogan.

*Patent:* The exclusive right to use documented intellectual property in producing or selling a particular product or using a process for a designated period of time.

*Copyrights:* Copyright is a set of exclusive rights given to the author or creator of an original work, including the right to copy, distribute and adapt the work. Copyright does not protect ideas, only their expression. In most jurisdictions copyright arises upon fixation and does not need to be registered.

*Know-how:* The technical knowledge and skill required to do something.

## 3 Measurement of intangible assets

Intangible assets composed of patent, license, trademark, goodwill, usufructus and copyrights, which have no corpus. These supply entity to privilege and ascendancy. Furthermore, establishment and formation expenses which enclose the expenses for establishment and development of entity are also counted intangible assets as capitalized expenses.

When intangible assets created or bought, they capitalize at the rate of the amount paid for them. Intangible assets are redeemed subjected to depreciation like tangible assets.

### 3.1 Measurement of Intangible Assets According to Turkish Commercial Law

There is no specific information about how single proprietorship measure intangible assets in Turkish Commercial Law (TCL). Because of this, single proprietorship measure its intangible assets on balance sheet value to general provision of article 75 in TCL.

In capital stock companies, to article 459, they have options to choose to write off establishment and formation expenses or capitalized and depreciate them maximum in five years. In TCL article 460, except establishment and formation expenses, rights, privileges, patents, licences, trademarks and other intangible assets like them are include in the balance sheet over their cost value.

Except establishment and formation expenses, valuation measurement for other intangible assets is cost value. But, if intangible asset value is under the cost value, it is possible to choose any measurement method entity wanted.

## **3.2 Measurement of Intangible Assets to Turkish Tax Law**

### **3.2.1 Rights**

Rights amortize in their usage time. Usage time must affirm by public authority or determined by a contract. If contract time is only a year, rights write off after end of the period they capitalized. If the period of benefit is unknown or can not be detected depreciation period is five years.

### **3.2.2 Establishment and Formation Expenses**

Capitalized establishment and formation expenses are measured with book value to Turkish Tax Procedure Law article 282. In the same article it is said that the capitalization of establishment and formation expenses are arbitrary.

### **3.2.3 Goodwill**

Goodwill can be only shown in acquirer entities balance sheets. In other words, internally generated goodwill, appearing from entities successful operations, can not be shown in balance sheet. Goodwill must be purchased for good and valuable consideration to include in the balance sheet.

Goodwill is measured with book value and capitalized to Turkish Tax Procedure Law article 282. Goodwill amortized in five years with equal payments on their book value.

### **3.2.4 Redemption of Special Costs**

If estates are hired, expenses about display case, shelves, lightening, ventilation and such facilities like them are capitalized as special costs in Turkish Tax Procedure Law article 272.

Expenditures capitalized as special costs are amortized equal percentages during tenancy in Turkish Tax Procedure Law article 327. This relation does not change if tenancy is prolonged. If we abandon rented place before the end of tenancy, unredeemed expenditures written as expenditures in one go.

If tenancy is unkown, special costs must be amortized in five years to Turkish Tax Procedure Law. Thence, redemption rate is accepted as %20 for special costs in communiqué related with depreciation amortization.

## **4 Capitalisation of intangible rights**

IAS38 determine some special conditions when the expenditures for intangibles can be capitalized.

### **4.1 Capitalization Conditions**

- Identifiability: An asset is identifiable if it either( International Accounting Standarts. IAS38):
  - is separable from other assets; or,

- arises from contractual or other legal rights.
- Control: An entity controls an asset if the entity has the power to obtain the future economic benefits flowing from the underlying resource and to restrict the access of others to those benefits. Third persons access can be blocked in actual fact or by courts.( Kaval p:339, 2008)
- Future Economic Benefits: The future economic benefits flowing from an intangible asset may include revenue from the sale of products or services, cost savings, or other benefits resulting from the use of the asset by the entity. For example, the use of intellectual property in a production process may reduce future production costs rather than increase future revenues (Turkish Accounting Standarts 38 p:730, 2010)

First step of putting intangibles in to the accounts is, deciding whether the future economic benefit is identifiable or not. Then it must be seperable and controllable. These conditions must be accepted for intangible rights which are gained separately or from corporate combination (Okanacar, 2011).

#### **4.2 Capitalization of Research and Development Expenditures**

To assess whether an internally generated intangible asset meets the criteria for recognition, an entity classifies the generation of the asset into:

- a research phase; and
- a development phase

No intangible asset arising from research (or from the research phase of an internal project) shall be recognised. Expenditure on research (or on the research phase of an internal project) shall be recognised as an expense when it is incurred (Turkish Accounting Standarts 38 p: 738, 2010)

An intangible asset arising from development (or from the development phase of an internal project) shall be recognised if, and only if, an entity can demonstrate all of the following: (International Accounting Standard 38):

- The technical feasibility of completing the intangible asset so that it will be available for use or sale.
- Its intention to complete the intangible asset and use or sell it.
- Its ability to use or sell the intangible asset.
- How the intangible asset will generate probable future economic benefits. Among other things, the entity can demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset.
- The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset.
- Its ability to measure reliably the expenditure attributable to the intangible asset during its development.

#### **4.3 Capitalization of Goodwill**

Goodwill does not provide capitalization requirements because it is not recognised as an asset and an identifiable resource. In other words, goodwill can not be sold separate from other assets and can not be used in production. But, in Turkey, goodwill is in the uniform chart of accounts in intangible assets.

Goodwill can not be capitalized if it is internally generated to IAS38. Goodwill can be capitalized if there is a business combination or an entity purchase. In this case, paid price distributed to purchased entities assets and debts. After evaluating all assets and debts with current market value, share to purchased entity from its equity capital at balance sheet, is under the value that paid for the purchased entity, goodwill come into being and written off balance sheet with capitalization. But, this goodwill will not be amortized. After at the end of every year, impairment will be executed on goodwill instead of the amortization (Kaval p: 350, 2008).

## **5 Auditing of intangible rights**

Intangibles have an importance today greater than ever before. A generation ago, about 80% of a typical company's assets were tangible (buildings, equipment, and the like) and 20% were intangible, according to a study by the American Intellectual Property Law Association. By the turn of the Millennium, the relative value of tangible and intangible assets had essentially reversed so that approximately three-quarters of a typical company's assets were intangible assets (Meyer and Patel, 2005).

In virtually every case, substantial initial information will need to be gathered and presented before the auditors can efficiently begin their detailed investigation. The types of information that will be needed include: (Meyer and Patel, 2005)

- Information concerning the nature of the assets: In the case of transaction-related audits, the audit team should be fully informed of the details of any transaction for which the audit is being performed, and should be given relevant documents such as a letter of intent, terms sheet or draft purchase or license agreement.
- Background research: Some initial background research before the audit begins will greatly increase efficiency downstream. For example, there may be issues peculiar to the law of a particular state or country that must be explored. The technology at issue may be so complex that background research by the auditors will be necessary, particularly if patents are at stake or if there are questions of inventorship.
- Data gathering: Someone at the company should be designated to coordinate the gathering of documents and information relevant to the particular subject matter of the audit, and as many documents as possible should be reviewed before the audit begins. Depending upon the scope of the audit, relevant documents may include license and maintenance agreements, distribution agreements, government contracts, federal registration and recordation documents and state commercial code filings.

### **5.1 Cases to Which Auditor Must Pay Attention**

Auditor must pay attention to the following points to make a successful audit about intangible rights. Auditor has to be sure (Kaval, 2008, p: 338).

- If the asset included in the balance sheet, provides the conditions to include in the balance sheet or not.
- If required explanation made about assets in the footnotes, which are not include in the balance sheet.
- If accurate measurement made about intangible assets or not.

Auditor has to be sure to have satisfactory evidence about the mentioned issues above.

### **5.2 Operation Tests**

There is a small risk of fraudulent operation when intangible rights are purchasing and selling. Because, intangible rights costs are very high and senior management buy or sell them after a

detailed investigation. Because of intangible rights usages are restricted by access and laws, there is a small risk of fraudulent operation in intangible rights usages. Because of this, there is no need of special internal control systems. Fortiori, there are little problems about measurement and capitalization of intangible rights.

### 5.3 Material Verification Tests

Because of intangible rights are not physical and concrete, there is no auditing procedure like counting them. When we are doing verification, we must note the followings:

- We must check licence contracts.
- We must search cases which may occur as a compensation in the future.
- We must check, if the assets include in the balance sheet, provide the conditions to include in the balance sheet or not.

### 5.4 Reporting

Entities which are not reporting according to IFRS, are reporting according to tax laws. It is important that, if the tax declaration is true or not. Entities reporting according to IFRS, publicly held companies, are more important for auditors. Financial statements must be investigated well, considering the points above. Accuracy of footnotes must be investigated also after controlling of intangible prices in the balance sheet.

## 6 Conclusions

Intangible rights are defined as identifiable non-monetary assets that cannot be seen, touched or physically measured, which are created through time and/or effort and that are identifiable as a separate asset. These are patents, licences, trademark, copy rights, quota rights, franchising, computer programs, films, articles of virtue and goodwill.

We can classify intangible rights as intangible rights which do not need obligation to register and intangible rights which do need obligation to register. The reason for classifying intangible rights like this is the confirmation necessity of intangible rights.

Intangible assets composed of patent, license, trademark, goodwill, usufructus and copyrights, which have no corpus. These supply entity to privilege and ascendancy. Furthermore, establishment and formation expenses which enclose the expenses for establishment and development of entity are also counted intangible assets as capitalized expenses. When intangible assets are created or bought, they capitalize at the rate of the amount paid for them. Intangible assets are redeemed subjected to depreciation like tangible assets.

IAS38 determine some special conditions to capitalize the expenditures for intangibles. An asset must be identifiable, controllable and have future economic benefits.

Auditor must have pay attention to measurement, capitalization and taxation of intangible rights. If asset does not have the conditions for capitalization, it must be denoted in footnotes. Auditor must also be careful about redemption rate. There are some assets which have infinite economic life. In these assets, there are rights which are separable. Auditor must be sure if separable rights are determined accurately or inaccurately.

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## ***Measurement, Capitalization and Auditing of Intangible Assets and Rights According to Turkish Commercial Law and IAS 38***

### **Summary**

Intangible rights are assets that are not physical in nature such as patents, trademarks, copyrights, franchising, leasing, business methodologies and goodwill. We can categorize intangible in two groups: Do not need obligation to register and do need obligation to register. If intangible assets created or bought, they capitalize at the rate of the amount paid for them. Intangible assets are redeemed subjected to depreciation like tangible assets to Turkish Commercial Law. Rights amortize in their usage time, capitalized establishment and formation expenses are measured with book value, goodwill can only shown in acquirer entities balance sheet and expenditures capitalized as special costs are amortized equal percentages during tenancy to Turkish Tax Procedure Law. IAS38 determine some special conditions to capitalize the expenditures for intangibles. An asset must be identifiable, controllable and have future economic benefits. Auditor has to be sure to have satisfactory evidence by doing operation and material verification tests. In the world, production centres are changing continuously, idea becomes as valuable as production and economic branches are diversifying by the day. Because of this, intangible rights became more valuable in the coming ten years.

**Key words:** Measurement and capitalization of intangible rights; Turkish Commercial Law; Turkish Tax Procedure Law; IAS38.

**JEL classification:** M41, M42, K2, K34.



# Determinants of Capital Structure: Western European and Russian Experience

*Olga Sharikova\**

## 1 Introduction

In modern economies of the world's capital structure organization serves as an important economic category and is the foundation of any business entity. There are a number of concepts that describe the logic of the choice of a particular capital structure, each of which has its own strengths and weaknesses sides. And although the current conditions there is no concept of optimal capital structure, but their studying and analysis are seen very significant because during our research we can identify factors, confirming in practice the use of one or another theory. The choice of these factors that determine the solutions of organizations in the area of own and borrowed ratios is one of the central problems of the modern theory of optimal capital structure.

One of the most common concepts of a theory of optimal capital structure is the Trade-off Theory, in which the most famous works are: Kraus and Litsenberger ("A State-Preference Model of Optimal Financial Leverage" (1973)), Scott ("A Theory of Optimal Capital Structure" (1976)), Kim ("A Mean-Variance Theory of Optimal Capital Structure" (1978)), Bredley, Jarrell and Kim ("On the Existence of an Optimal Capital Structure: Theory and Evidence" (1984)). In these works the main determinants of this concept are: maintaining the target level of debt, bankruptcy costs and benefits of the tax shield. In this case, a positive impact on the debt level established by the factor of maintaining the target level of debt and negative – on the drivers of bankruptcy costs and benefits of the tax shield.

The Packing-Order Theory most famous work is represented by the following authors: Gordon Donaldson and "Corporate Debt Capacity" (1961), Myers and Mayluf "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have" (1984), Leland and Pula "Information Asymmetries, Financial Structure, and Financial Intermediation" (1977). Significant factors, according to this concept, the authors found: the positive influence – financial flexibility, the volatility of income, size of organization, with a negative influence – the profitability ratio, ratio of market activity.

Within the Market Timing Theory, sponsored by Baker & Vegler "Market Timing and Capital Structure" (2002), significant factors are: the value of the shares of companies on the market, changes in stock prices, the fiscal deficit.

In addition to the lack of consensus among researchers on the issue of identifying the most significant factors, it should be noted that most articles on this topic is based on experiences of American companies. However, knowledge gained from the experience of one country does not reflect the impact of the financial situation, traditions and modalities of the institutions of other countries on the capital structure.

Thus, the aim of this article is to study the basic concepts of capital structure, based on both Western European and the Russian experience, the choice of the most significant factors, as well as assessment of the impact of these factors on the capital structure in the Russian conditions on the example of the most major local organizations.

As a basic indicator, reflecting the impact of various factors on capital structure, financial leverage ratio is used, which characterizes the amount of debt used by the organization, per unit

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of capital. This ratio is the lever that multiplying a positive or negative effect obtained by the corresponding value of its differential.

This article has significant theoretical and practical meaning and contributes to the study of the theory of corporate finance, namely:

Firstly, this work studied the Western European and American experience in managing its capital structure, identifies the key factors influencing the formation of an optimal capital structure of Western organizations within the basic concepts of capital structure, defined the nature of country differences in the achievement of optimal capital structure of organizations;

Secondly, we have studied the Russian experience in determine the optimal capital structure, identify the most significant factors affecting the management of the capital structure of Russian organizations, and developed a dynamic model, that allows to research the influence of the most significant factors on the optimization of capital structure (financial leverage) Russian organizations; In practice, most large Russian companies confirmed the packing-order theory.

Third, the mechanism of retardation of financial leverage that is defined by the presence of dynamic (velocity) to achieve the target level of financial leverage.

The results of the study of Russian experience in determining the optimal capital structure shows that the most important in the Russian context is the trade-off theory. The most important factors affecting the coefficient of financial leverage are the profitability ratios, market activity and liquidity.

The relationship between **the rate of return on sales** profitability and financial leverage ratio and a significant inverse for all the five sectors. High index of the coefficient of profitability increases the internal resources of the organization and, consequently, reduces the need for external financing.

**The coefficient of market activity** is high for all industries except oil and gas, which has a large investment opportunities and growth for the organizations that studied industries. In addition, the relationship between this index and the coefficient of financial direct in all cases (except oil and gas sector).

**Current ratio** is one of the most important and has an inverse relationship with the coefficient of financial leverage, indicating that the organization primarily focused on domestic funding sources that is first and foremost will be sold liquid assets, generate funds from profits, and only in case of lack of options will be considered debt financing.

During research of effect of delay of coefficient of the financial lever, that is influence of the lever of the previous period on value of the same indicator of the present period that characterizes speed of change of coefficient of the financial lever of the organizations, it has been revealed that all organizations have a certain target objective of coefficient of the financial lever and certain speed of its achievement. The companies of oil and gas industry fastest reach the optimum level of coefficient of the financial lever (0,87), and the lowest speed belongs to metallurgical industry (0,40).

This article consists of several sections. The following section 2 is devoted the analysis of the foreign literature researching the most significant factors and character of their influence on a capital structure of the western companies within the limits of the most known concepts of a capital structure. Also in the given section character country distinctions in achievement of an optimal capital structure of the organizations is specified. Section 3 is devoted the description of samples and a research method. Results of research are presented in section 4. And, at last, section 5 is presented in the form of the conclusion.

## **2 Theory and practice of (Western European and American Experience)**

An important issue in the study of concepts of capital structure is to analyze the factors influencing the capital structure. The most comprehensive research in this area over the past ten years have been conducted by Western economists such as Graham and Harvey, Bancel and Mitt, Frank and Goyal, Fama and French, and others by the example of Western European and American companies. During the research work of the above authors found that capital structure in western countries have significant differences. In application 1 displays the main results of studies of Western European and American scientists in this field over the past ten years, given the fundamental factors affecting the capital structure, as well as belonging to a particular theory of capital structure.

The Trade-off Theory argues that the organization by selecting a specific capital structure, reach a compromise between the advantages of financing through borrowing (favorable taxation, lower risk loans) and increased shareholder value and costs associated with bankruptcy. Optimal ratio between debt and equity in the capital structure is achieved when the marginal cost of debt (agency costs and bankruptcy costs) and benefits of debt (the benefits of the tax shield and Troubleshooting lack of free funds) are equalized.

In the research of Frank and Goyal (Frank M., Goyal V. «Capital structure decisions») (2003) considered the influence of factors in 1939 (the most known and studied in the literature) by the amount of financial leverage of the company. The authors conclude that the most significant factors affecting capital structure are: tax benefits and bankruptcy costs, agency costs, as well as a compromise between the parties concerned in the matter of investment. Identify the significance of the above factors, evidence in favor of the concept of compromise.

In the work of Chen and Hames (Chen, Y., Hammes, K. «Capital Structure. Theories and Empirical results - a Panel Data Analysis») (2005) using regression analysis examined data from seven countries (Canada, Germany, Italy, United Kingdom, USA, Denmark and Sweden - all 1397 companies). Also, the authors define significant country differences in the choice of capital structure, which is the reason for the difference in the level of financial leverage for different countries.

Interesting results were obtained by Beattie, Goodacre, and Thomson (Beattie V., Goodacre A., Thomson S. «Corporate Financing Decisions: UK Survey Evidence») (2006), who with the help of a questionnaire survey method CFOs of 192 companies in the UK. As the most significant factors within the limits of the compromise concept by authors have been selected - maintenance of a target objective of a debt, the tax shield, agency costs. The basic conclusion made in given work, following: the agreed conclusions connected with an optimal capital structure, aren't unequivocal and unilateral. Approximately 40 % of the organizations, from number of respondents, support the target objective of a debt load determined on the basis of the concept of an exchange; the remained 60 % of the organizations follow the packing-order theory. But respondents don't consider these two concepts mutually exclusive: in organization practice both concepts to some extent use.

Another recent study, which compares the mechanisms of formation of an optimal capital structure at the example of European companies, is the work of Brown, Jong and Koudijk (Brounen, D., Jong, A. and Koedijk, K. «Capital Structure Policies in Europe: Survey Evidence "(2006). By means of questionnaire of 313 companies from Great Britain, France, Germany and the Netherlands as the basic factors influencing management by a capital structure, authors has been considered: maintenance of a target objective of a debt, tax advantages. Following results have been received: in the considered countries almost 2/3 companies have a certain target value extra and equity, and 10 % from them rigidly fix the given value. Thus the tax shield factor is on the fourth place after financial flexibility, a credit rating and volatility of incomes. The

exception is Germany: in this country the highest tax rate (54%), but the financial director of the tax shield attach little importance in determining the capital structure.

The Pecking-Order Theory assumes that managers are better informed about the situation inside the organization about the quality of investment projects and so on, and this may give rise to adverse selection costs that outweigh the benefits and costs to be considered in the concept of compromise. Besides, at the heart of the hierarchy concept the precondition that costs of attraction of additional capital sources (in particular, transactional costs and costs of information asymmetry) is high lies. Thereof the organizations for financing of the projects will use at first own resources (retained earnings), then a risk-free debt, then a risky debt, and only in the most extreme cases (for example, in case of financial problems of the organization) will agree on new shares issue.

This conception confirms the concept Antonio, Gurney and Paudal (Antoniou A., Guney Y., Paudyal K. «Determinants of Corporate Capital Structure: Evidence from European Countries») (2002), which in the example of French, German and British companies (from 3341 company) by the regression analysis revealed that for all three countries studied the main internal factor having a direct impact on the capital structure is the size of the company, and the feedback is observed when the impact of interest rates, which confirms the failure of companies to debt financing at high interest rates. Also feedback between profit ratio and level of the financial lever is found out in France and Great Britain. The interrelation between coefficient of turnover of fixed capital and the financial lever is various in the different countries, is essential and positive in Germany, is insignificant in France and is negative in Great Britain. And, at last, the liquidity rate and instability of incomes don't render essential influence on size of the financial lever.

Also, this concept is confirmed in the works Bancel and Mittoo (Bancel, F. and Mittoo, UR «Cross-Country Determinants of Capital Structure Choice: a Survey of European Firms») (2004). The questioning method had been interrogated 87 companies from sixteen European countries and is specified that managers on the first place among all factors influencing a choice of a capital structure, put financial flexibility, on the second place – a credit rating. Thus tax advantages from debt use stand on the third position; and potential costs of bankruptcy – only on the seventh. Besides, authors determine essential influence country factors at management of financial structure of the organizations.

The study Fama and French (Fama E., French K. «Financing decisions: Who Issues Stock?») (2004) for example, 1,329 companies had been determined the effect of the packing-order theory to manage its capital structure. In work following major factors were considered: influence of operations with shares of the enterprises (release and the redemption), profit ratio, the size of the company, volatility incomes. Researchers have come to following conclusions: in practice too frequent share issues (54–72 % of the companies of sample emitted shares every year) and shares repurchases (20 % of the companies of sample produced redemptions every year) that contradict positions of the packing-order theory are found out. Hence, authors determine weak influence of the packing-order theory at level of separately taken enterprise. But thus authors specify in important circumstance: infringements of the concept of hierarchy don't come to light, when research is conducted on a market level as a whole, thus, deviations smooth out at aggregating of the data; however at more detailed level these deviations become obvious. It imposes restrictions on methodology on similar researches.

Chen and Hames in his work (Chen, Y., Hammes, K. «Capital Structure. Theories and Empirical results - a Panel Data Analysis») (2005) also explore the concept of hierarchy in the case of seven countries (1397 companies) and within this concept identify the following significant factors affecting the value of financial leverage: company size, profitability ratios, material consumption and market activity. Researches confirm that the size of the company, profit ratios,

materials consumption and market activity have essential influence on a choice of a capital structure of the companies. The materials consumption coefficient is directly proportional to an indicator of the financial lever, while profit ratio inversely proportional. More profitable companies to a lesser degree use loans. Between the size of the company and size of the financial lever there is an essential directly proportional dependence.

Based on the Market Timing Theory, there are also certain options and financing organizations. Company emits equity securities during the period of high prices in the market and buys back shares during the period of low prices. Thus, managers benefit from a temporary deviation value of equity relative to the cost of other forms of capital.

In Graham and Harvey's works (Graham, J., Harvey, C. «The Theory and Practice of Corporate Finance: Evidence from the Field») (2001) by questioning the financial directors of 392 U.S. and Canadian companies was found that in rating the importance of the factors influencing the decision to produce its own shares as a source of funding, in the first place CFOs put the level of income (68.55%), second and third place belongs to "the amount by which overvalued or undervalued in the market shares of the company" (66.94%) and the recent increase in stock prices, since in this case, the new issue of shares can be sold at a higher price "(62.60%), then there are factors that support the Market Timing Theory.

Kayhan and Titman in their study (Kayhan A., Titman S. «Firms' Histories and Their Capital Structures») (2007) using the regression analysis are developing the concept of behavioral tracking market. In their work authors allocate following most significant factors of size of a share of a debt in equity: change of the price of shares, financial deficit (attraction of the capital from external sources). The companies behave as if they have target value of a debt, but maintenance of current and strategic activity of the company (investment, market tracing etc.) leads to a deviation of current coefficient of a debt from the target. Thus the companies aspire to come back to target value, but there is it slowly enough. Besides, the similar behavior of the enterprises has strong long-term influence on capital structure forming. The capital structure of the companies strongly depends today on fluctuation of its ratio balance sheet and market value which took place ten years ago and more. Such long term of effect doesn't speak in traditional concepts of a capital structure. Thus, in the given research the behavioral concept of tracing of the market proves to be true. Unlike the previous researches of other authors, Kayhan and Titman in the work show that the optimal capital structure, as a matter of fact, doesn't exist: it develops not as a result of strategic planning, in summary realizations of the momentary favorable possibilities given in the capital market during this or that moment.

### **3 Samples of the research and methodology**

For the given research it has been chosen five industries of the Russian economy: metallurgical, oil and gas, a consumer sector, electro power, telecommunication. The similar choice is caused by that the above-stated sectors of economy are the most developed and perspective now. Development and functioning of the given markets indissolubly due with innovative activity and research intensity branch goods that renders a great influence on other industries of economy, pushing new technology requirements to goods, production organizations, to intrabranh communications and staff management. Besides these industries have high level of detection the financial reporting information that allows us to conduct the given research, using the most complete and authentic financial data.

As the object of the research were selected 50 organizations, ranging in size and industry sector. The sample was attended mostly private organizations. The total study period was ten years since 2000 and ending with 2009.

In the given research as estimate parameter of a capital structure the coefficient of the financial

lever which characterizes a share of the borrowed funds used by the organization with a view of the optimal distribution of available financial resources will act and allowing to receive additional profit on an equity. In work the coefficient of the financial lever in the balance sheet estimation, characterizing the relation of book value of a total sum of a liability to book value of the sum of the assets of the enterprise is used.

In the regression analysis of panel data have been identified the six most significant factors affecting the capital structure of organizations, namely:

- X1 - Net profit ratio of sales
- X2 - The effective tax rate
- X3 - Ratio of market activity
- X4 - Ratio of fixed assets
- X5 - Current Ratio
- X6 - The scale of production

The profit ratio of sales is determined as the relation of operating profit to the sum of assets of the organization. We expect that the given indicator will play an essential role in an estimation of influence on coefficient of the financial lever as almost all objects of research have high profit ratios that promotes use first of all own means in the course of realization of financial policy of the organization. Hence, the negative interrelation of the given factor and coefficient of the financial lever is expected.

The effective tax rate is determined as the relation of a total sum of taxes to organization taxable surplus. The organizations with higher tax obligations have stimulus to attraction in more volume of borrowed funds. Hence, it is possible to assume availability of direct dependence between level of the taxation of profit and coefficient of the financial lever of the organization.

The coefficient of market activity is determined as the relation of book value of the sum of the assets, reduced by book value of shares plus share market value to book value of the sum of all assets of the organization. The given factor characterizes expectation of the market concerning investment possibilities and organization growth. With coefficient of the financial lever unequivocally it is impossible to specify character of interrelation of the given factor. On the one hand, the organizations with favorable possibilities of growth use less borrowed funds to soften agency problems, confirming with that return character of interrelation of estimated parameters. On the other hand, the developing organizations need borrowed capital to implement the investment possibilities and in that case it is necessary to resort to a share issue that leads to increase in indebtedness and, hence, the coefficient of market activity should have direct communication with coefficient of the financial lever.

Ratio of fixed assets is defined as the ratio of assets to equity. Tangible assets play an important role in the structure of assets of all the studied organizations, which helps to increase leverage in the structure of their capital, so it is expected a significant direct relationship between the coefficient of financial leverage, and this factor.

The current liquidity coefficient is determined as the relation of a working capital of the organization to its short-term obligations. The given factor should play an essential role in an estimation of its influence on coefficient of the financial lever for the organizations having considerable liquid means. Under condition of availability of essential quick assets, the organizations don't need attraction of borrowed capital and, hence, it is possible to assume negative character of influence of researched parameters.

Last, in our research, the factor, the scale of production which is expressed by a logarithm of

cumulative (total) revenue of the organization is used. The given factor also should play an essential role in an estimation of influence on coefficient of the financial lever and have positive character of interrelation as the activity scale directly influences investment possibilities of the organization and their access to the capital markets.

In the given research we use a method of plural regress as one of the most widespread on today in economy and allowing with sufficient accuracy to construct model with a great number of factors, having specified thus influence of each of them separately, and also their cumulative influence on a modeled indicator (in our case – coefficient of the financial lever in a balance sheet estimation).

Thus, the basic formalized model of the influence of factors on the coefficient of leverage is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6, \quad (1)$$

where  $Y$  = the leverage ratio,  
 $X_1$  = ratio of return on sales,  
 $X_2$  = the effective tax rate,  
 $X_3$  = ratio of market activity,  
 $X_4$  = the coefficient of fixed assets,  
 $X_5$  = current liquidity ratio,  
 $X_6$  = the scale of activity.

## 4 Results

Data of descriptive statistics of the received results regressive the analysis is presented in the (Table 1). In the given table the statistical certainty and reliability of the received equations and their parameters for each researched industry is estimated, namely: the importance of criterion F, a multiple correlation index (R Pl), value R - a square, coefficient of a standard error is specified. As a result, having analyses the data obtained during correlation analysis, we have specified that the constructed models of plural regress on five industries are statistically significant and reliable.

**Tab. 1: Descriptive statistics of sample**

<b>Coefficients</b>	<b>Metallurgical</b>	<b>Oil and gas</b>	<b>Consumer sector</b>	<b>Electro power</b>	<b>Telecommunication</b>
Criterion F	0,0018	0,0000	0,0003	0,0001	0,2116
R Pl	0,6956	0,8447	0,7450	0,7389	0,4943
R - a square	0,4838	0,7135	0,5550	0,5460	0,2443
Standard error	0,0714	0,0242	0,0805	0,0306	0,0634

To solve the problem of comparing and ranking factors on the extent of their influence on the coefficient of leverage in Table 2 are constructed regression equations in a standardized scale for each industry based on a matrix of pair correlation coefficients.

**Tab. 2: Regression equations in a standardized scale**

Industry	Regression equations
Metallurgical	$t_Y = -0,2061t X_1 - 0,0500t X_2 + 0,3990t X_3 + 0,5010t X_4 - 0,3337t X_5 - 0,1543t X_6$
Oil and gas	$t_Y = -0,1952t X_1 + 0,2000t X_2 - 0,0204t X_3 - 0,2444t X_4 - 0,5947t X_5 - 0,0914t X_6$
Consumer sector	$t_Y = -0,3834t X_1 - 0,2930t X_2 + 0,3628t X_3 - 0,2776t X_4 - 0,2673t X_5 + 0,0429t X_6$
Electro power	$t_Y = -0,0123t X_1 + 0,1806t X_2 + 0,3947t X_3 + 0,0100t X_4 - 0,2150t X_5 + 0,0324t X_6$
Telecommunication	$t_Y = -0,0586t X_1 - 0,1419t X_2 + 0,4855t X_3 + 0,0900t X_4 - 0,1873t X_5 + 0,0255t X_6$

After implementing the necessary transformations the results obtained by evaluating the extent and nature of the effect selected for the study of factors on the capital structure of organizations in each of the five industries are shown in Table 3. Next, we analyze the results.

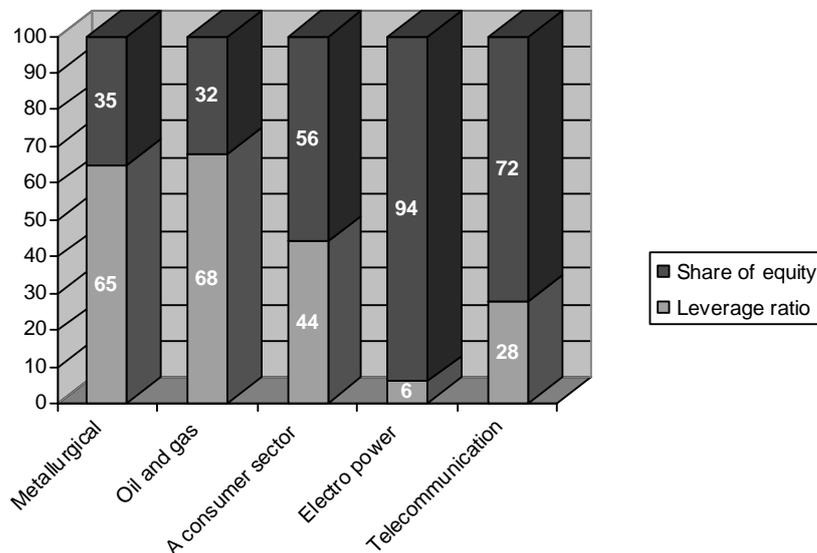
**Tab. 3: The estimation results of basic research model**

Coefficients	Metallurg.	Oil + gas	Con. sector	Electro power	Telecommunication
Fin. leverage	0,65	0,68	0,44	0,06	0,28
Net profit ratio of sales	-0,36	-0,20	-0,38	-0,21	-0,16
Effective tax rate	-0,05	0,20	-0,29	0,18	-0,14
Market activity	0,40	-0,02	0,36	0,39	0,49
Fixed assets ratio	0,50	-0,24	-0,28	0,01	0,09
Current ratio	-0,33	-0,59	-0,27	-0,22	-0,19
Operation scale	-0,15	-0,09	0,04	0,00	0,03

#### 4.1 A Theory of Financial Leverage

Using data from Table 3, we analyze the average rate coefficient of financial leverage, calculated for each branch (data period: 2000 to 2009) (circuit number 1). Apparently on the Figure 1, oil and gas and metallurgical industries have the highest indicators of coefficient of the financial lever (68 % and 65 % accordingly) while the lowest value of the given coefficient belongs to electric power industry (6 %). Rather more the high level of indebtedness of oil and gas and metallurgical sectors is caused by that is traditional these industries are the active borrowers. In 2008-2009 the state has given essential support to the Russian oil and gas business, having given out credits a total sum on 1 420 million \$ the USA. The international financial institutions also participate in financing of the large Russian oil organizations, basically in the form of club transactions. Besides, following universal tendencies, the Russian oil and gas companies were reoriented on the market of bonded loans. This tendency speaks acceptable rates, absence of special conditions (including on provision) and an openness of the bonded market while the market of bank loans still remains very exacting.

**Fig. 1: Coefficient of financial leverage**



The enterprises of metallurgical industry also actively used borrowed funds basically on investment activity, but in connection with financial and economic crisis in the given sector investment resources are sharply reduced. In 2008 the size of investments into fixed capital in iron and steel industry has decreased in comparison with expected (230 billion rubles) and has constituted 198 billion rubles., in 2009r it hasn't exceeded 125 billion rubles (63, 8 % from level 2007r). In the future, it is obvious that in the conditions of financial and economic crisis, the difficulties which have arisen with reception of cheap credits in the western banks, a high interest rate and insufficiency of proceeds of credit at the Russian banks, the industry organizations will be forced to limit attraction of proceeds of credit and will start to be reoriented on internal sources (depreciation charges and profit).

The lowest value of coefficient of the financial lever belongs to electro power sector (6 %). As the possible reasons can serve: electric power industry reform in 2000 – 2008, and also the economic crisis which has led to recession of power consumption. A basis of reform of electric power industry is “the General scheme of placing of objects of electric power industry to 2020r.” According to which the investment program on input of new power capacities has been developed. A considerable share of means private investments - additional issues of the

generating companies with attraction of strategic investors and sales of the state shares in the generating, sales, service and other companies (850 billion should provide rubles – 50 % of the investment program). The following on volume a financing source are own means in the form of depreciation charges – 1 321 billion rubles (30 % of the investment program). And, at last, 20 % of the investment program (886 billion rubles) should be implemented on borrowed funds. The situation has worsened in influence of financial and economic crisis: capitalization of the power companies has fallen in 5 – 7 times that has made impossible attraction of means by means of new issues; because of a liquidity crisis banks refused to the organizations of the given industry crediting of long-term projects, the debt market also has appeared is closed for new placing. After 36 organizations of electro power sector have been included in the list, for granting of the state financial support.

#### 4.2 Net profit ratio of sales

The results presented in Table 3, confirm the assumption made earlier and show essential feedback between profit ratio and coefficient of the financial lever on all to five industries. Thus, the most essential influence of the given factor on coefficient of the financial lever is observed in consumer (-0, 38) and oil and gas (-0, 20) sectors. The received results confirm position of the concept of hierarchy that the organizations prefer to use first of all own means for realization of investment projects, and only after that to resort to external loans. Higher indicator of profit ratio promotes increase in internal resources of the organization and, hence, reduces requirement for extraneous funding. Partially these results contradict positions of the theory of free monetary flows. For example, Hovakimian (2001) asserts that the enterprises with rather high level of profitability, possibly, will have the big assets, and, hence, and higher target objective of indebtedness. Nevertheless, results of our research confute these positions since the profit ratio has influence essential more negatively on level of coefficient of the financial lever. It is necessary to notice that the industries participating in sample have the greatest profit ratios of sales among all industries of a national economy (see Table 4) that allows them to use mainly own means for financing of investment projects. Besides, in the conditions of a financial economic crisis, in connection with problems on a loan market and decrease in investment activity almost all data structures of industries reoriented the financial strategy on use of own means in the greatest possible volumes, as cheapest source of financing of their activity.

**Tab. 4: Dynamics of net profit ratio of sales (percentage)**

Industry	2004	2005	2006	2007
Metallurgical	32,2	26,7	34,5	34,2
Oil and gas	32,9	36,0	30,9	31,1
Consumer sector	21,7	18,4	23,0	21,3
Electro power	24,2	27,7	14,1	23,3
Telecommunication	32,7	33,6	33,0	36,1

With improvement financially - the economic country situation can assume that the organizations with rather high indicators of profit ratios will have the big assets, and, hence, and higher target objective of indebtedness. In such situation it will be possible to predict direct communication between the given indicator and coefficient of the financial lever.

#### 4.3 Effective tax rate

In aforesaid confirmation, oil and gas and electropower industries have statistically significant, positive values of coefficients, characterizing thereby applicability of benefits of the tax shield at use of extra financing. In cases with all other industries having negative coefficients, it is

possible to assume that extraneous funding costs (for example, agency and liquidating) aren't blocked by the tax concessions. The possible reason consists that the majority of the Russian organizations uses various schemes of optimization of the taxation that doesn't promote extraction of benefits on write-off of a part of costs from taxable surplus, i.e. extra financing isn't becomes cheaper than own sources of means.

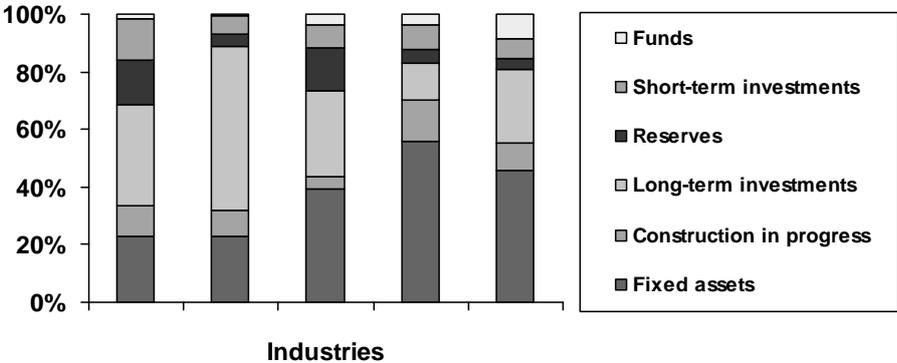
**4.4 The coefficient of market activity**

The given factor is one of the most significant for all considered industries except for oil and gas industry. The given coefficient reflects share market value in comparison with its book value. Becker and Verger (2002) use the given coefficient for measurement of time market possibilities of the organizations and determine dependence of the financial lever on an estimation of shares of the companies in the market. High values of coefficients for metallurgical (0, 40), electropower (0, 39) and consumer (0, 36) sectors characterize the big investment possibilities and growth of the organizations of the given sample. Also they are connected with expectation of higher monetary flows. Feedback between the given indicator and coefficient of the financial lever in a case with oil and gas industry (-0, 02) confirms that fact that cost of financial straits of the organizations of the given sample is rather high also agency costs are considerable. Because of high cost of extra financing (creditors are interested in increase of interest rates when asymmetry of information it is high), managers won't be interested in borrowed capital growth that promotes decrease in level of coefficient of the financial lever. But in the Russian conditions direct communication between these two indicators is observed. In our case high values of coefficients of market activity testify to increase of stimulus to use of extra financing.

**4.5 Ratio of fixed assets**

Communication between coefficient of the financial lever and coefficient of fixed assets a straight line for industries of metallurgy, electric power industry and telecommunications that confirms the assumption presented above, and return for oil and gas industry and a consumer sector (Table 3). The organizations having rather big share of assets, meet difficulties investments of investments into more brave projects since indebtedness level is provided besides by these assets (Johnson, 1997). Therefore, tangible assets reduce agency costs from extra financing, thereby lifting level of optimum indebtedness since they can be considered as debt collateral. Thus, rather the high level of tangible assets means higher credit status.

**Fig. 2: The structure of the organization's property**



As is shown in the Figure 2 in all five industries the share of the non-negotiable means consisting of tangible assets from which in turn the considerable part belongs to fixed assets and long-term financial investments prevails. Hence, almost all organizations of sample are material-intensive and such factor as the coefficient of fixed assets or a share of fixed assets in an equity,

plays a crucial role that proves to be true our results. Besides, having powerful material resources, in case of attraction of extra financing fixed assets will serve as material provision of given credits.

Direct communication of the given coefficient with the financial lever in industries of metallurgy (0, 50), electric power industry (0, 01) and telecommunications (0, 09) speaks that the given sectors of economy actively develop the material base and use the newest developments for creation of the effective modernized equipment. For example, many organizations of black and color iron and steel industry have developed and perform investment programs of reconstruction and modernization the productions directed on increase of production volumes and value added of goods, on decrease in negative influence on environment.

Similar processes occur and in telecommunication industry which became the hi-tech, quickly developing and quickly modernized industry demanding introduction and use of new technologies and the new equipment. As banks are ready to credit the organizations with sufficient material provision the companies of these industries will much easier find sources of reception of borrowed funds, having given as provision the hi-tech equipment.

The low indicator of the given factor for the organizations of an electropower complex (0, 01) can be explained that though the share of fixed assets in structure of non-current assets is rather considerable, but quality of material resources was very low. Before conducted reforms in 2000th years process of renovation of capacities practically has stopped, performance indicators of work of the organizations of the given industry have fallen to a minimum. By the end of 2006 the share of out-of-date generating capacities on power stations of Russia has constituted 39 %, and depreciation of basic funds of an electro network economy has constituted 40, 5 %. Hence, similar material provision couldn't be approaching for reception of essential borrowed funds.

#### 4.6 Current ratio

Results of Table 3 confirm the assumption made earlier and reflect essential, feedback between the given indicator and coefficient of the financial lever for all five considered industries. The current liquidity coefficient is also one of the most significant in our research (for all industries its value exceeds 0, 20) that confirms position of the concept of hierarchy and testifies that the organizations, first of all, are focused on internal sources of financing, i.e. quick assets will be implemented first of all, to form funds from profit, and only in case of their lack variants of extra financing will be considered.

In Table 5 industries on an indicator of coefficient of the current liquidity, reflecting sufficiency of circulating assets for repayment of short-term obligations are analyzed. Values of coefficients confirm good ability to meet payments of the organizations of all five industries and ample opportunities to forming of own sources of financing, and, hence, and to decrease in coefficient of the financial lever (according to the standard standards, the coefficient is in limits from 1 to 2-3).

**Tab. 5: Indicators of liquidity ratios**

Industry	Current liquidity	Quick Liquidity
Metallurgical	1,90	1,37
Oil and gas	2,21	1,76
Consumer sector	1,36	1,13
Electro power	1,62	1,42
Telecommunication	1,34	1,20

#### 4.7 Scale of operation

The results presented in Table 3, show that such factor as the activity scale, is essential only for metallurgical (-0,15) and oil and gas (-0,09) industries. Feedback between the given indicator and coefficient of the financial lever is thus traced. As the large organizations are less subject to risk of bankruptcy direct communication would mean that cost of costs at an adverse financial position is the essential factor influencing level of the financial lever. Negative coefficients of the given factor show that possibility credits to take considerably limited by risk of bankruptcy and that the optimum level of the financial lever is high at the organizations with lower risk of bankruptcy.

Thus, according to the conducted research, the most important factors influencing coefficient of the financial lever, profit ratios, market activity and liquidity are. Interrelation between profit ratio of sales and coefficient of the financial lever essential and return for all considered five industries. The coefficient of market activity has high value and direct interrelation for all industries, except oil and gas. And the current liquidity coefficient acts as one of the most significant factors for all researched industries and has essential feedback with coefficient of the financial leverage.

#### 4.8 Retardation effect of the coefficient of financial leverage

In addition to research of influence of some factors on coefficient of the financial lever on five industries we research effect of delay of coefficient of the financial lever for the purpose of determination of degree of influence of the given indicator of the previous period on the same indicator of the present period. Influence of one period of delay promotes the best understanding of, whether have the organizations an optimal capital structure and if have, what degree of a discrepancy with desirable structure. Thus, the primary goal is revealing of speed of change of coefficient of the financial lever for achievement of an optimal capital structure of the organizations.

The results presented in Table 6, reflect essential and a positive effect of lagging of one period (quarter) on coefficient of the financial lever for all five industries. The received results testifies that the coefficient of the financial lever aspires to desirable level and, hence, dynamism existence in the decision of a question of a capital structure is meant, i.e. as a whole the organizations regulate the coefficient of the financial lever for achievement of a target indicator and optimal capital structure creation. Thus the highest speed of change of the financial lever belongs to oil and gas industry (0, 87). The lowest indicator belongs to metallurgical industry (0, 40). As a whole high value of the given indicator testify to a tendency of planning and realization of financial strategy of the organizations for the purpose of an establishment of optimum coefficient of the financial lever that is financial policy of the Russian organizations is aimed at optimization of their capital structure.

**Tab. 6: Indicators of the retardation effect of the coefficient of financial leverage**

Industry	Speed of change of the financial lever
Metallurgical	0,40
Oil and gas	0,87
Consumer sector	0,59
Electro power	0,75
Telecommunication	0,65

## 5 Conclusions

In summary we will generalize above described results of the given clause. The purpose of the present work was to analyze the West European and American experience of determination of an optimal capital structure, to reveal the most essential factors at an establishment of certain level of the financial lever.

Our research has shown that the western companies are guided by three basic concepts of a capital structure: the compromise concept, the hierarchy concept, and also the concept of tracing of the market. Within the limits of the compromise concept the most essential factors are: maintenance of a target objective of a debt, expenses of bankruptcy and benefit from the tax shield. Essential factors, according to the hierarchy concept, are: financial flexibility, volatility of incomes, organization size, profit ratio, coefficient of market activity. Within the limits of the concept of tracing of the market significant factors are: a stock value of the companies in the market, change of the prices of shares, financial deficit. Thus character of dependence of a share of a debt in a capital structure of the companies from a number of external and internal factors has considerable country no difference and shows general tendencies in optimal capital structure determination.

Other important task of the given work was to research the Russian experience of determination of an optimal capital structure for what it is necessary to specify character and degree of influence of some factors on the financial lever on an example of the Russian organizations. 50 largest organizations participated in sample from five most developed and perspective industries of the Russian economy: metallurgical, oil and gas, a consumer sector, electro power and telecommunication.

Our research identifies a number of the factors influencing level of the financial lever for the organizations, participating in sample. We have revealed degree and character of influence of the factors selected for research on coefficient of the financial lever of the organizations on each of five industries.

We determine coefficient of the financial lever, as one of the major characteristics of the organization in the conditions of inconstancy of the market. As has shown our research, level of coefficient of the financial lever has constituted more than 60 % for metallurgical and oil and gas industries that characterizes the organizations of these industries, as active borrowers in the markets of capitals. The lowest value of the given indicator belongs to electropower industry that is connecting with conducted reform in the given sector of economy, and also influence financial - an economic crisis.

According to the conducted research, the most important factors influencing coefficient of the financial lever, profit ratios, market activity and liquidity are. Interrelation between profit ratio of sales and coefficient of the financial lever essential and return for all considered five industries. The high indicator of profit ratio promotes increase in internal resources of the organization and, hence, reduces requirement for extraneous funding. The organizations of all five industries have high profit ratios that testifies that first of all they will aspire to the maximum use of own means.

The coefficient of market activity has high value for all industries, except oil and gas that characterizes the big investment possibilities and growth for the organizations of researched industries. Besides, communication between the given indicator and coefficient of the financial lever a straight line in all cases (except oil and gas sector).

The current liquidity coefficient acts as one of the most significant and has feedback with coefficient of the financial lever that testifies that the organizations of the given sample, first of

all, are focused on internal sources of financing that is quick assets will be implemented first of all, to form funds from profit, and only in case of their lack variants of extra financing will be considered.

Other important task was determination of influence of effect of delay of coefficient of the financial lever that influence of the lever of the previous period on value of the same indicator of the present period that characterizes speed of change of coefficient of the financial lever of the organizations. Results of research have shown that all organizations have a certain target objective of coefficient of the financial lever and certain speed of its achievement. The companies of oil and gas industry fastest reach the optimum level of coefficient of the financial lever, and the lowest speed belongs to metallurgical industry.

Thus, our research confirms positions of the concept of hierarchy in the Russian conditions and determines that the coefficient of the financial lever, and also profit ratios, market activity and current liquidity urged to play a basic role in optimal capital structure determination. The organizations will use first of all own means and only in case of their shortage, will be ready to address to extra financing. Last statement is especially actual in conditions financially – an economic crisis when almost all companies of all sectors of the Russian economy have reduced the investment programs, and most necessary of them are financed first of all at the expense of own means. Thus it is necessary not to forget that force and the nature of influence of these factors depend as from external financially - economic conditions, and on internal conditions in which the organizations, and also from specific features of each separately taken industry of economy function.

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## ***Determinants of Capital Structure: Western European and Russian Experience***

### **Summary**

In this article investigates the experience of determining the optimal capital structure at the example of Western European, American and Russian companies. Western practice of determining the Optimal Capital Structure in the most prominent concepts has been investigated and defined the set of factors in varying degrees affect decisions on the optimal ratio of own and borrowed means. In this case, the main criterion of optimality is a Theory of Financial Leverage and its changes influence the Capital Structure when changes the impact of this or that factor. In Russian conditions is corroborated the Packing-Order Theory and take shape a number of the most significant factors affecting a Theory of Financial Leverage, namely profitability, market activity and liquidity ratios. And also in this work detects influence of retardation effect of a theory of financial leverage that characterizes the rate of change in a theory of financial leverage of companies. In Russian conditions of oil and gas industry faster than anyone else reach their optimum level of a theory of financial leverage and the lowest rate belongs to the metallurgical industry.

**Key words:** Theory of optimal capital structure; Trade-off theory; Market timing theory; Theory of financial leverage, Retardation effect; Theory of financial leverage.

**JEL classification:** G30.



# **Economic and Financial Diagnostics of Enterprises: Anti-Crisis Aspect**

*Valentyna Shevchenko\**

## **1 Introduction**

The recognition, determination of characteristics and identifying the causes of deviations from planned results (a situation of risk) is implemented by means of diagnostics. This is a method and a research tool for every kind of business in the market environment.

Diagnostics is not a new process in the economy of Ukrainian enterprises. The definition and assessment of the functioning of an economic entity, that is the object of diagnostics research, depends on a complex of measures, guidelines and procedures to improve the condition or prevent adverse to its operation situations and events in an uncertain market environment. That economic diagnostics should act as a reasonable and reliable procedure, on which depends the further business entity. Any wrong diagnostic conclusion can be made to undermine all the efforts of the enterprise to achieve the anti-crisis stability and ensuring the best prospects.

The aims of the paper are determination the essence of economic and financial diagnostics, construction the system of its realising and investigation the techniques and methods for diagnostics of an enterprise to reduce the risk of making false anti-crisis management decisions.

## **2 Essence of the economic and financial diagnostics**

There are some differences in the interpretation of essence and content of the diagnostics among economists, although the concept is often widely used in the study of all the problems of organization the production o and management.

It is prevalent narrow approach to the diagnosis in the economic literature. For example,

A. I. Vorobyov treats diagnostics as a method of establishing the nature of the normal business failure process course on the basis of only typical characteristic of the object.

A. P. Gradova, V. I. Kuzin, N. G. Danilochkina, G. A. Shvydanenko, A. I. Oleksiuk consider diagnostics as a direction of economic and financial analysis to help identify the nature of breaking the normal course of economic processes in the enterprise. Some scientists generally equated with diagnostic analysis (economic or financial) without selecting specific functions and tasks of diagnostics as a management stage.

The perspective systemic approach to diagnostics, namely economic, is considered in the researches of A. S. Vartanov, A. I. Kovalev, O. Y. Biryukova (2011), I. G. Sokirinskaya, M. I. Bakanova, Y. M. Bahramova, O. H. Dmitriev, E. M. Korotkov, A. D. Sheremet, V. A. Verba, I. A. Blank (2006), T. I. Reshetnyak and Z. N. Sokolovskiy. This approach is more promising in the terms of revealing the essence, functions and economic methods of diagnostics, which allows use of its opportunities extensively in the process of management the object as a system. Besides, this system composed of interconnected elements, each of which has its own peculiarities and influences on the behaviour system as a whole.

Thus, economic and financial diagnostics solves the following problem: to evaluate the economic situation of enterprises; to determine the stability of the system; to select the options of economic and financial dynamics on the basis of relationships between the structural

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parameters; to assess the possible impact of managerial decisions concerning to production efficiency, financial condition, solvency and other enterprise data indicator.

Scientists distinguish the six economic diagnostic classification features: the level of the investigated object; the time range of research; the frequency of performance; themes and capacity problem; goal orientation; subjects of implementation.

In a number of works diagnostics regarded as a phase of anti-crisis management along with marketing, crisis forecasting and planning, adoption and implementation of anti-organization procedures, supervision and motivation for their implementation and regulation enforcement. Some scientists identify the economic processes of the diagnostics and economic analysis. Emphasis in this case is shifted to the implementation of business financial and economic analysis (G. A. Shvydanenko, O. I. Oleksiuk, T. B. Berdnikova, A. E. Voronkova).

But I believe it is important to understand the differences between economic and financial analysis and economic and financial diagnostics.

The main methodological differences between the categories are shown in Tab. 1.

**Tab. 1: The main differences between the analysis and diagnostics**

<b>Criterion</b>	<b>Economic and financial analysis</b>	<b>Economic and financial diagnostics</b>
Subject	Economic events and processes, cause-effect relationships between them	Quantitative and qualitative characteristics of the object of research
The process of implementation	Decomposition into components and careful analysis of phenomena	Comparison of different symptoms to diagnosis, identify the causes of disease
Objectives	Evaluation of changes of economic phenomena and processes	Evaluation of an object of the research, diagnosis of problem areas and development the impact activities
Connection with other managerial functions	Separate management function (planning→ analysis→ accounting→ audit→ regulation →control)	The complex combination of individual management functions (analysis + audit + regulation forecasting)
Methodological basis	Specific individual methods	Complex methods
Result	Description of the situation	Elaboration of measures to improve the state

Source: V. V. Lukyanova, 2007, p.69

G. O. Shvydanenko, A. I. Oleksik, M. O. Kizim, V. A. Zabrodska, V. A. Zinchenko, N. S. Nosova (2009), Y. S. Kopchak agree with the idea that the main purpose of diagnostics is to solve the problems of the rationalization process, the assessment regime financial management enterprise, identifying options for economic dynamics of economic indicators and assessing the implications of entrepreneurial management decisions. N. V. Rodionova said that mentioned should be undertaken in the following areas: financial feasibility of diagnosing (the study of relevant aspects of the company to clarify the trends in all activities position in the trajectory of the life cycle and decision based on it economically and socially sound decisions to correct deviations installed); organizational diagnostics as a system of methods, techniques and methods for research purposes to determine the functioning of an economic entity and how to achieve them, identifying problems and choosing solutions.

Diagnostics, consistently performing three functions: scorecard (definition of the control object functioning), diagnostic (identification of possible changes of an object), search (definition of the possible steps for improving or restoring the status of the entity), as a result it has set a valid reason problems of enterprises and provide “medicine” saving for the company from its “disease”.

### **3 System of the economic and financial diagnostics during realising the anti-crisis management**

L. A. Kostyrko indicates the need for separate certain concepts of diagnosis, one of them must have anti-crisis orientation. For stable operation of the enterprise in the implementation of crisis management attributes the emergence of critical assessment of symptoms and diagnosis must be made before the manifestation of obvious signs of crisis or bankruptcy events. Crisis symptoms can be considered any signs or manifestations of deterioration in production and business activities of an entity that can bring business to the state of crisis.

The author finds it necessary to review the current models and methods for diagnosis of crisis symptoms. It is worth to identify the advantages and disadvantages of their application and adaptation to modern economic conditions. Rapid diagnostics, functional and complex types of economic and financial diagnostics carried out during the anti-crisis management in «quantitative» and «qualitative» forms. Authorial vision of the economic and financial diagnostics system in the process of anti-crisis management is presented in Fig. 1.

#### **3.1 Assessment of current state of enterprises and the prospects for its further development**

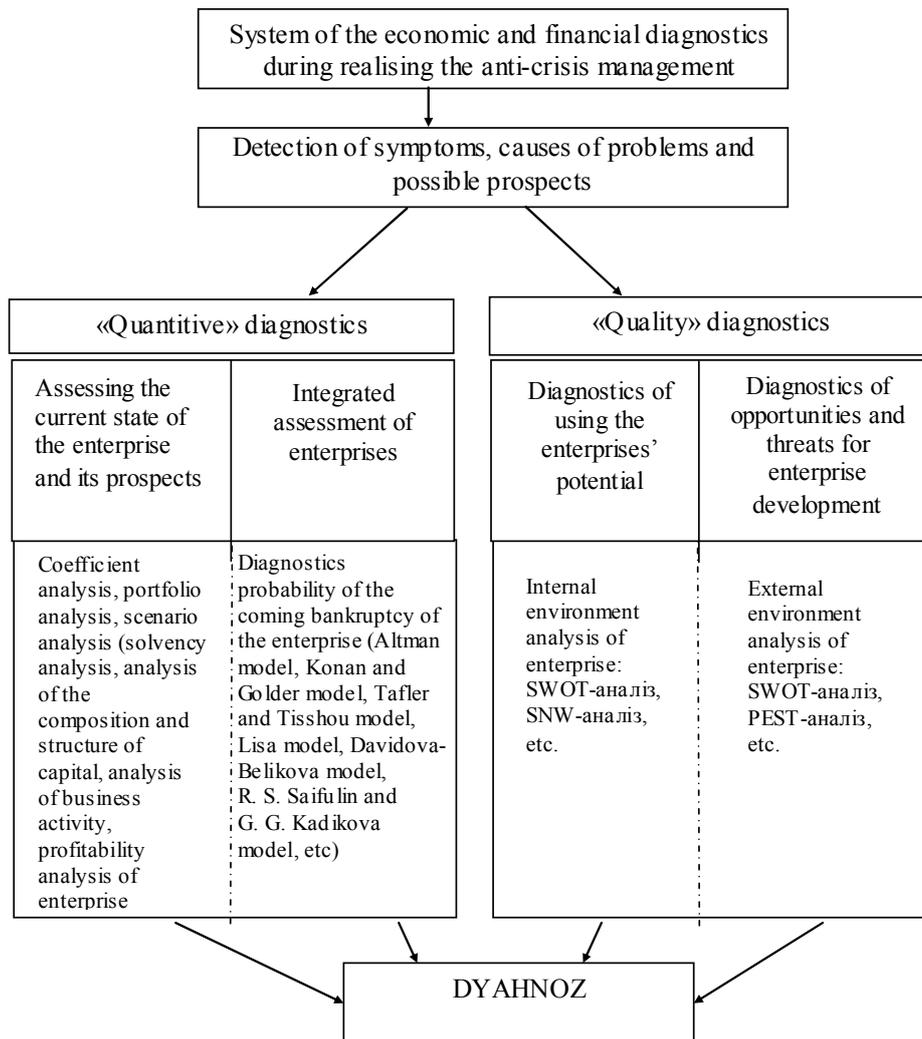
Economic system diagnostics during crisis management involves regular evaluation of the company. It is based on data in its financial accounting standard analysis algorithms, while the main purpose of this method are early signs of development of enterprise crisis and its prevention.

The author investigates that in the world practice there are different methods of diagnosis. The analysis of the main methods of diagnosis of the financial state determined that a significant number of methods have drawbacks: missing or insufficiently substantiated performance thresholds and the size of the coefficients in the models, authors use the terminology and indicators adopted in foreign models in most methods, but they are not adapted to current Ukrainian conditions in the economy, many methods consider individual aspects of business, in details focusing only on some points. That’s why there is need to develop approaches that take advantage of existing models and maximal eliminate their shortcomings. It presents a model for rapid diagnosis and (or) basic model diagnostics financial condition of the company that is actively used by domestic enterprises and are based on finding, analyzing the relationships between the main indicators of business, internal and external factors in its activities.

Complex of measures concerning anti-crisis financial management is developed on the basis of coefficients calculated during the rapid diagnosis and (or) basic diagnostic.

A typical application of rapid diagnosis is to calculate the estimated financial and to compare them with established (industry) standards.

**Fig. 1: System of the economic and financial diagnostics during realising the anti-crisis management**



Source: Author

In practice, companies do not always apply all the factors that are belong to rapid diagnosis, most notable of them are elected.

For example, we show the calculation of indexes of the financial sanitation capacity at three sugar factories in Vinnitsa region (Tab. 2).

The conclusion about the type of financial sanitation capacity will be made on financial ratios in compare with the criteria defined in consideration of actual performance data for sugar mills and based on the average in industry. Besides, it can be the possibility of correction the criteria base adjustment of estimated parameters, based on the evidence of the period preceding the date of making the decision.

Therefore, calculated indicators of sanation financial capacity of sugar factories “Babynskyy sugar factory”, “Braylivskyy sugar factory”, “Zhadanivskyy sugar plant” are significantly lower than their standard meaning. It can be seen from the table of criteria (Tab. 3).

A normative value of estimated parameters has the financial capacity to be reduced because of the critical state of the sugar industry enterprises for which potentially can be instituted bankruptcy case.

**Tab. 2: Indexes of the financial sanitation capacity at sugar factories in Vinnitsa region**

Index	“Babynskyy sugar factory”		“Braylivskyy sugar factory”		“Zhadanivskyy sugar plant”		The industry average
	beginning 2006	end 2006	beginning 2006	end 2006	beginning 2006	End 2006	
<b>Ratio</b>	0,70	0,60	1,00	1,10	0,80	0,90	0,87
<b>Ratio of own capital</b>	-0,70	-0,94	-0,04	0,06	-0,18	-0,14	-0,17
<b>Accounts receivable/ payable ratio</b>	0,10	0,20	0,20	0,40	0,10	0,20	0,40
<b>Coefficient of autonomy</b>	-0,37	-0,71	0,58	0,47	-0,01	0,03	0,17
<b>Return on sales of sugar, %</b>	-23		10		9		6
<b>Return on all the activities, %</b>	-25		1		2		0,6
<b>Turnover ratio of accounts payable</b>	1,1		1,6		1,5		1,5
<b>Receivables turnover ratio</b>	5,5		4,6		8,4		3,9
<b>Inventory turnover ratio</b>	3,6		2,1		2,0		2,4
<b>Capital turnover ratio</b>	1,56		0,76		1,47		1,1

**Tab. 3: Criteria of the financial sanitation capacity at sugar factories**

Index	Level score or estimation trend		
	high	average	low
Ratio	1,0-2,0	0,8-1,0	<0,8 or >2,0
Ratio of own capital	>0,1	0-0,1	<0
Accounts receivable/ payable ratio	0,5-1,0	0,3-0,5	<0,3 or >1,0
Coefficient of autonomy	>0,4	0,2-0,4	<0,2
Return on sales of sugar, %	>6,0	0-6,0	<0
Return on all the activities, %	>0,6	0-0,6	<0
Turnover ratio of accounts payable	>1,5	<1,5 trend growth	<1,5 trend decrease
Receivables turnover ratio	>3,9	<3,9 trend growth	<3,9 trend decrease
Inventory turnover ratio	>2,4	<2,4 trend growth	<2,4 trend decrease
Capital turnover ratio	>1,1	<1,1 trend growth	<1,1 trend decrease

### 3.2 Integrated assessment of enterprises

It is often used the discriminant method in the Ukrainian economic practice concerning diagnosis and prediction of bankruptcy (Prokopenko I. F., 2008; Umanets T. V., 2010). It is based on empirical coefficients. Let us see a comparative description of discriminant models for assessing the propensity of the enterprise into bankruptcy (Tab 4).

The analytical frameworks are an objective basis for developing new methods or improve the well-known models. It is noteworthy, that conclusions concerning different models may be fundamentally opposed, due to orientation models for diagnosis of various events that cause different types of crises. None of these models can be used as the universal assessment precisely because of its “specialization” on any one type of crisis and inability to recognize other problems. That is why the choice of specific methods should be made under conditional features of the industry in which the enterprise operates. Thus, the correction of most methods and models should be specific to particular industries.

**Tab. 4: Diagnostics probability of the coming bankruptcy of the enterprise**

<b>Model</b>	<b>Design formula</b>	<b>Benefits</b>	<b>Disadvantages</b>
<b>Two-factors Altman model</b>	$Z_1 = -0,3877 - 0,0736 K_1 + 0,0579 K_2$	- ease of calculation; - there are only two factors	- the model was created for the U.S. and in Ukraine there are other inflation, other cycles of macro- and microeconomics, other levels of productivity; - the model does not provide an objective assessment of the financial condition of the company, and therefore can be possible significant deviations of reality from the forecast and it can be applied only companies listed at a stock exchange; - the model does not reflect the parties' financial condition such as asset turnover, return on assets, rate of change of proceeds from sales, in practice does not reflect the real picture liquidity
<b>Five-factors Altman model</b>	$Z_2 = 3,3K_1 + 1,0P_1 + 0,6K_2 + 1,4K_3 + 1,2K_4$	- ease of calculation; - availability of sequence studies	- the model can be applied only for relatively large companies listed at a stock exchange; - underdevelopment of the stock market of Ukraine; - difference of Ukrainian accounting, the need of adapting weights; - does not take into account fluctuations in share prices
<b>Konan and Golder model</b>	$Z = -0,16X_1 - 0,22X_2 + 0,87X_3 + 0,10X_4 + 0,24X_5$	- allows to identify strategic issues	- the model can be applied only for companies listed at a stock exchange; - does not take into account many factors that determine the financial stability
<b>Lisa model</b>	$Z = 0,063K_1 + 0,092K_2 + 0,057K_3 + 0,001K_4$	- ease of calculation;	- the model is not adapted for Ukrainian enterprises, it is designed for England; - the model built on the western view of development
<b>Tafler and Tisshou model</b>	$Z = 0,53K_1 + 0,13K_2 + 0,18K_3 + 0,16K_4$	- ease of calculation;	- the model can be applied only for companies listed at a stock exchange
<b>R. S. Saifulin and G. G. Kadikova model</b>	$R = 2K_1 + 0,1K_2 + 0,08K_3 + 0,45K_4 + K_5$	- ease of calculation;	- the model does not assess the reasons for getting the company "in the zone of insolvency"; - the normative content coefficients used for the rating does not factor the industry features of enterprises; - the dependence of estimation results of the experience and training of an analyst; - the imbalance of weight coefficients values;
<b>Davidova- Belikova model</b>	$Z = 8,38K_1 + K_2 + 0,054K_3 + 0,63 K_4$	- ease of calculation; - clarity and validity of the calculation steps	- no conditions for branch specificity

### 3.3 Implementation of the «quality» diagnostics

The "quality" diagnostics includes the enterprise potential diagnostics and diagnostics of

opportunities and threats for enterprise development. The principal methods of such diagnostics are considered to be SWOT-analysis, SNW-analysis and PEST-analysis.

SWOT-analysis (Strengths; Weaknesses; Opportunities; Threats) is carried out the analysis of indirect and direct influence environmental factors, and the analysis of internal environment of the company. Results of SWOT-analysis are usually arranged in a table after a comprehensive study of the influence of individual factors on the company. Let us consider the basic parameters, which are required for a SWOT-analysis of internal and external environment of sugar industry enterprises (Tab. 5).

**Tab. 5: SWOT analysis of sugar factories**

Index	Level score or estimation trend	
	Strengths	Weaknesses
<b>Output of sugar</b>	growing tendency	flowing tendency
<b>Capacity utilization factor, %</b>	greater than the industry average rate, but there are free capacities	the industry average rate
<b>Duration of extraction, days</b>	greater than the industry average rate, but less than optimal level	less than the industry average rate
<b>Fixed assets and technology</b>	- there are some kinds of modern production equipment; - possible changes in technology and technological equipment	- high level of depreciation of fixed assets; - low rate of renewal of production equipment
<b>Personnel</b>	availability of qualified engineering and management	lack of qualified engineering and management
<b>Feedstock supply</b>	- availability of own raw material base; - availability of opportunities for switching suppliers	- lack of raw materials
<b>Sale</b>	existence of potentials markets	troubles with finding buyers
<b>Opportunities</b>		<b>Threats</b>
Attraction the lenders, investors and owners for financial sanitation		Reluctance of creditors in supporting the financial sanitation
Lower interest rates on loans		High level of competition because of import of raw sugar cane
Investment attractiveness of sugar industry		Dependence on quotas
Public support for Ukrainian sugar producer		Insolvency and bankruptcy of counterparties
Development of regional supporting programs		Problems with suppliers

SNW-analysis analyzes the factors of internal environment of the enterprise.

SNW-analysis:

- Strength position;
- Neutral Position;
- Weakness Position.

Neutral Position in this method usually corresponds to an industry average value of similar businesses.

PEST-analysis helps to provide the analysis of environmental factors of indirect influence on the company. PEST-analysis:

- Political and legal environment;
- Economic environment;
- Sociocultural environment;
- Technological environment.

The “quality” of diagnosis will help get a more detailed picture of the enterprise and find ways and methods to ensure its development and if it is necessary to make full recovery of the business entity.

#### **4 Conclusions**

After studying the investigations of economists concerning theoretical, methodological and practical approaches to implementation of the economic anti-crisis diagnostics, I may make a conclusion about the necessity of an integrated approach in building the system of economic diagnostics in Ukrainian enterprises. An integrated approach should take into account a combination of “quantitative” diagnostics and “quality” diagnostics. Thereby, it is needed the implementation of possible estimation of enterprises current condition and prospects for its further development, diagnosis probability of occurrence of bankruptcy and factor analysis of internal and external environment. This approach will help find the “disease” of enterprise and develop a set of action for its “treatment”.

The development of an adequate methodical approach to financial and economic assessment of enterprise and determination of crisis symptom manifestation requires further fundamental researches. It should be taken into account the peculiarities of national accounting and reporting standards, the available statistical and information base of Ukrainian enterprises, specific areas in which the company operates and therefore the probability of risks and threats occurrence.

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## ***Economic and Financial Diagnostics of Enterprises: Anti-Crisis Aspect***

### **Summary**

The article deals with the problematic anti-crisis aspects of realization the economic and financial diagnostics of industrial enterprises. The understanding of the economic and financial diagnostics is given in different aspects. The system of the anti-crisis diagnostics is constructed on the basis of “quantitive” diagnostics and “quality” diagnostics. Models and methods realization the economic and financial diagnostics are investigated. The practical calculations were fulfilled on the data of sugar industry enterprises.

**Key words:** Economic and financial diagnostics of enterprises; Anti-crisis management; Enterprise.

**JEL classification:** G34.

# Financial Statement Informativeness and Alternative Earnings Disclosure in Australia

*Elisabeth Sinnewe\**

## 1 Introduction

This study examines how the disclosure of alternative earnings in annual earnings announcements is affected by the effectiveness of accounting standards in measuring underlying performance (i.e. financial statement informativeness). Alternative earnings are a modification of non-statutory performance metrics to convey a more salient representation of the firm's underlying performance (Pitt 2001; Halsey & Soybel 2002). These individually designed earnings differ in the way they are calculated and presented, which is reflected in the disparity of labels, such as "pro forma earnings", "cash earnings", "operating earnings", "core earnings", "recurring earnings", "underlying profit", etc. (Bradshaw & Sloan 2002; Phillips, Luehlring & Waller Vallario 2002; Harrison & Morton 2010). Accordingly, this paper uses the following terms or any combination of these interchangeably: alternative earnings, adjusted bottom-line, non-statutory profit, pro forma earnings, modified earnings or underlying profit.

The term 'pro-forma earnings' has been coined by the US literature to describe the emerging number of adjusted bottom-line figures appearing routinely in the press releases of US businesses since late 1990s (Brown, Christensen, Elliott & Mergenthaler 2008, p.44). Commonly, alternative earnings are adjusted for earnings components, which management views as one-off or transitory items or alien to the core business (see Henry 2001 for anecdotal evidence). Therefore, it is argued that a more 'sustainable' earnings figure improves financial reporting quality.

However, the question on whether pro forma earnings are useful for investors is a highly controversial one. In the US, financial press and regulators questioned whether earnings have been altered to present a biased picture on firm performance (e.g. Alpert 2000; Henry 2001; Liesman 2001; Halsey & Soybel 2002). Pointedly, Lynn Turner, former chief accountant of the US Security Exchange Commission (SEC), referred to pro forma earnings as "Everything but Bad Stuff or EBS" (Turner 2000). Consequently, the SEC responded to the sharp increase in pro-forma earnings disclosure by issuing a cautionary advice to warn investors of the potential misleading nature of alternative earnings (SEC 2001). Following the warning in late 2001, Section 401(b) (also referred to as Regulation G) was enacted as part of the Sarbanes-Oxley Act in 2003. Regulation G requires that periodic corporate publications such as press releases are not materially misstated and reconciled with statutory profit (SEC 2003).

Recent research conducted in the US tests for the implications of Regulation G on the disclosure of pro forma earnings (e.g. Marques 2006; Yi 2006; Heflin & Hsu 2008). Prior research exhibits a strong focus on opportunistic reporting incentives, because archival and experimental evidence yielded that both sophisticated as well as unsophisticated investors are influenced by adjusted earnings disclosure (Frederickson & Miller 2004; Johnson & Schwartz Jr. 2005; Andersson & Hellman 2007). Hence, opportunistic disclosure motives may lead to market inefficiencies in the form of mispricing, as market participants do not fully appreciate the future cash flow effect of earnings exclusions (Doyle, Lundholm & Soliman 2003; Landsman, Miller & Yeh 2007). Arguably, the assumption of opportunistic incentives is a result of the jurisdictional setting. Supply side considerations in form of disclosure costs dominate in the highly litigious US environment, thereby obfuscating potential disclosure motives arising from investor demand. In

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fact, management may have economic incentives to better inform investors. For example, greater disclosure has been associated with a reduction in the cost of capital (Botosan 1997).

From a regulatory perspective, the present empirical evidence offers useful insights on determinants of alternative earnings disclosure to stimulate debate on whether capital market regulators should address underlying profit disclosure to protect the interests of investors based on their assessment of the US experience. Similar to the US, Australia has been experiencing a higher level of alternative earnings appearances in earnings announcements. The Australian Securities and Investment Commission (ASIC) reported that 78% of Australian companies disclosed alternative earnings in their media releases in 2010 (ASIC 2010). However, contrary to the US setting, the disclosure of alternative earnings in Australia is not regulated and only guided by a set of reporting recommendations published by the Australian Institute of Company Directors (AICD) in co-operation with the Financial Services Institute of Australasia (FINSIA) in March 2009. Thus, the Australian context offers a contemporary setting to test for any demand-side drivers (i.e. disclosure motivated by investor demand) of voluntarily disclosed underlying earnings. It is argued that managers, who are faced with an adverse selection problem due to information asymmetry, may have an economic incentive to overcome the information asymmetry gap by adjusting bottom-line earnings as a more realistic representation of underlying performance.

This study contributes to the existing literature in three ways. First, studies conducted outside the US are either of exploratory nature (Entwistle, Feltham & Mbagwu 2006; Harrison & Morton 2010) or indicative of opportunistic disclosure incentives (Walker & Louvari 2003; Hitz 2010). This paper extends this line of research by specifically addressing a theory-informed assumption, which contradicts with the mainstream assumption of opportunistic reporting incentives by proposing that managers are economically motivated to overcome the information asymmetry gap.

Second, the present research contributes to the literature stream that examines the informativeness, permanence, and predictive ability of pro forma earnings (Lougee & Marquardt 2004; Elshafie 2005; Mbagwu 2007). According to Watts and Zimmerman (1990), financial statement informativeness is affected by differences in industries' investment opportunity set (IOS), therefore, this study focus explicitly on the link between the IOS and its impact on disclosure of underlying profit. The assumption that the reporting of alternative earnings is industry driven acknowledges prior findings, which have revealed that pro forma earnings reporting is concentrated in certain industries (Bhattacharya, Black, Christensen & Larson 2003; Marques 2010). The results of the present study support this conjecture.

Third, this paper provides a refined measure of informativeness. The two factors used as a proxy for informativeness are deducted from Tasker's (1998) four measures of informativeness: (1) industry median market-to-book (MTB) value, (2) the interquartile range of MTB, (3) the Ohlson (1995) regression of earnings and book value on market values, and (4) industry sales growth. I disintegrate the four-measure component into two 2-measure components to reinforce the theoretical underpinnings and identify any temporal (Lev & Zarowin 1999) or jurisdictional differences (Barton, Hansen & Pownall 2010). The more robust informativeness measure derived from the literature is the component score based on industry mean of MTB and the interquartile range of MTB in a particular industry. The other two measures are expected to be susceptible to economic influences and are therefore co-integrated into a second component score of informativeness.

This paper proceeds as follows: Section two draws from the IOS literature to develop the hypothesis. Section three describes the research design including data sources, empirical model and variable specifications, section four presents research results, and section five concludes with a brief summary and suggestions for future research.

## 2 Literature Review

Two schools of thought deal with management's reporting decision from an agency theory angle: to produce biased information to mislead investors versus to produce useful information for investors (Brennan 2010).

The opportunistic view rests on two assumptions: the separation of firm ownership and control as well as the consequentially arising contractual relationship between managers and outside investors, in which both contractual parties are driven by the rationale of utility maximization. These assumptions form the core of agency theory. If contractual relationships are viewed as a pre-existing condition, managers are understood to exploit this pre-condition to maximize their own wealth, as it is virtually impossible for outside investors to fully monitor or contractually constrain opportunistic actions on part of the management. This is referred to as moral hazard (Jensen & Meckling 1976). Information is a limited access commodity according to agency theory (Eisenhardt 1989). Therefore, reporting decisions (or disclosure policy decisions in general) are assumed to be opportunistic, if the management takes advantage of the asymmetric information advantage to preclude investors from accessing information to further their own wealth (Arrington & Puxty 1991). According to Watts and Zimmerman's (1978) Positive Accounting Theory (PAT), managers may choose opportunistic accounting policies to improve their contractual compensation, meet debt covenant requirements, or avoid political costs such as taxes or litigation costs. Moreover, Warfield, Wild and Wild (1995) show that the greater the diffusion of ownership, the greater is the information asymmetry gap, as outside investors lack resources and access to information to monitor management.

Advocates of the incremental information school, however, assume that managers have economic incentives to engage in unbiased reporting. Managerial opportunism in accounting choice basically rests on the level of management discretion conceded by the shareholder-owners. Unconstrained discretion, on the one hand, is counterproductive for monitoring purposes, while full elimination of discretion is not efficient due to management's informational advantage on business operations (Skinner 1993). Hence, in anticipation of opportunism, shareholders' incur agency costs in form of monitoring costs, which increase with the level in managerial discretion. These costs, in turn, are ultimately borne by managers, since principals will transfer the costs to them via price-protection (Jensen & Meckling 1976). In essence, outside investors face an adverse selection problem in this situation, as they cannot distinguish between profitable and non-profitable investments due to information asymmetry. Price-protection in this sense means that investors will assign an average price to all investments. The consequence is that some investment will be underpriced and some overpriced. Thus, managers of firms that run risk of underpricing will try to reduce information asymmetries to maximize firm value by voluntarily providing investors with incremental information.

Two disclosure motives emerged in the pro forma literature, which are congruent with the two agency perspectives. Similar to the opportunistic incentive assumption in agency theory, pro forma earnings have been criticized for introducing bias into financial disclosure. Entwistle, Feltham and Mbagwu (2006) find that 10% of all U.S. S&P 500 firms used pro forma earnings disclosure in a potentially misleading manner. These firms presented pro forma earnings prominently in the earnings release headline disguised as GAAP earnings. In a similar vein, Black and Christensen (2009) argue that the exclusion of recurring items indicate aggressive pro forma reporting, as their test results revealed that managers strategically exclude recurring expenses from pro forma earnings in addition to non-recurring items to meet earnings benchmarks in analysts' forecasts. This finding has been triangulated by evidence provided by Jennings and Marques (2009). They find that particularly firms with weak governance structures disclosed pro forma earnings, which excluded recurring income components. Stock prices dropped in the year following the announcement, as the value relevance of the excluded

components became obvious. However firms stopped excluding recurring items, after the SEC passed Regulation G. No additional stock price reaction occurred in the subsequent year.<sup>1</sup>

In contrast, other earlier pro forma earnings studies revealed that market participants view pro forma earnings as more informative than statutory earnings. Bhattacharya, Black, Christensen and Larson (2003) compared the informativeness and permanence of GAAP, analyst-adjusted and manager-adjusted earnings. Their regression of earnings surprise based on each earnings metric on abnormal stock returns show that pro forma earnings are more informative than their statutory counterpart. Additionally, analysts are more likely to adjust their forecasts in accordance with management-reported pro forma earnings. This finding is supported by Mbagwu's (2007) value relevance tests of pro forma earnings relative to GAAP earnings and analysts' actual earnings, which demonstrated that pro forma consistently have the greatest information content. Finally, Heflin and Hsu (2008) interpreted a reduced stock-earnings correlation subsequent to Regulation G as indication that the regulatory action not only curbed misleading pro forma practice but also stopped some managers from providing useful information.

Despite the quite disparate views on disclosure motives, empirical evidence shows that firms, which disclose non-statutory earnings, are commonly from the business service sector and in particular from the hi-tech industry (Bhattacharya, Black, Christensen & Mergenthaler 2004; Lougee & Marquardt 2004). This commonality has been only implicitly referred to and not incorporated in any analysis of disclosure motives. For example, Lougee and Marquardt (2004) noted the concentration in the business service sector but did not integrate this finding in their analysis of different informativeness measures. Additionally, their results may be affected by a potential endogeneity problem as suggested by Mian (1996). This problem will be dealt with in greater detail in the research design section.

This paper adopts the view that accounting disclosure is affected by differences in industries' investment opportunity sets as suggested by Watts and Zimmerman (1990) and relies on Myers' theory of corporate borrowing to explain alternative earnings disclosure. Myers' (1977) theory of corporate borrowing offers a reference point to specify which firms are more likely to disclose adjusted earnings figures voluntarily. Based on the going concern assumption, Myers argues that firm value is a function of the company's assets-in-place (i.e. realized investment opportunities) and growth options (i.e. future investment opportunities). This function is referred to as the investment opportunity set or IOS. It is argued that information asymmetry is greater for firms with a higher proportion of growth options, as future investment opportunities are difficult for outside investors to observe and largely depend on management's special knowledge (Smith & Watts 1992; Gaver & Gaver 1993; Skinner 1993).

The information asymmetry gap for these firms is further exaggerated as financial statements only limitedly reflect firm value, because growth options remain largely unrecognized in accounting standards (e.g. direct expenditure of R&D investment). In other words, growth options reflect the company's intangible assets and several studies showed that especially for firms with high intangible intensity, statutory earnings are less reflective of underlying performance (Collins, Maydew & Weiss 1997; Francis & Schipper 1999; Lev & Zarowin 1999). Collins et al. (1997) for example, show that the rising number of intangible-intense companies is a factor contributing to the temporal decline in value relevance of earnings.

Thus, the prevalence of firms reporting alternative earnings in industries relying heavily on intangible assets may indicate that adjusted earnings are affected by the industries' investment

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<sup>1</sup> However, Kolev, Marquardt and McVay (2008) note that the SEC intervention had unintentional side effects. Their findings show that special items, which should have no persisting effect over earnings, in fact, had predictive power over future earnings. They suggest that managers adapted their disclosure strategy by transferring persistent earnings components to special items.

opportunity set. Linking back to the incremental informativeness perspective of agency theory, managers of these firms may face an underinvestment problem due to adverse selection, which in turn is caused by the limited informativeness of the firms' financial statements. Hence, the disclosure of alternative earnings is a result of the company's restricted financial statement informativeness. Therefore, it is hypothesized that:

*Informativeness of financial statements is negatively related to the disclosure of alternative earnings.*

### 3 Research Design and Data

#### 3.1 Research design

The following model is used to test the hypothesis:

$$AEDI = \int (\beta_0 + \beta_1 MICROINFO + \beta_2 MACROINFO + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 ABNORMALS + \beta_6 EARNDECR + \beta_7 NOA + \beta_8 OUTDIR + \beta_9 NEWOFF) \quad (1)$$

Where AEDI (i.e. Alternative Earnings Disclosure Indicator) is one if the company discloses an alternative earnings figure in their press release, zero otherwise.

While Myers' (1977) definition of firm value as a function of assets-in-place and growth options is apparent, its operationalization is less obvious. The market-to-book value has been commonly used to proxy for growth options in prior research to measure the level of informativeness associated with a company's asset structure (Gaver & Gaver 1993; Skinner 1993; Hossain, Ahmed & Godfrey 2005). Similar to Tasker (1998), who devised an aggregated four-measure informativeness variable, this paper uses the component score (*MICROINFO*) of the industry median of MTB value and the interquartile range of MTB value within a particular industry as measure for growth options. Previous studies based on MTB values suggest that it adequately reflects informativeness in different jurisdictional settings (see Wong & Wong 2010 for a New Zealand based study) and across time (see Skinner 1994 for one of the earlier IOS studies).

As noted earlier, Collins et al. (1997) found a temporal decline of the informativeness of earnings, while Barton et al. (2010) provided conclusive evidence that the value relevance of financial statements items varies across different economic circumstances and accounting regimes. To extrapolate these effects, the two residual measures in Tasker's (1998) study: (1) R-squared from the regression of earnings and book values on market capitalization (Ohlson 1995), and (2) the industry median of annual average operating revenue growth for the past three years have been transformed into a separate informativeness measure, which is labeled *MACROINFO*. The terms "*MICROINFO*" and "*MACROINFO*" have been chosen to reflect the respective subjectivity of these variables to macroeconomic influences.<sup>2</sup> While *MICROINFO* is expected to be largely unaffected by these factors, the explanatory power of *MACROINFO* may be significantly impaired.

Another design issue, which warrants closer consideration, is endogeneity, as already mentioned in section two. Endogeneity is the simultaneous interdependence of predictor and dependent variable (Watts & Zimmerman 1990; Mian 1996). For example, variations in firms' market-to-book ratios (i.e. informativeness) could be both cause and outcome of variations in firms' disclosure policies. That is, the level of disclosure may be caused by a firm's IOS, but at the same time, changes in disclosure levels may result in changes in IOS. Botosan (1997) provided conclusive evidence that increased disclosure reduces the cost of equity capital for a firm. This finding suggests that more forthcoming firms raise more equity capital at same costs or the same

<sup>2</sup> A principal component analysis has been performed resulting in these two informativeness components, which explain 89% of the total variance in the set of four measures.

amount of equity capital at less cost to pursue investments. Eventually, the increased proportion of realized investment opportunities in relation to growth options leads to a shift in IOS structure. The ambiguity in causality between a firm's disclosure policy and its financial statement informativeness requires the isolation of the exogenous part of informativeness, which is common to all firms of a specific industry, from the endogenous part, which is determined by the firm-specific disclosure policy. Hence, all informativeness measures are based on industry level. This approach removes any firm-specific disclosure decisions and is reflective of the effectiveness with which current accounting standards measure a company's core assets in a particular industry (Tasker 1998, p. 144).

All other variables in the model are control variables, as they represent several determinants of the disclosure of non-statutory earnings as suggested by prior literature:

*SIZE* and *GROWTH* proxies have been included as control variables, because prior empirical research indicated that mostly large and rapidly growing firms disclose alternative earnings (Walker & Louvari 2003; Lougee & Marquardt 2004). *ABNORMALS* are defined as items, which are part of the organization but are deemed to be of non-recurring nature, e.g. major bad debt write-offs or acquisition related expenses. Corresponding to evidence that the level of pro forma earnings is positively related to the occurrence of special items (Lougee & Marquardt 2004; Marques 2006), it is expected that firms, which report abnormal items, are more likely to disclose an alternative earnings figure. *ABNORMALS* are coded one if the firm reports non-zero abnormal items for the observed reporting period, and zero otherwise.

The next two variables measure the influence of any opportunistic disclosure motivation, which is associated with adjusted earnings (Doyle et al. 2003; Black & Christensen 2009; Elshafie, Yen & Yu 2010). The indicator variable, *EARNDECR*, which is one if current net income is lower than in the past period, is included to measure whether management disclosure decision is influenced by strategic earnings benchmarks (Burgstahler & Dichev 1997; Graham, Harvey & Rajgopal 2005), while *NOA* captures a firm's capability to absorb negative earnings surprises in accruals (Burgstahler & Eames 2006; Elshafie et al. 2010). Barton and Simko (2002) delivered conclusive evidence that the likelihood of greater positive or smaller negative earnings surprises decreases with the level of net operating assets, because net operating assets are the aggregated result of past accrual management decision. Hence, any current opportunistic decisions are curbed by the level of aggregated accruals of past earnings management decisions.

Marques (2006) demonstrated that the presence of strong corporate governance mechanisms is associated with a reduced level of alternative earnings disclosure. Hence, this paper uses *OUTDIR* as the percentage of outside directors to the total number of directors on the board. It is expected, that firms with a more independent board are less likely to disclose an adjusted bottom-line figure.

Finally, Tasker's (1998) results demonstrated that firms, which host a conference call as a disclosure medium, access the equity capital market more frequently. This can be attributed to the finding that managers change their disclosure behavior in periods prior to an equity issue (Healy, Hutton & Palepu 1999). To control for this capital market incentive, *NEWOFF* measures the proceeds of new equity issues during the year subsequent to the time period of this study to the firm's share capital at the beginning of that year (Hossain et al. 2005).

### **3.2 Data and Sample**

Companies listed in 2007 on the ASX All Ordinary index are examined. This time frame has been chosen to avoid any significant impairment of the generalizability of the results as a consequence of the Global Financial Crisis. Further, it is anticipated that the introduction of the voluntary disclosure recommendations by AICD and FINSIA in 2009 may influence the reporting pattern of companies. Annual earnings announcements issued between 30 March 2007

and 31 March 2008 were reviewed to see if a firm reported underlying earnings in 2007. Of the 493 listed companies, 134 have been removed from the sample, as they do not have a full set of financial information or did not issue a preliminary earnings announcement in 2007. This leaves 360 companies of which 171 disclose underlying profit figures in their earnings announcements and 189 do not.

The number of earnings announcements containing alternative earnings for the indicator variable *AEDI* is hand-collected by reading through each firm's earnings announcement individually. Alternative earnings were identified if the announcement included earnings that did not correspond with the reported earnings figure on the income statement. Labels such as "pro forma/pro-forma/proforma earnings/income/profit/loss", "earnings/net income excluding", "adjusted net income/loss", "recurring earnings", or "underlying profit" were usually an indication of an adjustment to the bottom-line figure. To measure the independent variables in the regression model, data is retrieved from three sources: (i) the Aspect Huntley FinAnalysis database for financial statement items; (ii) the Morning Star DatAnalysis database for earnings announcements and capital market data; and (iii) 2007 annual reports for the number of outside directors.

**Tab. 1: Industry distribution of sample**

<b>Industry</b>	<b>Number of Firms</b>	<b>Percent of Sample</b>	<b>Alternative Earnings Disclosed (% of firms in industry)</b>
Consumer	67	18,6%	29 (43%)
Energy	33	9,2%	18 (55%)
Financials	98	27,2%	57 (58%)
Health & Biotech	26	7,2%	11 (42%)
Industrial	61	16,9%	26 (43%)
Information Technology & Telecommunications	22	6,1%	12 (55%)
Mining	53	14,7%	18 (34%)
<b>TOTAL</b>	<b>360</b>	<b>100%</b>	<b>171</b>

Table 1 presents the distribution of the 360 companies in the sample by ASX sector classification. About 27 per cent of the companies in the sample are in the Financials sector, which forms the largest sector in Australia followed by Consumer goods (18,6%) and Industrial goods (16,9%). The smallest sector is Information Technology & Telecommunications (ITT) with 6,1% of the total sample. The last column of table 2 shows the number and percentage of companies that report adjusted earnings within their industry. The industry with the highest percentage of firms disclosing is the Financials sector followed closely by Energy and ITT. Alternative earnings disclosure is less frequent in the Mining sector with only 34%.

## **4 Results**

### **4.1 Descriptive statistics**

Table 2 presents the measures of financial statement informativeness by industry. The median market-to-book values (MTB Median) range from 1,48 for Financials to 3,15 for Health & Biotechnology, which means that Financials firms have more informative financial statements than companies from the Health and Biotech sector. The interquartile range of MTB values support the findings of the MTB Median, clearly showing that especially the ITT and Health

sectors have low informativeness with values of 4,39 and 6,71 respectively.

According to the R-squared values accounting numbers explain much of the variation in market capitalization in the Mining, Financials and Health and Biotech sectors, but are less informative for the Industrials and ITT sectors, which is partly reflected in higher growth rates for these industries, for example Mining grew by 34% closely followed by the Health sector with 33%. The apparent contradiction between market to book values and R-squared as well as industry growth can be explained by considering the economic outlook in 2007. For example, Australia experienced a significant growth in the Mining sector fuelled by high commodity prices in 2007. Since high business risk enterprises, such as Mining or Health and Biotech, mainly rely on equity capital for funding, a closer alignment of their market and book values is explained by the expedited growth in equity capital. This supports the expectation made earlier, that the *MACROINFO* measure is susceptible to temporal and economic change. The macroeconomic sensitivity of this measure may compromise its explanatory power. The discrepancy in informativeness values across industries shows that current reporting standards measure core performance for different industries with varying effectiveness.

**Tab. 2: Industry level descriptive**

Industry	Median MTB	MTB Range	MICRO-INFO	R-squared	Median Industry Growth	MACRO-INFO
Consumer	2,68	3,60	0,14	0,51	8,9%	-1,44
Energy	2,68	3,41	0,55	0,44	32,3%	0,24
Financials	1,48	1,95	-1,46	0,87	20,5%	0,42
Health & Biotech	3,15	6,73	1,89	0,84	33,0%	1,24
Industrial Information	2,61	3,31	0,23	0,37	20,7%	-0,64
Technology & Telecommunications	2,92	4,39	1,08	0,35	22,2%	-1,05
Mining	2,95	3,66	0,54	0,91	34,1%	1,46

Descriptive statistics for the continuous variables are provided in Table 3. The mean of zero and the standard deviation of one for both *MICROINFO* and *MACROINFO* reflect the standardized nature of the component scores. Due to the standardization, a score close to zero denotes an average informativeness level within the respective industry. Hence, the Financials sector is considered to be highly informative with a score of -1,46 for *MICROINFO* bearing in mind that one of the underlying measures is the market-to-book value, and high market-to-book values indicate lower levels of informativeness. *MACROINFO* is interpreted in the same manner. The descriptive statistics indicate that the variables *SIZE* and *GROWTH* are substantially skewed in the sample with the mean largely deviating from the median. Operating revenue (*SIZE*) shows considerable cross sectional variation, as the sample contains very small companies through to very large companies. However, the variables *OUTDIR* and *NEWOFF* are considerably less skewed in the sample. On average, 60% of Australian boards were independent directorships and new equity issues contributed only 4% to the existing share capital in 2007.

**Tab. 3: Descriptive Statistics of continuous variables**

	Mean	Median	Std. Deviation	Minimum	Maximum
<i>MICROINFO</i>	0,00	0,23	1,00	-1,46	1,89
<i>MACROINFO</i>	0,00	0,24	1,00	-1,44	1,46
<i>SIZE</i> (in \$ million)	1 782,13	288,20	5 050,48	0,00	47 066,10
<i>GROWTH</i> (in %)	6,75	0,21	59,95	-0,75	996,98
<i>NOA</i> (in %)	29,85	0,42	240,65	-6,58	3 898,29
<i>OUTDIR</i> (in %)	0,60	0,60	0,22	0,00	1,00
<i>NEWOFF</i> (in %)	0,04	0,00	0,21	0,00	2,50

## 4.2 Logistic regression

The logistic regression results for the alternative earnings disclosure dependent variable (*AEDI*) are shown in Table 4. All independent variables were entered simultaneously. A test of the full model with all independent variables against a constant-only model is statistically significant ( $\chi^2 = 47,12$ ,  $df = 9$ ,  $p < 0,05$ ), indicating that the independent variables as a set provide a more explanatory model for the disclosure of adjusted bottom-line figures. The full model explains 16% of the variance in disclosure status and correctly classifies around 63% of cases in the sample. The model classifies both categories (0 for non-disclosing, and 1 for disclosing companies) with the about the same accuracy of approx. 60%.

Table 4 also shows the coefficient, Wald test statistic, significance and odds ratio for each independent variable. As predicted, the *MICROINFO* coefficient is significant. The results indicate that disclosing alternative earnings is more probable if companies are from an industry in which financial statement informativeness is relatively low. Inverting the odds ratio for *MICROINFO* suggests firms in industries in which current financial reporting standards measure core assets succinctly, are twice as likely NOT disclosing an alternative bottom-line figure. The coefficient for *MACROINFO* is not significant in this setting, which supports the assumption that macroeconomic factors lessen the explanatory power of these measures. The coefficient for *SIZE* is significant at a 0,05 level in the predicted direction. That is, larger firms are more likely to disclose a non-statutory earnings figure in their preliminary results announcement. As expected, the coefficients for *EARNDECR* and *ABNORMALS* are significant and indicate that disclosing alternative earnings is more likely in situations in which firms report a statutory decrease in earnings or non-recurring items. The significance of *EARNDECR* is reflective of potential opportunistic disclosure incentives as discussed in section two.

However, the insignificance of *NOA*, which measures the accrued effect of earnings managed in the past, does not support this finding. Companies do not seem to be restrained by their level of accruals, which contradicts the supposition that alternative earnings disclosure is opportunistically motivated. Additionally, it appears that companies do not devise earnings adjustment as a communication strategy to advertise new capital offerings, as *NEWOFF* is not significant. Finally, *OUTDIR* and *GROWTH* are not significant determinants of adjusted bottom-line earnings disclosure in this sample.

**Tab. 4: Logistic regression of independent variables on alternative earnings disclosure (AEDI)**

<b>Variables</b>	<b>Pred. sign</b>	<b>Coefficient</b>	<b>Wald test</b>		<b>Odds Ratio</b>
<i>MICROINFO</i>	-	-0,397	10,567	**	0,672
<i>MACROINFO</i>	-	0,006	0,003		1,006
<i>SIZE</i>	+	0,081	5,389	**	1,084
<i>GROWTH</i>	+	0,000	0,058		1,000
<i>ABNORMALS</i>	+	0,752	9,965	**	2,121
<i>EARNDECR</i>	+	0,602	5,591	**	1,826
<i>NOA</i>	-	-0,006	1,412		0,994
<i>OUTDIR</i>	-	0,590	1,217		1,804
<i>NEWOFF</i>	+	0,141	0,066		1,151
<i>Constant</i>		-2,414	11,630		0,089
$\chi^2 / df$	47,12	9		**	
Nagelkerke R <sup>2</sup>	0,164				
% correctly classified	63,1				
<i>n</i>	360				

\*\* Significant at the 0,05 level

Variables definitions:

<i>MICROINFO</i>	Component score of Median MTB and Interquartile range of MTB
<i>MACROINFO</i>	Component score of R-squared and Median Industry Growth
<i>SIZE</i>	Log of operating revenue
<i>GROWTH</i>	Annual average of operating revenue growth for 2004-2006
<i>ABNORMALS</i>	1 if abnormal items were reported in 2007, 0 otherwise
<i>EARNDECR</i>	1 if earnings decreased from 2006 to 2007, 0 otherwise
<i>NOA</i>	Net operating assets as defined by Barton & Simko (2002) divided by Operating Revenue
<i>OUTDIR</i>	Percentage of outside directors on the board
<i>NEWOFF</i>	Proceeds of new share issues to share capital (%)

## 5 Conclusions

This study has examined factors explaining voluntary disclosure of non-statutory profit in annual earnings announcements of Australian listed companies. To provide more generalizable results, I tested the informativeness hypothesis in 2007, which was before the Global Financial Crisis unravelled and prior to the introduction of the AICD/FINSIA disclosure principles. The results supported our suggestion that the information content in financial statements varies significantly across industries, and therefore, may provide an incentive to disclose an alternative earnings figure.

I found support for agency theory in the context of alternative earnings disclosure. Firms may face an underinvestment problem due to information asymmetry as a result of the restrictiveness of communication within the regulated financial statements, which is reflected in the gap between their market capitalisation and book values. Therefore, these firms turn to alternative disclosure options to overcome the information asymmetry gap. However, the interpretation is not clear-cut, as I found limited support for the opportunistic disclosure of underlying profit.

Firms facing an earnings decrease are likely to disclose modified earnings. The level of accruals found in net operating assets is not significantly related with non-statutory earnings disclosure suggesting that managers decide to disclose alternative earnings independent of earnings management considerations.

Finally, I have provided a refined measure of informativeness based on the consideration of macroeconomic factors. The disaggregation of the original four component measure of informativeness as used by Tasker (1998) into two components offers support for Myers (1977) theory of IOS structure and identified the Median Industry MTB and the interquartile range of Industry MTB as the more robust measure of financial statement informativeness.

This study has several limitations. Firstly, it is confined to an examination of whether a company disclosed an underlying profit figure or not. A closer investigation of the disclosed earnings figure is expected to yield further insights into the motivation of disclosure, and more importantly into the quality of such disclosure vehicles. Hence, future research may wish to consider examining the quality of alternative earnings disclosures. Secondly, while this study offers strong support for the informativeness hypothesis, it still leaves room for other explanations such as potential strategic disclosure considerations. The consideration of adjusted earnings in a different theoretical context may triangulate the proposed views from agency theory, and, therefore, offers another prolific area for future research.

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# *Financial Statement Informativeness and Alternative Earnings Disclosure in Australia*

## **Summary**

This paper uses alternative earnings reported in earnings announcements issued by Australian firms to investigate whether companies from an industry, which is characterized by a lower level of informativeness are more likely to produce incremental earnings information. After controlling for other determinants of alternative earnings disclosure, I find that industry informativeness is significantly negatively related with alternative earnings disclosure. This finding supports the incremental information perspective of agency theory, which suggests that the managers have an economic incentive to close the information asymmetry gap.

**Key words:** Pro forma earnings; Voluntary disclosure; Informativeness; Investment opportunity set, Agency theory.

**JEL classification:** M41.



# The Accountancy Profession in the XXI Century

*Alexandra-Daniela Socea\**

## 1 Introduction

The paper intends to identify the role of the accountancy profession in the context of the XXI century. Such an approach requires first a few clarifications on the concept of the accountancy profession: meanings of the term, similarities and differences compared to other professions, etc. We consider also issues concerning the regulation of the accountancy profession, some aspects of the accountancy profession ethics, the profession's challenges.

Considering the implications of the accountancy profession throughout the economy, the topic is one of present interest. The approach is based on consulting the literature and formulating personal opinions rigorously substantiated.

The humanity is presently affected by a global financial crisis. Bankruptcies of large companies, small companies decline or extinction, significantly reducing revenues, increasing unemployment and degree of indebtedness, outlines an economic situation characterized by instability and uncertainty. In the short term, there is no magic formula for such complex problems. Faced with such circumstances, the accountancy profession could not stay immune. We consider that it occupies an important place in economic and social life.

The synthesis and accounting reporting documents represents a business card, and the professional accountant is its artisan. The enterprises development depends on their cost of capital, and the latter depends on the confidence in financial information, the quality of professional accountants work.

## 2 Some aspects concerning the accountancy profession

A profession is individualized based on certain characteristics, which include the following elements:

- mastery of intellectual skills acquired through training and vocational education;
- adhesion by its members to a common code of values and behavior, set by the professional body, which includes maintaining an image, essentially objective;
- accepting the existence of duties to society.

Experts consider that the accountancy profession concept can be approached from two points of view (Florea - Boulescu, 1994, p. 54):

- **in the wider sense**, the accountancy profession includes all economic experts, whose activity is wholly circumscribe or at least preponderant the applied accounting, namely: people who lead and organize the accounting of economic agents, financial and accounting departments workers, administration control bodies, persons authorized to verify, analyze and evaluate the accounting work and certify its regularity and sincerity;
- **in the narrow sense**, the accountancy profession refers only to dedicated professionals and public certified by administrative authorities or official business court, performing inspection and certification of annual accounts, accounting advisory, supervising of the economic agents management, judicial and extrajudicial accounting expertises.

We also mention that the accountancy profession means, increasingly, the liberal accountancy

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profession, that profession pursued by liberal professionals, or defined through a more accurate expression of self-employed accountants.

Liberal professions are seen as independent professions, non-commercial, unconnected with any speculative spirit, set in bodies, companies or rooms with self-regulatory and disciplinary powers, socially recognized by promoting their own rules to execute their missions given in responsibility, but also the rules of professional ethics. (Botez, 2005, p. 36)

The accounting profession is distinguished from other professions by assuming responsibility for the public interest, stakeholders: shareholders, employees, suppliers, creditors, banks, budget, national accounts, stock exchange bodies, investors etc.

Professional accountants have a key role in regulating economic systems. Limiting the regulation at two functions, reducing information asymmetry and increasing markets efficiency, it is easy to delimit the role of professional accountants: on the one hand, they are the ones that ensure reliability of accounting information, and on the other hand, they have knowledge and experience in different areas of enterprises management.

The influence and independence of the accounting profession is an important indicator of the effective enforcement of accounting standards. The Body of Expert and Licensed Accountants of Romania (CECCAR - Corpul Expertilor Contabili si Contabililor Autorizati din Romania) is the organization representing the Romanian accountancy profession. Organized along European models, it experienced a rapid growth in the last decade to become a solid organization with more than 50,000 accountancy professionals, 7 of which about 10,000 work as accountants or auditors. The constant development of the accounting profession leads us to predict an increase of the quality of financial reporting in Romania. (Filip - Raffournier, 2011, p. 87)

### **3 The accountancy profession regulation ... a necessity?**

How the accountancy profession should be regulated has been the subject of many debates in recent years. There have been many changes, because the accountants, their clients, the professional bodies and the governments want to ensure that the accountancy profession continues to provide high quality services and contributes to global economic growth and development.

While individual members of the accountancy profession have an obligation to serve the public interest, professional bodies have a specific responsibility and an essential role that can be found in the three fundamental objectives of the professional bodies (Toma - Potdevin, 2008, p. 87):

- education: ensuring continuous professional development of their members;
- ethics: deontological behavior of their members;
- quality: certification of services quality of their members.

To achieve these objectives, the professional organizations should support and promote high-level professional practices, including through legislation, to their members. A profession, in general, is defined and judged by the knowledge, skills, attitudes and ethics of those involved in this profession. The regulation of a profession is a definite answer to the need for reliable standards, performed by the members of that profession. The need for regulation and its nature depends on:

- the profession itself, its ability to effectively and efficiently meet economic and social demands;
- the market conditions where the profession activates;
- the quality of services provided by its members.

The regulation of the accountancy profession covers the following areas: the access requirements and the certification or licensing, the continuing education requirements, monitoring the behavior of professional accountants, the professional and ethical standards, the disciplinary systems and procedures.

A well-drafted legislation will provide the assurance that the nature and quality of accounting services meet both beneficiaries' needs and those of the economy in general.

We appreciate that the legislation is important, but not sufficient and may not be fully effective unless it is accompanied by a professional accountant's ethical behavior, which ultimately is the guarantee of good services and quality.

#### **4 Deontology and ethics – premises of quality**

The accountancy profession is characterized by a balance between theory and professional experience, resulting from the values that shape the nature of this profession: a profession with special responsibilities for the values management and the decisions concerning the company's management. The accountancy profession is (Rada, 2009, p. 76):

- *an art*, as assumes by those who practice a number of personal qualities, special capabilities, which develops skills and abilities through education, and forms the necessary talent to act in a variety of situations;
- *a science*, because it developed over time personal ideas, principles and operational concepts;
- *a profession*, because it takes into account all the attributes of a profession: a body of expertise, common values and symbols, a long-term activity serving the needs of society, personal legal system and ethical dimension, a specific professional profile.

The accounting deontology expresses all the rules and practices governing the relations between the professional accountant, producer of the accounting information and its user. It is the art of exemplary performance of professional duties (Horomnea, 2010, p. 143).

The professional accountant must impose upon himself through deontological behavior, a working manner compatible with good reputation of the profession, avoiding any activity that might harm this reputation. The professional accountants behavior must be based on: integrity, objectivity, independence, professional secrecy, professionalism and professional competence.

*Integrity*, as a basic principle, expresses conceptual the requirement of the professional accountant to show honesty and uniformity in the professional and business relationships.

*Objectivity* is the expression of professional obligation not to compromise the image of the profession because of errors, conflicts of interests, undue influence and pressures of the external environment.

*Professional competence and prudence* refers to the professional accounting incumbency to hold a solid level of knowledge, which ground in a responsible manner the professional reasoning underlying the opinions expressed by this one. The observance of this principle implies a steady approach of the professional accountant, oriented towards maintaining professional knowledge and skills, so that users can be assured of a perfect professional competence.

*Confidentiality*, as a principle, imposes to professional accountants the refrain from using confidential informations during execution of the mission, for personal or third person advantage, as well as the disclosure of confidential informations outside the organization.

*Professional behaviour* requires equally honor and loyalty, the obligation of professional accountants to comply with relevant laws and regulations and to avoid actions that may discredit

the accountancy profession.

Professional ethics does not allow unfaithfulnesses or violations, the person who commits such a deed is not a professional who is wrong; it's just a person who does not act like a professional (Del Valle, 2008, p. 32).

## **5 Challenges of the accountancy profession**

The accountancy profession has seen remarkable progress, but nonetheless experienced a period of crisis, has lost some credibility as a result of ethics mistakes and errors of government of the world's largest companies such as Enron, WorldCom or Parmalat.

The accountancy profession faces a number of changes in attitudes, which are challenges to be taken into consideration, both by the normalized and professional bodies. (Botez, 2005, p. 120)

One of these challenges concerns the elaboration of accounting standards and requires the substantiation of normalization process based on principles rather than rules. A principles-based approach requires that both companies and their auditors should exercise the professional discernment in public interest. Clear principles, supplemented by certain rules of proper application in particular cases, provide more benefits as conceptual basis for issuing standards than detailed rules.

Another challenge relates to the needs of global financial information, reflected in the shift from the concept of harmonization to convergence.

A third challenge concerns a new approach of the position of professional accountants independence and an increased attention to compliance with principle of integrity deontology.

Also a challenge is implementing the concept and operation of ever larger corporate governance mechanisms. The concept of corporate governance defines the whole principles, rules and regulations which ensure the management of enterprises, in the interests of current and potential investors in those entities.

Another challenge relates to the impact of new developments in information technology on the accountancy profession. The new companies' aspiration is to become "intelligent". The intelligence sought by the modern economy is a substitute for human intelligence, or assist the latter.

The modern enterprise will operate in a global computerized environment. The company's accounting information system, defined as the set of human and capital resources from an organization that deals with the preparation of accounting informations and also collecting and processing economic transactions, will become more computerized and will be based on an information system with a growing share (Oprea, 1995, p. 59).

For the accountancy profession, the acquisition of skills in line with modern technologies is essential.

## **6 Conclusions**

Professional accountants provide a representation of business reality, which underlies the decision-making process and influence the distribution of wealth in society. Although they represent private interests of a client, they must take into account the social mandate given under which they exercise their profession.

Professional accountants should act in the public interest to contribute to a fair distribution of wealth between different social actors, thus providing a climate of confidence for the society in the accounting information and business environment (Ionaşcu, 2006, p. 529).

The accountant is regarded in the literature as a professional of the information in conjunction with the existing economic model at a time in society. The professional accountant relationship with society and implicitly, the business environment is dynamic. Therefore, he must pay attention to changes that have occurred in the economic environment, to maintain his social statute. Some studies examine the potential for continued professional accountant statute in society (Elliot - Jacobson, 2002, p. 75). In this context, the elements that define a profession are: the holding of practical skills based on theoretical knowledge, ensuring professional training, skills testing, the profession organisation, adhering to a code of ethical behavior, etc. Of these, the knowledge held is shown as the main underlying attribute of a profession.

There are three trends that characterize the world's accounting profession today (Ionașcu, 2006, p. 537):

- the formation of an “universal” professional accountant, on the globalization background of accounting normalization;
- the increasing role and responsibility of the professional accountant in the enterprise efficient governance;
- the professional judgments importance in producing and reporting the accounting information.

The specialized studies highlight the importance of accounting in enterprise governance (Trébucq, 2005, p. 56). We consider that between company governance and accounting, as the main source of information there is a biunivocal connection, meaning that the governance mechanisms ensure the reliability of accounting information and a quality information enables an effective governance.

We believe that, although the elaboration of a company's accounting image involves more than one part, the professional accountant continues to fulfill a major role in producing and reporting the financial and accounting informations. In the professional practice, he must take into account the deontology and good application of the rules and professional judgments based on shaped reality.

In the context of business globalization, we find out that contemporary accountancy profession crosses a process of conversion, with the aim of forming a “universal” professional accountant (Ionașcu, 2006, p. 540). This will build the accounting image of the company, relying on a regulatory accounting referential applied on a global scale, aiming to provide quality informations.

As environmental sustainability and social and economic performance have become vital business concepts, the accountancy profession must be in line with the tasks of providing the services needed for reporting and for ensure reporting on corporate social responsibility (Del Valle, 2008, p. 35).

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## ***The Accountancy Profession in the XXI Century***

### **Summary**

There is no human progress without the development of markets, and this implies the existence of professional accountants. Therefore, accountants satisfy general interest. The financial and accounting scandals that culminated with the collapse of large corporations have had an important impact, on the economy and the accountancy profession, at international level. Accounting information quality degradation as a result of such events led to the deterioration of the specialists' image. The globalization of world economy requires that the accountancy profession to be prepared for the future, to cope with a set of priorities aimed at ensuring proper communication, able to meet the requirements propagated to and by the users of financial accounting information. By its nature and objectives, the accountancy profession has a responsibility in the complex world of business. In the context of the global financial crisis with effects throughout the economy, the independence, integrity, objectivity and professionalism of the specialist, that produces the accounting information, are absolutely necessary. Essential for the health of the economic environment, these values lead to true and fair view and generate the credibility of business partner.

**Key words:** Accountancy profession; Regulation; Deontology.

**JEL classification:** M41.

# Accounting for Construction Contracts under IFRS and CAS: Limitations in Assuring the True and Fair View

*Barbora Svobodová\**

## 1 Introduction

IAS 18 *Revenues* applies to accounting for revenues that originate from the following sources: (1) sale of goods, (2) rendering of services and (3) use of the entity's assets by others, yielding dividends, interests and royalties. IAS 11 *Construction contracts* was released to address the issue of rendering services based on a long-term contract (i.e. a contract that spans a number of accounting periods). The current Exposure Draft on revenue recognition aims to change the revenue recognition principles which will also impact the accounting for construction contracts.

On the contrary, the Czech Accounting Standards do not provide any guidance on accounting of construction contracts and thus several approaches are possible.

This paper discusses the accounting for construction contracts under both the International Financial Reporting Standards (IFRS) and the Czech Accounting Standards (CAS). It focuses on the areas in which the creative accounting practices may be used by the management to create a desirable view of the Company's performance. It stresses what the auditor should be aware of in order to provide a reasonable assurance to the financial statements' users.

## 2 IFRS

IAS 11 defines the construction contract as a "contract specifically negotiated for the construction of an asset or a combination of assets that are closely interrelated or interdependent in terms of their design, technology, and function or their ultimate purpose or use" (IASB 2010).

At the reporting date, the entity should recognize the expenses and the revenues (and therefore the profit) with reference to the stage of completion of the asset, provided that the outcome of the contract, the total contract cost and the stage of completion of the asset can be measured reliably. If the conditions are not met, the method referred to as "zero profit" must be used. Under that method, the revenue is recognized only to the amount of expenses incurred. The contract profit is not recognized until the contract is completed.

The standard prescribes three methods for the percentage of completion (POC) determination, among which the cost-to-cost method is the most popular in practice. The POC is determined as the proportion of the contract cost incurred to the estimated total contract cost. The invoicing or the advance/progress payments from the customer are not a measure of POC.

The following discussion focuses on the most problematic areas of IAS 11 and the cost-to-cost method, stressing the critical issues for an auditor.

### 2.1 Reporting flexibility

IAS 11 lacks exact guidance in many areas, which allows the Companies to apply the reporting principles with flexibility. On one hand, this facilitates the reporting entity to account for the transactions in accordance with their true substance and to make the best of this flexibility to provide the truth and fair view of the Company's activities. On the other hand, the freedom in application of the IAS 11 principles may lead to the reporting of consciously misleading figures

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aiming to influence the decisions of the financial statement users.

Further, the flexibility leads to incomparability of the financial statements within the construction industry (Krupová 2010). This fact intensifies the importance of relevant disclosures the reporting entities should make in respect to the construction contracts.

Under an earlier version of IAS 11, both the POC method and the zero profit approach were considered acceptable alternative methods (Epstein 2010). The current standard prescribes the use of the zero profit approach only in the cases where the conditions for the POC method are not met. The fact that each of the methods can be used under another set of conditions means that the Companies have less flexibility in choosing the accounting method and, therefore, in influencing the revenue recognition timing.

## **2.2 The use of estimates**

The stage of completion of a contract is an accounting estimate as defined by IAS 8 *Accounting policies, changes in accounting estimates and errors*. A change in the accounting estimate is accounted for prospectively, i.e. the change is booked to profit and loss account in the actual period. Such estimates are thus susceptible to creative practices.

The use of the POC method requires the Company to estimate the total contract revenues and the costs to complete the project.

### **2.2.1 Contract revenues**

The total contract revenues are volatile in the construction industry (the orders are often subject to changes; incentive payments are involved etc.). The existence of revenues is essentially tested through vouching them to the supporting documentation, primarily to the contracts with customers.

Difficulties may arise when the auditor has to evaluate whether the revenue is probable. This includes situations in which variations, claims and incentive payments are involved. They represent changes in the scope of work indicated by the customer (variation), reimbursement of costs not included in the contract price (claims) and additional payments to the contractor for meeting the specified performance measures (incentive payments). All of them can form a part of the total contract revenue, provided it is probable that they will result in revenue and the revenue can be measured reliably.

In general, the variation and the claim form part of the contract revenue if it is probable that the customer will be agree to pay for them (however the claim can be also requested from a third party or depend on a law suit result).

It is very difficult to assess the probability that the Company will meet the performance targets. The project has to be in an advanced stage of completion and the contractor needs to provide the auditor with a detailed budget which supports the assumption that the performance standards will be met or exceeded.

#### **Example 1:**

The Company ABC undertakes the construction of a show room for a customer. The construction spans two accounting periods. The contract revenue is 75 and the handover date set in the contract is 15 March 20X1. The Company is entitled to the incentive payment of 2 for each week the hand over will occur sooner than expected. As of 31 December 20X0, the Company expects the works to be finished as of 1 March 20X1 and includes the additional revenue of 4 into the total revenue partly recognized according to POC at the year-end. However, due to unexpected complications with the site finishing, the Company didn't complete it before the deadline of 15 March 20X1. The incentive payment was not granted.

The Company reported the following figures:

	20X0	20X1
Expected contract revenues	79	75
Cumulative costs incurred at the year-end	40	50
Estimated costs to complete	10	0
POC	80%	100%
Expenses	40	10
Revenues	63,2	11,8
<b>Recognized profit</b>	<b>23,2</b>	<b>1,8</b>

The Company should have reported the following figures (the incentive payment should not have been included in the total revenues, POC remains unchanged):

	20X0	20X1
Expected contract revenues	75	75
Expenses	40	10
Revenues	60	15
<b>Recognized profit</b>	<b>20</b>	<b>5</b>

By overstating the total revenues, the Company can inflate the profit recognized in the current year, that means the recognition of a premature revenue (In 20X0, ABC recognized  $80\% \cdot 79$  instead of  $80\% \cdot 75$ ). As the project was in an advanced stage of completion as of the year-end 20X0 ( $40 \div 50 = 80\%$  was finished), the greater part of the expected incentive payment was reported in 20X0 (3,2 out of 4). In fact, the Company could reach a desirable level of profit reported in the current year by deliberately shifting the expected hand over date. For example, if the Company ABC needed to report in 20X0 an additional profit of nearly 5, it could have “expected” the completion of the asset on 21 February 20X1 (e.g. three weeks before the deadline,  $3 \times 2 = 6$ , of which  $6 \times 80\% = 4,8$  would be recognized in 20X0).

### 2.2.2 Estimated cost to complete

Considering that the length of the construction period could be up to several years, the changes in input prices or other unexpected events can impact the total contract costs considerably. In order to assess the reliability of the total estimated contract costs, the auditor carries out an analysis of the already completed projects to evaluate the historical accuracy of estimates.

It is important to stress that no audit procedure excepting involvement of industry professionals in the audit can confirm that the reported stage of completion is in conformity with reality.

### 2.3 Contract costs

If the Company uses the cost-to-cost method to determine the stage of completion of an asset, the cost already incurred in the project is one of the critical variables. IAS 11 states the types of costs that can/cannot be included in the total contract costs. In general, the costs allocated by the construction contract have to be directly attributable to the construction activity or contractually reimbursable. To push up the stage of completion of the asset, the reporting entity may speed up the recognition of the cost incurred in the contract (e.g. by treating the whole amount of prepaid insurance as contract cost at the moment of the payment, instead of booking it as prepaid expense) or allocate extra costs, which should be expensed, to the contract (e.g. non-reimbursable selling expenses or depreciation of an asset not used for the particular asset construction). Therefore, the contract costs incurred during the period have to be tested not only for their completeness (which is an assertion typically focused on during the cost testing) but also for their existence. By overstating these costs, the Company would report higher (premature) revenues and thus higher profits in the current period.

The cost manipulation may include also reallocation of the cost from one (onerous) project to

another (a profit-making one). In this way, the Company is able to give an impression that no loss-making projects are undertaken and, additionally, doesn't have to recognize the loss on the contract at once, at the moment it's discovered (IAS 11 prescribes any expected loss is recognized immediately, irrespective of the stage of completion of the contract).

### Example 2:

The Company ZYX undertakes two projects – Project A and B. Both projects have three years duration. The details of the budgeted costs and revenues are outlined below:

Project	Revenue	Costs per year			Profit
		1	2	3	
A	220	50	70	60	40
B	100	40	30	20	10

By the end of the year 1, the price of a material used in the Project B unexpectedly increased on the world market. The increase was substantial and turned the whole project into a loss of 15 (i.e. the total project costs increase is 25). The expected cost in year 2 and 3 will be 45 and 30 respectively.

Let's assume that the actual project costs and revenues did not differ from the budgeted figures (with the exception of the price increase).

The projects should be accounted for as follows:

#### Project A

Year	1	2	3
Cumulative costs incurred at the year-end	50	120	180
Estimated costs to complete	130	60	0
POC	28%	67%	100%
Expenses	50	70	60
Revenues	62	85	73
<b>Recognized profit</b>	<b>12</b>	<b>15</b>	<b>13</b>

#### Project B

Year	1	2	3
Cumulative costs incurred at the year-end	40	85	105
Estimated costs to complete	75	30	0
Expenses	40	45	30
Revenues	40	45	30
<b>Loss recognized immediately</b>	<b>15</b>	<b>-</b>	<b>-</b>
<b>Total profit or loss for the period</b>	<b>-3</b>	<b>15</b>	<b>13</b>

The Company should recognize the whole expected loss from the Project B at the end of the first year. As a result, a total loss is reported in this year. In the years 2 and 3, the revenues are recognized to the extent of the costs incurred.

If the Company undertakes the cost reallocation, the total expected costs of the Project A will be 205 (180+25) and the costs incurred at the year-end will be higher in year 2 and 3 by 15 and 10 respectively:

### Project A

Year	1	2	3
Cumulative costs incurred at the year-end	50	135	205
Estimated costs to complete	155	70	0
POC	24%	66%	100%
Expenses	50	85	70
Revenues	53	92	75
<b>Recognized profit</b>	<b>3</b>	<b>7</b>	<b>5</b>

### Project B

Year	1	2	3
Cumulative costs incurred at the year-end	40	70	90
Estimated costs to complete	50	20	0
POC	44%	77%	100%
Expenses	40	30	20
Revenues	44	33	23
<b>Recognized profit</b>	<b>4</b>	<b>3</b>	<b>3</b>
<b>Total profit or loss for the period</b>	<b>7</b>	<b>10</b>	<b>8</b>

The total profit for the three project periods remained unchanged (25), but, by using the creative accounting practices in the second case, the Company was able to

- Defer the recognition of the project B loss and, subsequently, smooth the total profit (7, 10, 8 versus -3, 15, 13 if the loss was recognized immediately)
- Offset the loss from the Project B with the Project A profits of the years 2 and 3 so that the Project B seems to be profitable.

Similarly, the Company may wish to conceal that a loss on a project is expected. The project is accounted for as a profitable one and the loss is not reported until the project is finished. To prevent such situation, the auditor should analyze the accuracy of the budgets of the projects already finished (to verify that the budgets conform to the reality). This helps to assess the reliability of the client's budgets and therefore the extent of audit procedures necessary to carry out in respect to the actual projects. However, it is extremely difficult to prove that the client is concealing some facts that indicate the particular project will be unprofitable.

## **2.4 The retention**

One of the frequently cited insufficiencies of IAS 11 is the lack of actual guidance on some important industry specific topics, such as the retention.

The common practice in the construction industry is that the buyer does not pay a full price for the asset upon its completion but retains a certain amount referred to as retention. The retention is a percentage (usually 5-10%) of the contract price with a deferred due date (depending on the contract – e.g. three years upon the contract completion provided the revealed defects on the asset have been removed by the constructor).

IAS 18 prescribes the revenue should be measured at the fair value of the consideration received or receivable. When the consideration is deferred, there is a difference between the fair value of the consideration and its nominal value. This difference has to be recognized as interest revenue. However, IAS 11 does not provide any guidance on accounting treatment of the retention which is, by nature, a long term receivable and therefore should be discounted as it contains an interest element representing the time value of money.

The International Financial Reporting Interpretations Committee (IFRIC) Interpretation 12 on private-to-public service concession arrangements also relates to IAS 11. The Interpretation suggests that the consideration received or receivable by an operator are recognized at its fair value. This approach is inconsistent with IAS 11, which does not contain any reference to the fair value, and the receivables/payables related to construction contracts are recognized at their nominal values. IASB should make clear which approach should be used. Discounting the receivables and payables in respect to construction contracts would be theoretically right, however, the complexity of such contracts causes this approach to be impractical. Nevertheless, it seems to be appropriate to use some discount method when recognizing the retention receivable.

**2.4.1 Suggested solution**

The retention amount can be divided into two parts:

1. Its fair value which will be included in the total contract revenue and recognized according to the stage of completion of the asset
2. The interest which will be recognized during the periods following the asset completion until the final payment of the retained amount.

The fair value of the retention amount would be ascertained by discounting the future consideration using an imputed rate of interest. This will correspond to an interest rate for which the buyer could obtain a similar loan in an arm’s length transaction or to a rate that discounts the nominal amount of the contract to the price that the constructor would charge if the asset was fully paid upon its completion (i.e. the deferred amount was nil). I assume that the retained amount would normally be included in the last customers’ payment, even if the connected revenue is spread over the whole period of the asset construction. This simplification may be acceptable, considering that the receivables issued from construction contracts are normally not discounted as mentioned above.

According to the above solution, the interest is excluded from the total contract revenue and thus from the POC calculation. Any change in the expected interest rate during the contract lifetime impacts the total contract revenue.

**Example 3:**

The Company XYZ entered into a three year construction contract with the following characteristics:

Contract revenue (the total consideration receivable)				1 200
Retention as a percentage of contract revenue (payable 3 years after the asset handover)				10%
Year	1	2	3	
Cumulative costs incurred to the year-end	250	450	800	
Estimated costs to complete	500	300	0	
Forward interest rate <sup>1</sup>	4%	5%	4,5%	

**Solution:**

The Company XYZ would report the following amounts of revenue in the years 1-6:

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<sup>1</sup> The actual interest rate in year 3.

Year	1	2	3	4	5	6
Retention – FV	106,7	103,7	105,2			
Retention – interest	13,3	16,3	14,8			
Expected contract revenue	1 186,7	1 183,7	1 185,2			
POC	33%	60%	100%			
<b>Revenues from services</b>	<b>391,6</b>	<b>318,6</b>	<b>475</b>			
<b>Financial revenues</b>				<b>4,7</b>	<b>4,9</b>	<b>5,2</b>
Cumulative receipts from customer <sup>2</sup>			1 185,2			1 200

*Calculations explanation:*

Retention (FV) =  $(10\% \times 1\,200) \div (1 + \text{fwd interest rate})^{\text{years to maturity since year 3}}$

Retention (interest) = 120 less Retention (FV)

Expected contract revenue = Considerations 1 200 less Retention (interest)

POC = Cumulative cost incurred at year-end  $\div$  Total expected cost

Revenues from services = POC x Expected contract revenue less Revenue recognized in previous periods

Financial revenues = Retention (FV) x actual interest rate in year 3 4,5%

In practice, it is difficult to estimate the forward imputed interest rate. However, “the best estimate” the Company will use to discount the retention amount would be more suitable than recognizing the whole retained amount as contract revenue which could be considered a premature revenue recognition and an improper revenue classification (revenues from the sale of services instead of the financial revenues).

The imputed rate of interest is to be reviewed at the end of each reporting period until the construction of the asset is completed.

## 2.5 The Revenue Recognition Project

The joint project of the International Accounting Standards Board and the Financial Accounting Standards Board (creator of the US GAAP) aims to provide a consistent and robust framework for the revenue recognition. The new principles should be applied in a variety of transactions across the industries. Even though the new standard will not impact the simple commercial transactions such as the ordinary sale of goods, the practices in the construction contracts area will be considerably affected.

The project introduces a contract-based approach where the revenue is recognized based on the fulfillment of the performance obligation identified within the contract. The performance obligation is satisfied when the customers obtain control over the constructed asset. Control can be evidenced in many ways (the legal title is not a requirement). For example, when the customer has an unconditional obligation to pay; has physical possession of the asset; participates in the design of the goods or service and has the ability to change it substantially during the construction etc. If the customer controls the work in progress as it’s being developed, the reporting entity will apply a ratable method of the revenue recognition (such as POC), but on the performance obligations basis.

<sup>2</sup> The invoice timing is not specified in this example

The reporting entity will identify the separate performance obligations within the contract (that typically consists of a bundle of tasks/phases). The task (goods, service) is regarded as a separate obligation if it is distinct. This means (1) the contractor or another entity sells identical or similar goods or services separately or (2) it could be sold separately; (3) the goods or services have distinct functions or (4) the goods or services have distinct profit margins as it is subject to distinct risk.

The total contract price is subsequently allocated to the separate performance obligations and the revenue is recognized when the performance obligation is satisfied.

This approach brings new estimation elements into the revenue recognition process:

- Identifying the separate contract obligations

The Exposure Draft provides examples of tasks that could be considered in the separate contract obligations as they are distinct (site preparation work, the actual construction, design services etc.). However, in practice, identifying the various performance obligations is a very judgmental process. It would be difficult for an auditor (who is not an industry professional) to assess the reasonableness of the client's solution that, however, is crucial for the revenue recognition.

- Allocating the transaction price to the separate performance obligations

This should be done based on the stand-alone selling prices of each performance obligation. If they are not observable, the Company must estimate them. This estimation needs to be done based on a risk level associated with each performance obligation. To confirm the reasonableness of such estimation would involve time-consuming research which is normally not possible to carry out as a part of the standard audit procedures.

Whereas IAS 11 focuses on the costs that drive the revenues calculation, the new standard focuses on the performance obligations. This can lead to a situation in which two transactions of the same substance (a house construction for a particular customer) can be reported differently: According to IAS 11, the house construction meets the criteria for the sale of services, as it „involves the performance by the entity of a contractually agreed task over an agreed period of time". The seller reports the revenue from that contract on the POC basis. Under the new standard, the revenue recognition model would depend on when the performance obligation is satisfied. If the seller satisfies his performance obligation only when the completed house is handed over to the customer, the revenue cannot be recognized until the handover takes place. If, however, the performance obligations are satisfied by adding labor and materials to the house controlled by the customer (the discussion paper provides an example of that house being situated on the customer's land), the revenue is recognized throughout the construction. The distinction between the two cases may not be very clear in practice. Although the majority of the construction contracts would probably fall into the second category, the reporting entity may be able to justify the use of the completed contract method (e.g. when it is suitable in respect of its profit smoothing activities).

The Exposure Draft was not well received by the construction contractor community (Lund, 2010), especially because it requires accounting for each performance obligation separately. Therefore, the work in progress reports need to be more detailed which will raise the additional costs (under the POC method, the whole contract is accounted for as one WIP item).

As noted above, one of the problems of IAS 11 is it does not assure the comparability of the construction companies' financial statements. It is questionable whether the new standard can enhance this comparability as the performance obligation method will be approached differently by each contractor.

The new standard should be finalized in the second quarter of 2011.

### **3 The Czech Accounting Standards (CAS)**

CAS do not provide any specific guidance on the construction contracts' accounting treatment. In general, the revenue recognition timing is not addressed within CAS and the transactions are preferably treated according to their legal form. This implies the revenue recognition in the construction contracts depends on the particular contract arrangements.

#### **3.1 Contract milestones**

If the contract stipulates the asset will be handed over in parts (i.e. the contract milestones are identified) and each milestone is invoiced separately, the reporting entity recognizes the revenue at the handover date as stated in the handover protocol duly signed by both contractual parties. In practice, it is necessary to test the revenue cut-off as the reporting entities sometimes tend to recognize that the revenue at the invoice date may be different from the handover date (cut off issues occur if each date falls into different reporting periods). This is often caused by a poor internal control/engagement monitoring system of the reporting entity. The uninvoiced work in progress (WIP) is reported as inventory valued at cost incurred at the reporting date.

From the point of view of an auditor, it is difficult to verify the valuation of WIP and the milestone approach can be therefore considered "creative-friendly".

#### **3.2 Partial invoicing**

The contract may stipulate that invoicing is done regularly (e.g. monthly) based on the actual work performed. Each invoice is supported by the list of completed works during the invoicing period.

This approach is probably the most appropriate regarding the truth and fairness of the accounting information: The invoicing can be considered a measure of the asset completion in this case (such contract would be described as "cost-plus" under the IAS 11 terminology). When auditing such a project, margin analysis helps to identify possible omissions (e.g. missing accruals at the end of the accounting period). No WIP inventory is reported.

#### **3.3 Completed contract**

In both of the above cases, the invoices could also be booked as deferred revenue, with the reference to the CAS No. 001, according to which the accounting transaction is completed when the delivery is accomplished. If the constructed asset is regarded as a whole, no revenue is reported during its construction and it's deferred until the contract is completed.

At the reporting date, the invoices issued should be shown as deferred revenue (liability) and the work in progress valued at cost as inventory. However, this approach is problematic due to the following reasons:

- When the revenue is deferred until the contract is completed, the accounting information does not provide the truth and fair view about the Company's level of activity during the reporting period.
- The reported profit is zero until the contract is complete and the Company's financial statements show high cumulative balances of work in progress and deferred revenue.

This approach is rarely used in the Czech accounting practice (Botek 2007).

#### **3.4 Tax interrelation**

Another problem is a close linkage between the Czech accounting rules and the measurement of taxable income. In some cases, the Company issues the invoices to the buyer without actually having incurred any cost in respect of the asset construction – it's a common situation in the public tenders. Such invoices have to be booked as deferred revenue. In practice, the reporting

entities are reluctant to show high balances of deferred revenue and therefore opt for booking the invoice directly to revenues (which is not a compliant but frequent approach). To reduce the consequently high tax base, the Companies tend to speed up the expenses recognition through the booking of accrued expenses. If such creative practices are used, the financial statements provide completely misleading information.

## 4 Conclusions

IAS 11 Construction contracts deals with the sale of services that span a number of accounting periods. As the substance of such transactions is a continuous sale, the revenue is recognized in reference to the stage of completion of the asset at the reporting date (provided the conditions for the use of the POC method are met). The determination of POC involves significant judgment and accounting estimates. This can be used not only to give the truth and fair view about the Company's activities but also to give a desired picture, i.e. to use the creative accounting practices. In general, the reliability of the stage of completion determined by the Company, and therefore the accuracy of revenues and expenses recognized in the current year, depends upon the reliability of the Company's budgets.

IAS 11 lacks sufficient guidance on many industry specific topics. This paper discusses the issue of the retention discount and proposes a model that reflects the fact the retention is a deferred payment which includes the interest element and therefore should not be recognized as revenue immediately upon the contract completion.

A new standard on the revenue recognition is being prepared. The advantage of this standard is it introduces the universal principles, applicable for both sale of goods and sale of services and thus removes the current inconsistencies. However, its application in the construction contracts area may be difficult. It requires the Company to decide when the control of the asset/service result is transferred to the buyer (based on the contract conditions) and if that happens continuously, the reporting entity has to identify the separate performance obligations within the contract and to allocate the contract price to those obligations. It involves an extensive use of the estimates and will increase the compliance costs.

Under CAS, there is no clear guidance for construction contracts accounting. The revenue is recognized according to the contract arrangements, on milestones or a progress invoicing basis. The completed contract method could be also applied; however, it's rarely used. The interrelation of the tax and the accounting systems was identified as a limitation in achieving the truth and fair view.

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# ***Accounting for Construction Contracts under IFRS and CAS: Limitations in Assuring the True and Fair View***

## **Summary**

The paper discusses the accounting for construction contracts under IAS 11, aiming on the most problematic areas from the point of view of an auditor (the use of estimates and the contract costs). It suggests a retention discount model that could be used to report the contract revenues consistently with the IAS 18 Revenues. The Revenue project is discussed and compared to the current practice. Further, the paper summarizes the possible approaches to the construction contracts accounting under CAS, pointing out their advantages and drawbacks.

**Key words:** Construction contracts; Creative accounting; IFRS; CAS; Retention.

**JEL classification:** M41, M42.



# Demands for Financial Statements for Foreign Currency under IFRS

*Dmytro Tereščenko\**

## 1 Introduction

International Financial Reporting Standards reflect the traditions and conditions of the developed market economies. Development of international standards contributes to the consistency of the whole world of financial information through the harmonization of accounting standards. Fundamental principle of the harmonization of accounting and financial reporting in the world is that the financial system from different countries in accordance with the principles of International Financial Reporting Standards.

International Financial Reporting Standards (IFRS) are now an effective tool to improve the transparency and clarity of information that reveals the activities of operators, creates a reliable basis for recognition of revenues and expenses, assets and liabilities, which allows to publish and objectively reflect the current financial risks the entity and to compare its performance to ensure adequate assessment of their potential and make appropriate management decisions. In addition, IFRS has an impact on quality management capabilities to manage the organization and provide significant advantages over its competitors. For individuals who are reporting under IFRS is even better opportunity to attract other sources of capital and business partners to help generate economic growth and prosperity. On the other hand, entities using IFRS have access to information about the financial situation of potential partners, which serves as another tool of their choice.

Transparency in the fields of national economy is high-power because the market value of equity consist two key factors: the future earnings and future risks. Lenders and investors are willing to get less profit, but want to be sure that correct and accurate information will reduce their risks.

The order of transactions in foreign currencies and foreign operations for financial reporting of an organization, as well as conversions of financial statements into the presentation currency is set to IAS 21 *The Effects of Changes in Foreign Exchange Rates*. This standard applies to follow:

- Taking into account transactions and balances in foreign currency;
- In terms of results and financial performance of foreign operations are included in the financial statements of the organization methods of consolidation, proportionate consolidation or the equity;
- In terms of results and financial performance of organizations in reporting currency.

However, this rule has some exceptions:

- In respect of derivative financial instruments, which fall under the IAS 39 "Financial Instruments: Recognition and Measurement". In particular, IAS 21 does not apply to hedge accounting of articles in foreign currencies, including the hedging of net investments in foreign operations;
- In respect of the statement of cash flows of the cash flows arising from transactions in foreign currency or converting cash flows from foreign operations.

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## **2 Determination of the functional currency and reporting currency**

For transactions and balances in foreign currencies, except for derivative transactions and balances which belong within the scope of IAS 39 - Financial Instruments: Recognition and Measurement, with regard to financial results and performance of foreign activities included in the entity's method of consolidation, as in terms of financial results and financial statement reporting currency of the organization should be used in accordance with IAS 21 - Effects of Changes in Foreign Exchange Rates (IAS 21).

An important consideration in applying the provisions of this standard is the definition of functional currency and reporting currency for reporting under IFRS.

Functional currency - currency used in the primary economic environment in which the organization operates.

Reporting currency - the currency in which financial statements are reported.

How, the company's management should define its functional currency?

IAS 21 establishes that in determining its functional currency, the organization takes into account the following factors:

- The currency that mainly influences sales prices for goods and services (such currency is often the one in which sales prices are expressed in goods and services, and calculations are made on them);
- The currency of the country, competitive forces and competition rules are mainly determined by relative prices for goods and services produced by the organization;
- The currency that mainly influences on the labor, material and other costs associated with the delivery of goods or services (such currency is often the currency in which it expressed, and such costs are paid).

If on the basis of these characteristics to establish the functional currency of the organization is difficult, the standard specifies a number of additional factors that may also be indicative of the functional currency of the organization:

- It is the currency in which funds are expressed, generated in the process of financial activities (i.e., issue debt and equity instruments);
- It is the currency in which the organization typically retains the income from operations.

When the above indicators are mixed, and the functional currency is not obvious, management of the organization defines a functional currency which most accurately represents the economic effects of main operations, events and conditions. Under this approach, management of the organization gives priority to key indicators, and then to consider other, designed to provide additional indirect evidence, which currency should be selected as the functional currency of the organization.

## **3 Conversion of foreign currency transactions into the functional currency**

Amounts of assets and liabilities of the organization should prepare its financial statements under IFRS can be made in foreign currency (U.S. dollar, euro). In particular, may have a claim for goods sold, labor, services, loan, loan commitments for goods, works and services.

For financial statements which have been prepared in compliance under IFRS transactions in foreign currency must be converted into the functional currency. After initial recognition in the functional currency of foreign currency transactions must be reported according to the current exchange rate at the date of the transaction.

Usually, for practical reasons can use the average exchange rate that approximates the actual rate at the transaction date. For example, the average rate for a week or month can be used for all foreign exchange transactions carried out during this period. In the case of significant fluctuations in exchange rates using the average exchange rate for the period is inappropriate.

At each balance sheet dates:

- Monetary items denominated in foreign currency must be converted using the exchange rate at the balance sheet date;
- Non-monetary items denominated in foreign currencies are recorded at historical cost converted on the exchange rate at the date of the transaction;
- Non-monetary items denominated in foreign currencies are recorded at fair value converted on the exchange rate on the day of the fair value.

Monetary items are assets and liabilities to be received or paid in fixed or determinable number of units of currency. Examples of cash items: currency unit - the money in cash and current on an account, assets and liabilities to be received or paid in foreign currency - receivables and payables denominated in foreign currency (ex. loans and loans received and granted).

Exchange differences arising on settlement of monetary items or from the translation of monetary items at rates different from the courses they are in the initial recognition during the year or in previous financial statements should be recognized in profit or loss in the period in which they are incurred.

#### **4 Conversion from functional currency to reporting currency**

The parent company, which provides financial reporting in accordance with IAS 27 *Consolidated and Separate Financial Statements* has the right to submit such statement in any currency (or currencies). If the company uses a currency different from the functional currency, its results and financial statements translated into the reporting currency in accordance with paragraph 38-50 of IAS 21.

Results and financial statements of companies in the functional currency, which is the currency of a hyperinflationary economy, must be recalculated in a different presentation currency using the following procedures:

- Assets and liabilities for each balance sheet presented (i.e. including the comparative figures) must be recalculated based on the current rate at the date of such balance;
- Income and expenses for each income statement (i.e. including the comparative figures) are subject to the conversion rate prevailing on the transaction date;
- All exchange differences arising are subject to recognition as a separate component of equity.

Usually, for practical reasons, can use the average exchange rate that approximates the actual rate at the transaction date. For example, the average rate for a week or month can be used for all foreign exchange transactions carried out during this period. In the case of significant fluctuations in exchange rates using the average exchange rate for the period is inappropriate.

Exchange differences arising from translation of revenues and expenses of the exchange rate on the date of implementation of these operations, assets and liabilities - at the current exchange rate at the date of the statement. These exchange differences should be considered in accordance with IAS 21 as a separate component of equity (for example, "Provision for conversion into currency").

It should be noted that IFRS does not regulate a current billing; it is not an explicit prohibition

on charging in currencies other than functional. However, if a company declares that the statements have been prepared in full compliance with IFRS, statement must be used with all the requirements of IFRS; including the provisions of IAS 21, for converting foreign currency into the functional currency and the transfer of functional currency into the currency of statements.

## 5 Conclusions

The introduction of IFRS does not change while the system-wide accounting and reporting country. The transition to international standards should certainly be a gradual and deliberate process. The importance of this process lies in the fact that gaps and inconsistencies in national accounting system are solved gradually in accordance with the needs of a market economy without disrupting the system.

Experience has shown that the use of internationally acceptable solution to the national standard is possible only if the decision reflects the real situation in the country. In other words, the use of IFRS for the introduction of the system of national accounts requires adaptation. Moreover, the transition to IFRS requires time to practice, practice new techniques and procedures for collecting and processing information.

Changes in accounting and reporting, in particular the transition to IFRS, must take place gradually, taking into account the possibilities, needs and availability of professional and other interested public and public authorities.

The concept provided the guidelines for the development of accounting and reporting applicable to all sectors of the economy of a country. However, their implementation in some sectors of the economy (in particular, non-profit organizations, government, banking system) has some peculiarities.

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## ***Demands for Financial Statements for Foreign Currency under IFRS***

### **Summary**

Companies which carry out foreign operations can perform transactions in foreign currency. In addition, companies can provide financial statements data in a foreign currency. IAS 21 *The Effects of Changes in Foreign Exchange Rates* establishes a procedure for perform transactions in foreign currencies and foreign operations for financial reporting, as well as conversions of financial statements into the presentation currency. The task of the standard is to disclose information about how the exchange rate to use and how to reflect in its financial statements the impact of changes in exchange rates.

In the East Europe organizations constitute statutory financial statements in national currency obligatory. However, the requirements of international financial reporting standards are not so unambiguous; each organization can choose the currency in which constitutes the international reporting. For reporting under IFRS it can be selected such currency, which is actively used by and has a significant influence on it. This paper summarizes the issue of the impact of functional currency and reporting currency on's financial reporting and its impact on the rules of reporting under IFRS.

**Key words:** IFRS; Foreign Exchange Rates; Functional currency; Reporting currency.

**JEL classification:** M41.



# Process of Creation a Common Standard in Case of Lease Accounting

*Mariana Valášková\**

## 1 Introduction

*Declaration on strengthening the financial system* (London 2009), in which the Leaders of G20 took action to strengthen regulation and supervision of the financial sector, brought also some recommendations for standard setters. The Leaders of G20 declared that accounting standard setters should inter alia increase efforts to achieve a single set of high quality, global accounting standards, within the context of an independent standard setting process. In response to this recommendations the high quality, global accounting standards were entered to IFRS Foundation Constitution as a organisation's primary objective, the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) updated their Memorandum of Understanding and the IASB and the FASB also reaffirmed their commitment to improve International Financial Reporting Standards (IFRS) and U. S. generally accepted accounting principles (U. S. GAAP) and to achieve their convergence. In November 2009, the IASB and the FASB published the joint statement in which can be found the confirmation of the boards' commitments "to redouble their efforts to achieve a single set of high quality standards within the context of their respective independent standard-setting processes, to provide a high degree of accountability through appropriate due process, to consult widely with stakeholders, drawing on experience from investors, preparers, auditors, standard-setters, regulators and others around the world and to publish progress reports on a quarterly basis".

Objective of the paper is to show the process of creation a common standard, to show the development of the high quality standard through that independent standard-setting process, sophisticated due process. The paper focuses on the process of development a new standard in case of leases.

## 2 Leases – Memorandum of Understanding Project

Lease accounting is one of the Joint Project of the IASB and the FASB. The project has been taken under the Memorandum of Understanding. In the Memorandum of Understanding, also known as Norwalk Agreement of boards' meeting in the same city Norwalk in September 2002, each of the boards "acknowledged their commitment to the development of high quality, compatible accounting standards that could be used for both domestic and cross-border financial reporting". In 2006 the IASB and the FASB set specific milestones to be reached by 2008. The Milestones did not comprise the leases on an active agenda of the boards yet but the leases were already mentioned as a topic being researched. The boards were expecting to make a decision about the scope and timing of a potential agenda project by 2008. In connection with the Memorandum of Understanding a common set of high quality global standards became the long-term strategic priority of both the IASB and the FASB.

In 2008 the boards issued an update to the Memorandum of Understanding, in which the leases were already placed among the projects where the boards were working jointly on areas identified for improvement in IFRSs and US GAAP with estimated completion by 2011.

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### **3 Process of Creation a Common Standard on Lease Accounting**

The economic situation, when leasing became a major international industry and an important source of finance for a wide range of entities, caused pressure on an improvement of current international accounting requirements, set out in IAS 17 Leases, and the US standard FASB Statement No. 13, Accounting for leases. These standards were developed some 25-30 years ago. Since that time, as mentioned above, the conditions have changed and the standards have begun to be criticised for allowing similar transactions to be accounted for in very different ways.

#### **3.1 Working Group**

After putting the project to active agenda the boards may establish a working group. The purpose of the working group is not to develop proposals. The working group gives the boards' access to additional practical experience, expertise and advice on the concepts, ideas and proposals developed by the boards and their staff. In July 2006 the IASB and the FASB posted a notice on their Websites inviting nominations for the working group. The boards' members and staff prepared initial proposals on the membership of the working group and these proposals were reviewed and approved by the Trustees of both of the Foundations. After that the IASB and the FASB established a joint working group for the project of lease accounting. The joint working group is an international group serving both boards. The working group consists of individuals from a variety of backgrounds – preparers, auditors, users of financial statements, subject-matter experts and others. The composition of the working group takes into account the diversity and magnitude of interest in this area and seems to have an ability to achieve satisfactory perspectives.

The first working group meeting was held in February 2007 and the last meeting took place on 7th January 2011. Of the meeting, before the last one, held in September 2009 the report is available on the boards' websites called Summary Report of the Leases Working Group Meeting. The report summarises the views and discussions held during that meeting. The purpose of that meeting was to discuss a summary of the comment letters received on the discussion paper, issues related to the project of Leases and obtain working group members' views on those issues. The meeting was attended by members and staff of both boards, by two observers intended for the Leases Working Group, one member of International Organisation of Securities Commissions (IOSCO) and one member of European Financial Reporting Advisory Group (EFRAG), and of course by members of the Lease Working Group.

#### **3.2 Discussion Paper**

On 19th March 2009 the IASB and the FASB published a joint discussion paper Leases: Preliminary Views. The discussion paper represents the document through which the boards introduce and explain the issues concerning to lease accounting. In the discussion paper the boards discuss a possible new approach to lease accounting, the preliminary views on significant components of an accounting model for leases.

The boards published also the paper called Snapshot: Leases – Preliminary Views accompanying the discussion paper, through which the boards provide a first short insight into the major ideas presented in the discussion paper. In the Snapshot the boards present the reason why they were being undertaking the project to improve the lease accounting. The main problem of existing approach is seen in splitting leases into finance and operating leases, when the assets and liabilities arising from operating leases cannot be found in entity's statement of financial position. This is strengthened, as the Snapshot presents, by the fact that according to the World Leasing Yearbook 2009, in 2007 the annual volume of leases amounted to US\$760 billion. The Snapshot also describes 3 main problems relating to the split into finance and operating leases. First problem is that the users of financial statements complain about unclear depiction of the

effects of operating leases in financial statement and many of them are of the opinion that operating leases give rise to assets and liabilities. Second problem is that the similar transactions can be accounted for very differently and it causes the reduction of transparency of accounts and comparability for investors. The last problem resulting from the splitting concerns that the lessee obtains a source of off balance sheet financing in case of operating lease and that can be difficult for investors to understand. The boards propose a new approach to lease accounting when they had concluded that all lease contracts create rights and obligations that meet the boards' definitions of assets and liabilities and that's why these assets and liabilities should be recognized in the financial statements of lessees. "This approach is aimed at ensuring that leases are accounted for consistently across sectors and industries" – as stated in News Release of FASB from 19th March 2009.

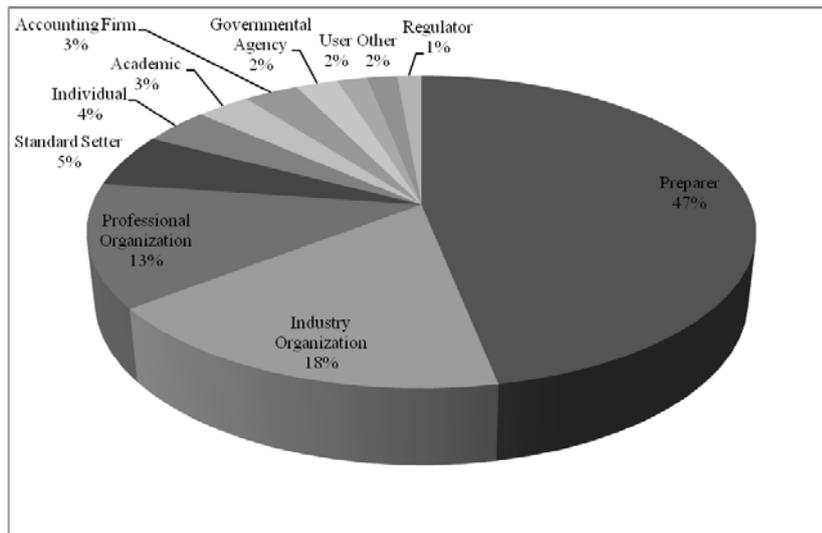
The discussion paper *Leases: Preliminary Views* deals mainly with lessee accounting. The issues, that are discussed, are recognition, initial and subsequent measurement of the assets and liabilities arising in a lease contracts, accounting for leases with options, for contingent rentals, residual value guarantees and presentation of leases in the financial statement. However, discussion paper also describes some of the issues concerning to lessor accounting. The discussion paper represents the real elaborate document of all main accounting issues concerning to improvement of leases. It is also important to say that every boards' discussed issue, proposal in discussion paper is accompanied by the specific questions for respondents.

By the publishing the discussion paper the boards namely launched a public discussion on lease accounting. Next to the objective to explain the issues of lease accounting the second objective of discussion paper is to solicit comments from different respondents on the boards' proposals. The discussion paper was open for comments until 17th July 2009, which means that the stakeholders had four months long comment period. The respondents were asked to send their comments electronically to the IASB or the FASB websites and they could have chosen to answer all or selected questions or also could have commented any other matter. All responses of the discussion paper are put on the public record. In some cases the respondents' requirement of confidentiality can be met.

The boards received overall 318 letters, when 231 letters were received during the comment period and the remaining letters were received outside the comment period. However, all received letters were put on the public record and all are available at boards' websites. The technical staff of the FASB and the IASCF prepared the paper called *Comment Letter Summary*, where they statistically summarize all responses. In the summary is stated that approximately half of the respondents supported the overall principles and objectives set out in the discussion paper, while approximately one-third of the respondents did not support the boards' preliminary views and the reasons cited by those respondents are summarized in detail in that paper. The paper is also important basis for discussion at public meetings of the IASB and the FASB.

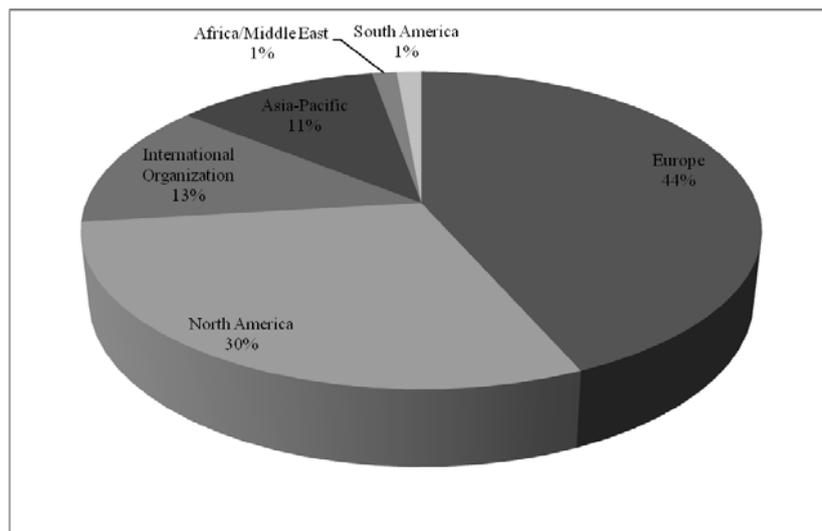
The technical staff also stated the interesting statistical data about the 290 comment letters received until 11th August 2009 by the type of the respondents and geographic region of respondents (see graphs below).

**Fig. 1: Type of Respondent**



Source: Discussion Paper Leases – Comment Letter Summary.

**Fig. 2: Geographic Region**



Source: Discussion Paper Leases – Comment Letter Summary.

### 3.3 Exposure Draft

On 17th August 2010 the IASB and the FASB published a joint exposure draft Leases. The exposure draft is another step after the feedback received by discussion paper. The exposure draft represents the document of boards' proposals to improve the reporting of lease contracts. These proposals were developed on the basis of discussion paper and especially taking into account feedback received. The exposure draft sets out a proposal for a new common standard (IFRS and US GAAP).

The exposure draft Leases comes with a consistent accounting model for both lessees and lessors as a reaction on all that facts (already mentioned above) that the leasing is an important source of finance for many businesses and the current standards are criticized for different accounting approach in case of similar transactions and for a greater deficiencies in the quality of information in relation to lessees than lessors. The consistent approach of lease contracts should ensure all lease being included in the statement of financial position, consequently providing more complete and useful information to investors and other users of financial

statements. The boards published also the Snapshot: Leases for exposure draft. The Snapshot shortly introduces and provides an overview of the proposals published in exposure draft. In the Snapshot the boards stated that they plan to issue the new standard in 2011.

By the publishing the exposure draft the boards launched another public comment period. The boards invited for comment on their proposals again. At the inception of exposure draft document there is a part called Introduction and Invitation to Comment, through which the boards answer several questions as why are the FASB and the IASB publishing this exposure draft, what are the main proposals, how would the main proposals affect current US GAAP and IFRSs, and so on. The boards believe that the exposure draft, if confirmed, will result in significant changes to the accounting requirements for both lessees and lessors, which will affect both of the US GAAP and the IFRSs. This inceptive part also comprises questions for respondents. The boards invite individuals and organizations to comment on all matters in the exposure draft, but particularly on the listed questions in this introduction and invitation part. The questions focus on individual parts of the exposure draft regarding to the accounting model, definition of a lease, scope, measurement, sale and leaseback, presentation, disclosure, transition, benefits and costs and any other comment. The exposure draft was open for comments until 15th December 2010, which means that the stakeholders had another four months long comment period on leases. The respondents were asked again to send their comments electronically to the IASB and the FASB using the web page. The boards stated in exposure draft that the proposals may be modified in the light of the comments received before being issued in final form as a common standard. All responses of the exposure draft are also put on the public record, unless the respondent requests confidentiality.

The boards published also the joint basis for conclusions Leases as a separate accompanying material to exposure draft. This material summarises the considerations of the IASB and the FASB in reaching the conclusions in the exposure draft and gives reasons for the conclusions in the exposure draft. Individual board members gave greater weight to some factors than to others in the basis for conclusions material. The basis for conclusions was also open for public comment through boards' websites until the same deadline as exposure draft, so until 15th December 2010.

The boards received overall 782 comment letters during and some of them after the four months comment period. All received letters were put on the public record and are available at boards' websites. The technical staff of the IASCF and the FASB prepared the summary material Comment letter summary – main issues of 760 received comment letters as of 12th January 2011. The summary states that most of the respondents supported the boards' efforts in "jointly developing a single, comprehensive and converged" lease accounting model, but some significant concerns were expressed relating to a different kinds of topics concerning to lease accounting. The material summarises all those concerns of respondents and other responses.

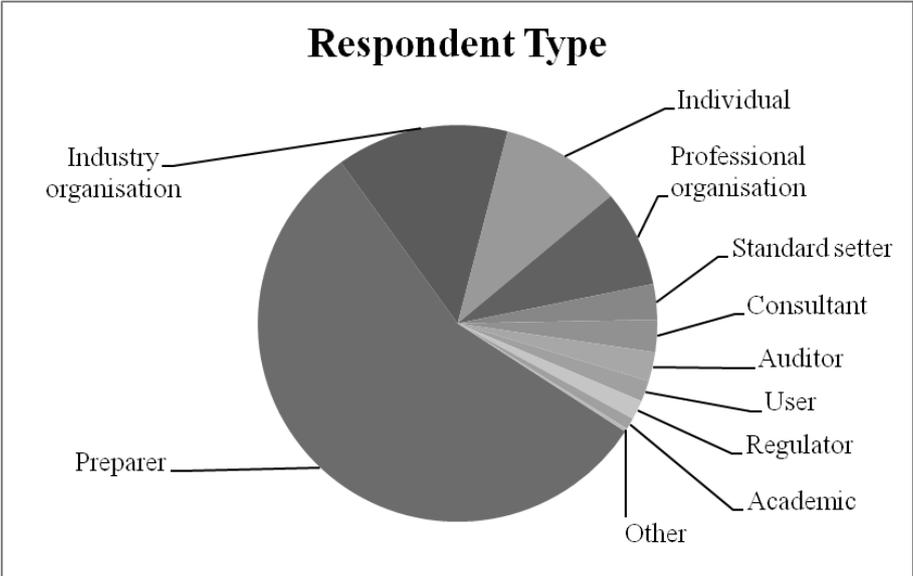
The boards stated that the response rate to exposure draft Leases was very high and suppose that it is because of many entities are involved in lease transactions. Consequently, they suppose that it is not surprising that a diverse range of industries are well represented in the responses, including retail, financial services, real estate, transportation, power and utilities, tourism and hospitality. Some of the concerns raised by those respondents were specific to their industry, but many concerns expressed were shared by respondents from a range of different industries. The high response rate was from preparers as well as from the substantial number of responses from auditors, accounting professional bodies, national standard-setters, industry organisations and other interested parties including academics.

The boards suppose that the very high response rate can be also attributed to the lease project being an IFRS-US GAAP convergence project, which ensured the comment letters from a geographically diverse range of respondents. An interesting fact is that next to the responses

received from the FASB’s and the IASB’s constituents from jurisdictions using IFRS since 2005, such as Europe and Australia, the responses were received also from jurisdictions adopting IFRSs for the first time in 2010 or 2011 (Brazil, Canada and South Korea) or planning the adoption of IFRSs from 2012, such as India, and from jurisdictions that are in the process of making a decision on whether to adopt IFRSs in the future, such as Japan.

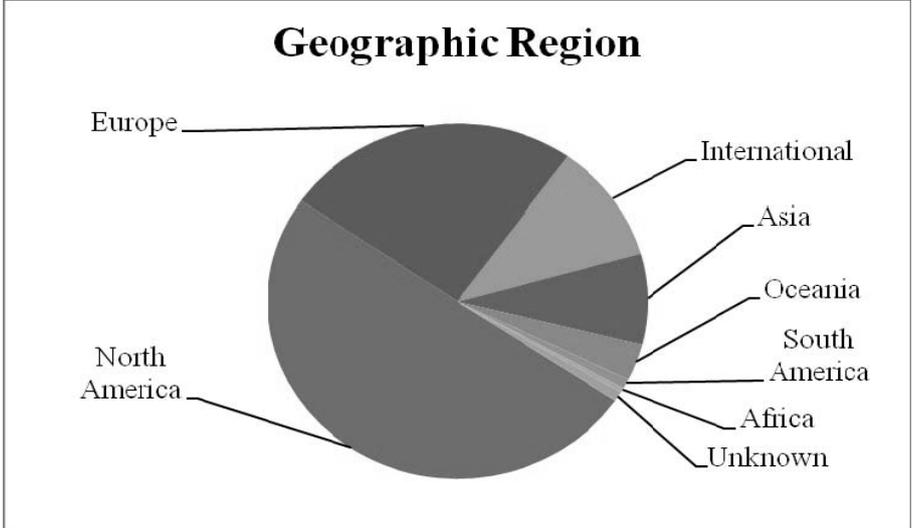
The graphs below summarises the 760 received comment letters by type, geographic region and industry of the respondents.

**Fig. 3: Respondent Type**



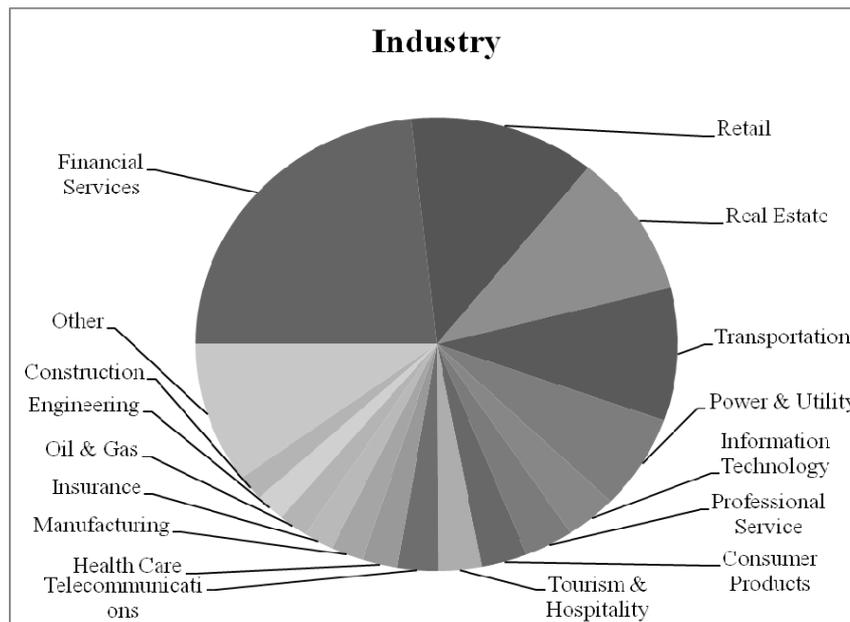
Source: Exposure Draft Leases – Comment Letter Summary – main issues.

**Fig. 4: Geographic Region**



Source: Exposure Draft Leases – Comment Letter Summary – main issues.

**Fig. 5: Industry**



Source: Exposure Draft Leases – Comment Letter Summary – main issues.

### 3.4 Other Public Activities

Before, during and after the comment period of the exposure draft both of the IASB and the FASB were performing several outreach activities. They were doing field work, they were having webcasts, podcasts and they were trying to reach out different companies to discuss the proposals in the leases exposure draft and to find out the impact at those might have on companies and to get some feedback on costs and benefits of implementing a new leases standard.

As a part of their outreach on the lease project, the boards conducted field work to get some feedback on costs and benefits of proposed requirements. The field work comprised preparer and users part as to obtain information from both of preparers and users of financial statements. In the preparer part of the field work, the boards were surveying organisations on their accounting for leases. For these purposes the boards designed a questionnaire of about 27 questions to be submitted separately by lessees and lessors until 30th September 2010. The boards planned to hold several workshops across the world to bring a wide range of companies together. Finally the boards really held fifteen preparer workshops in London, Tokyo, Seoul, Melbourne, São Paulo, Toronto and Norwalk during November and December 2010. These workshops were attended by representatives from over 90 organisations.

One of the important role of outreach activities are the Round tables. The purpose of these round-table meetings is to listen to the views of interested parties about the joint exposure draft and obtain information from these stakeholders. The boards were seeking participation in round tables from a wide variety of stakeholders, including users, preparers, auditors and others. The boards held 7 roundtables in London, Hong Kong, Chicago and Norwalk during December 2010 and January 2011. These round tables were attended by representatives from over 80 interested parties and included one round table focused on private and not for profit entities. Webcasts from the round table meetings can be viewed at the boards' websites.

Other outreach activities are webcast recordings, in which the record is accompanied by slide presentation, and podcasts which provide audio overview of the topic and are designed to be listened to on a computer or downloaded to a digital media player. Project webcasts and podcasts each has meanwhile attracted between 500 and 1000 participants.

### 3.5 Due Process

Both of the IASB and the FASB call the process through which they develop new standards as a “due process”. The due process means an international consultation process, an comprehensive and independent process, which involves interested individuals and organisations from around the world to provide transparency into the standards-setting process.

The whole due process of developing a new common standard in case of lease accounting is described above. The project of leases was conducted by the boards as joint project because of the international significance of this topic. The discussion paper and the exposure draft represent a main due process documents.

A current situation of developing a new standard is that the meetings of the IASB and the FASB are proceeding over the major remaining issues of the topic leading to a successful conclusion. The IASB and the FASB plan to issue the new standard (the final document) in the second quarter of 2011, the target date is set for the end of July. In such case the effective date of the new standard would be in six months afterwards.

## 4 Conclusions

The major intention of the paper was to show and describe a procedure of developing a new international standard of leases. The whole process of creation a new common standard called as due process has taken over 4 years - since adding the project to an active agenda and establishing a joint working group in July 2006 until February 2011 when the joint meetings and discussions of the IASB and the FASB are proceeding - until now in case of leases. The fact regarding to the timeline and the process of lease standard development described in the paper considering to all activities around confirms that the due process is not only a kind of “complex approval procedure”, but it mostly represents extensive public professional discussion, sharing of views, seeking of solutions and searching for a common objective goal. This international consultation procedure confirms that the due process is a living and interactive process, which seems to be able to stand as global internationally acceptable standard-setting tool.

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## ***Process of Creation a Common Standard in Case of Lease Accounting***

### **Summary**

The paper focus on single stages of development a new common standard in case of joint project of the IASB and the FASB – topical lease accounting. The presentation of the due process takes place on basis of real timetable on the leases project. At the beginning of due process, when the project was put to an active agenda, the joint working group was established for the project of lease accounting. The boards issued two main due process documents: Discussion Paper - Leases: Preliminary Views and Exposure Draft – Leases. The public discussion of boards' proposals comprised in discussion paper and exposure draft was accompanied by many of other public outreach activities to obtain the highest possible response from all kinds of stakeholders.

**Key words:** Due process; Leases; IFRS.

**JEL classification:** M41.