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FOREWORD

This special edition of Journal of Business Management's 5th issue mainly consists of scientific papers that were presented during the 9th International Scientific Conference "Accounting and Finance in Transition, European and World Experience, and Public Policy Consideration", or 9th ICAFT-2012. The conference was held in Riga International School of Economics and Business Administration (RISEBA) from the 11th to 13th of October 2012. Participants of the conference explored trends, concepts, experience, and issues generated by accounting and finance academics, researchers, practitioners, and policy makers in the context of dynamic political, economic and social changes. Representatives of 18 countries participated in the conference.

Presented topics covered various aspects of financial management in the context of researched organisations' strategies, as well as search of methodological approaches to tackle the most complex issues of financial and accounting policies' practical application both in private and public sectors. In most cases the general tendency of research appeared to be the problem of adequacy and quality of information disclosure in financial reporting of different organisations, including enterprises, banks and public sector, as well as application of integrated performance measurement system.

The articles published in this issue reflect most of the 9th ICAFT findings:

- There is a positive relation between corporate sustainability and financial performance (N.Vitezic, T.Vuko, B.Morec).
- Corporate social responsibility has been analysed mostly from the viewpoint of economic benefits a company possesses from its social orientation (N.Vitezic, T.Vuko, B.Morec).
- Non-financial performance measurement indicators can be grouped according to proposed non-financial perspectives (A.Sobota, D.Peljhan).
- High quality information disclosure is connected not only to references in financial statements, but even more to the financial statements being integrative and integral information (B.Ljutic, S.Jankovic, D.Vlasic).
- Regulatory recommendations alone are not sufficient to guarantee work effectiveness of a board and directors (A.Lagzdins).
- There is a limited evidence to support claims that different ownership structures (state-controlled, private or foreign-invested ownership) have a significant relationship with tax aggressiveness in China (G.Yuan, R.McIver, M.Burrow).
- The growing diversity of accounting data efficiency measures are getting more sophisticated and multidimensional to encourage education providers not only towards cost minimization, but also to increase the output quality (B.Mörec, V.Vitezic, M.Tekavcic).
- Decision time is the key indicator to determine costs of human resources (I.Purinsh, T.Reizinsh, G.Braslinsh, N.Svitlika).
- Autonomous (devolution) and assigned by the state to municipalities (delegation) functions are presented without any logic system and do not match any classification (G.Zigiene).
- Measurement and evaluation of long-lived assets is directly related to corporate governance and cannot be ignored, when developing investment strategies (I.Kuzmina, I.Kozlovska).
- There are relationships between convergence and divergence and business performance in the information and communication technologies sector (S.Veneti, Z.Sevic, D.Maditinos).

The presented research results determined the most disputable matters in the international financial thought. A number of points for discussions arose, for instance:

- How does a managerial optimism as well as other psychological biases affect a firm's investment decision process?
- What is the role of different performance perspectives, when assessing efficiency of integrated performance management systems?
- Is such hypothetical amount as a "fair value" sufficiently understandable, reliable, relevant and comparable to be suitable for financial reporting?
- How should organisations plan their strategic positioning within the divergence-convergence recursive model in a timeline?
- Does the corporate governance structure influence future cash flows and investment strategy of a company?

Answers to these and other questions that arose during the conference discussions contribute to further development of theory and research of international experience and practice in the field of finance and accounting, thus also stimulating development of creative thinking and scientific research in future.

Vice Chair of the ICAFT conference,
Irina Kuzmina

Head of the Editorial Board,
Vulfs Kozlinskis

CONTENTS

1. Financial and Business Performance

Aleksandra Šobota, Darja Peljhan (Slovenia). *Importance of Different Perspectives in Integrated Performance Measurement Systems* **6**

Alexandra Tsinani (Greece), Prof. Željko Šević, and Prof. Dimitrios Maditinos (UK). *Firm Performance, Corporate decision and the Role of Managerial Optimism – the Case of Creece: Literature Review and Methodology* **19**

Sofia Veneti, Prof. Dimitrios I. Maditinos, and Prof. Željko Ševič (UK). *A Study of Innovation Based it Convergence as a Strategic Roadmap to Business Performance Acceleration for High End it Vengors: an Insight to the Dynamic Interactive TV Market* **28**

Neda Vitezić, Tina Vuko, and Barbara Mörec (Croatia). *Does Financial Performance Have an Impact on Corporate Sustainability and CSR Disclosure? A Case of Croatian Companies*. **40**

Vanja Vitezić (Croatia), Barbara Mörec, and Metka Tekavčič (Slovenia). *The Role of Accounting in Measuring Efficiency in Public Education: A Literature Review* **48**

Irina Kuzmina and Ieva Kozlovska (Latvia). *Accounting Measurement of Long-Lived Assets:A Case Study of Impairment Practices* **56**

Branko Z. Ljutic (Serbia), Sandra Jankovic (Croatia), and Dubravka Vlasic (Croatia). *Impact of Notes to Financial Statements on the Quality of Financial Reporting: Evidence from Croatia and Serbia* **66**

Ilmars Purinsh, Toms Reizinsh, Girts Braslinsh, Natalija Svitlika. *Efficiency Assessment Tool for Credit Granting Process* **78**

2. Financial Sector Development

Inna Romānova (Latvia). *Bank Lending and Crisis: Evidence from Latvia* **87**

Agnese Kage (Latvia). *Prerequisites for efficient virtual teams' creation in banking industry* **98**

Gerda Zigiene (Lithuania). *The Importance of Functions Assignment for the Intergovernmental Fiscal Relations* **112**

3. Corporate Governance and Information System

Arnis Lagzdins (Latvia). *Corporate Governance, Compliance and Banking Boards in Latvia: the Results of Survey* **126**

Guodong Yuan, Ron P. McIver, and Michael Burrow (Australia). *Corporate Income Tax Aggressiveness in China: Regulatory Enviroment and Ownership Impact* **144**

Nikolaos C. Kokkinos (Greece), Dimitrios I. Maditinos (Greece), Željko Šević, and Aleksandar Stojanovic (UK). *The Common Criteria and Information Systems Security Certification* **161**

IMPORTANCE OF DIFFERENT PERSPECTIVES IN INTEGRATED PERFORMANCE MEASUREMENT SYSTEMS

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Abstract

Purpose – Performance management literature advocates the usage of integrated performance measurement systems (IPMS), which incorporate financial as well as non-financial measures of performance. One of the best known IPMS, the Balanced Scorecard (BSC), categorises performance measures into four basic perspectives: financial, customer, internal business processes, and learning and growth perspective. The aim of this paper is to find out whether the measures used by Slovenian companies can also be grouped according to these four perspectives and if yes – is there a significant difference in average overall importance of different perspectives between companies that use IPMS and companies that do not use such systems. Also, we would like to find out if performance perspectives are weighted equally by companies using IPMS or is there any weighting bias.

Design/methodology/approach – Data for the study were collected from 249 companies during the survey "Cost management and contemporary management tools in Slovenian companies". Importance of different performance indicators was measured using a five-point Likert scale and respondents were asked to evaluate the importance of 70 financial and non-financial measures. We tested our research hypotheses using several statistical techniques, such as principal component analysis and discriminant analysis.

Findings – Overall, the results confirm that non-financial measures can be grouped according to proposed non-financial perspectives (according to the BSC). Also, the average overall importance of different perspectives differs between companies that use IPMS and companies that do not use such systems, even though this difference is statistically significant only for financial and learning and growth perspective. Furthermore, the results indicate that different perspectives are not weighted equally and weighting bias appears to be greater for companies using IPMS than for companies not using such systems.

Research limitations/implications – The generalisation of research results is limited because only Slovenian companies were included in the survey. This study begins to reveal possible reasons that could influence the effectiveness of IPMS. Further research should focus on studying the relationship between IPMS's effectiveness and overall importance of different performance perspectives. In order to get a better understanding of this issue, case study approach should also be used in the future.

Keywords: performance measures, Integrated Performance Measurement Systems, performance perspectives, Balanced Scorecard.

1. INTRODUCTION

Over the last two decades there has been a growing criticism of traditional performance measurement systems as too narrowly focused on short-term-oriented financial performance measures. Critics claim, that traditional financial performance measures do not provide comprehensive information on changes in areas of strategic importance as they only show the effects of past decisions. That is why they advocate the usage of integrated performance measurement systems (IPMS), which incorporate financial and non-financial performance measures. If used in harmony, these measures are supposed to provide a better understanding of business as a whole.

One of the most widely used IPMS is the Balanced Scorecard (BSC), developed by Kaplan and Norton in 1992. The model was developed to steer businesses beyond traditional and reactive financial measures

(Ahn, 2001). According to Kaplan and Norton (1992, 1996, 2001, 2008) the Balanced Scorecard complements financial measures of past performance with measures of the drivers of future performance. The methodology of the Scorecard is that it breaks down the organisation vision and mission into strategic objectives that can be categorised into four basic performance perspectives: (1) financial, (2) customer, (3) internal business processes and (4) learning and growth perspective. In viewing a company from four vital perspectives, the BSC is intended to link short-term operational control to the long-term vision and strategy of the business. It permits a balance between desired outcomes and the performance drivers of those outcomes as well as between objective and more subjective measures.

The paper aims to investigate whether the measures used by Slovenian companies can also be grouped according to four BSC's performance perspectives and if yes – is there a significant difference in average overall importance of different perspectives between companies that use IPMS and companies that do not use such systems. Also, we would like to find out if performance perspectives are weighted equally by companies using IPMS or is there any weighting bias. To accomplish the purpose of the paper, we will test the following research hypotheses: (1) Companies using IPMS put more emphasis on non-financial measures as opposed to companies that do not use such systems. (2) Based on overall importance of different performance perspectives we are able to distinguish between companies using IPMS and companies that do not use such systems. (3) Companies using IPMS put equal emphasis on different performance perspectives.

Data for the study were collected from 249 companies during the survey "Cost management and contemporary management tools in Slovenian companies". The sample consists of large, medium and small companies from different industrial sectors, including manufacturing and service. Importance of different performance indicators was measured using a five-point Likert scale and respondents were asked to evaluate the importance of 70 financial and non-financial measures. We test our research hypotheses using multivariate data analysis techniques, such as principal component analysis and discriminant analysis.

The paper is organised as follows. In the following section we first present our research hypotheses and their theoretical underpinnings. Next, we describe research methodology. In section IV we discuss the results and their implications, whereas in section V we provide our final conclusions.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

There is no doubt that performance measures are an essential element in the evaluation of a company's success in achieving its strategic objectives (Crabtree & DeBusk, 2008). However, prior to the start of the information age in the late 20th century, financial measures have been used as the sole criterion for managing organisations. Since then, management accounting researches have been describing many limitations of using only financial measures for evaluating and managing performance. The main disadvantage of financial measures is that they show the effects of decisions already taken. As such, financial measures are inadequate for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation (Kaplan & Norton, 1996). According to Bourne and Neely (2003), traditional accounting-based performance measures have been characterised as being internally focused, backward looking and too highly aggregated. Rapid changes in technology, the growing importance of service industries and increased global competition have further undermined the role of financial measures, and consequently the need for alternative performance measurement systems arose. As a result, various performance measurement frameworks with multidimensional performance views have been proposed. Examples include Balanced Scorecard (Kaplan & Norton, 1992, 1996, 2001, 2008), Performance Pyramid (McNair, Lynch & Cross, 1990; Lynch & Cross, 1991), Tableau de Bord (Epstein & Manzoni, 1998) and performance management framework (Otley, 1999). Even though these approaches vary, they all aim at improving decision making and problem solving by helping managers understand the interrelationships and trade-offs between different performance perspectives (Banker, Chang, Janakiraman & Konstans, 2004) with the ultimate aim of improving performance.

According to the theory (Bourne, Neely, Mills & Platts, 2003; Chenhall & Langfield–Smith, 2007; Ittner, Larcker & Meyer, 2003; Moers, 2005), companies that use IPMS put more emphasis on non-financial measures as opposed to companies that do not use such systems. Our first research hypothesis regarding the usage of integrated performance measurement systems is therefore the following:

H1: Companies using IPMS put more emphasis on non-financial measures as opposed to companies that do not use such systems.

As follows, we discuss the Balanced Scorecard (BSC) in more detail because it has received the most attention in the relevant literature. Balanced Scorecard was introduced by Kaplan and Norton in 1992 as a performance management tool that reflects all the measures critical for the success of the firm's strategy (Blocher, Chen, Cokins & Lin, 2005). According to Kaplan and Norton (1996) the Balanced Scorecard complements financial measures of past performance with measures of future performance drivers. The methodology of the Scorecard is that it breaks down the organisation vision and mission into strategic objectives that can be categorised into four different perspectives: (1) financial, (2) customer, (3) internal business processes and (4) learning and growth perspective. The financial perspective defines how the company wants to be viewed by its shareholders, the customer perspective describes the value proposition that the organisation wants to apply to satisfy customers and generate more sales. Furthermore, the internal business processes perspective is concerned with key business processes that create customer value and satisfy shareholders, while learning and growth perspective relates to the changes and improvements that are necessary if a company wants to follow its strategy and make its vision come true. The four performance perspectives are identified as being critical for long-term growth and improvement, even though additional perspectives may be included in the Scorecard.

Since theoretical implications suggest that companies using Balanced Scorecard or any other IPMS follow different performance perspectives, we would also like to examine if we can distinguish between companies using IPMS (Group 1) and companies not using such systems (Group 0). Namely, we would like to know, if it is possible to predict group membership based on overall importance of different performance perspectives. Our second research hypothesis is therefore:

H2: Based on overall importance of different performance perspectives we are able to distinguish between companies using IPMS and companies that do not use such systems.

According to Paranjape, Rossiter and Pantano (2006) there are two broad streams in the literature: one acknowledges and advocates the use of BSC, while the other questions some of BSC's key assumptions and relationships. The proponents of the BSC (Bourne, Neely, Platts & Mills, 2002; Gumbus & Lyons, 2002; Kaplan & Norton, 1996; Olve, Roy & Wetter, 1999) agree that BSC is an effective performance measurement tool and advocate the usage of BSC through several success stories, such as National Insurance, Halifax, Scandia, Electrolux, British Airways, Coca-cola Beverages Sweden, British Telecom, Volvo Car Corporation. Moreover, several empirical studies confirm the association between BSC usage and improved financial performance or higher stock market returns (Braam & Nijssen, 2004; Carbtree & Debusk, 2008; Davis & Albreight, 2004; Hoque & James, 2000; Ittner & Larcker, 2003; Marr, 2004). On the other hand, however, Ittner, Larcker and Randall (2003) provide evidence for a negative association between BSC usage and financial performance, while others (Bourne et al., 2002; Venkatraman & Gering, 2000) point out that along with BSC's success stories there are also many examples of unsuccessful implementations (Machine Shop, Controls, Components). Reasons for unsuccessful implementations include selection of inappropriate or excessive measures, inefficient implementation by the management, over-emphasis on financial measures or even inexistence of the causal relationship between different performance perspectives, which is one of the key assumptions of the BSC and has been challenged by several academics and practitioners (Banker et al., 2004; Kennerley & Neely, 2002; Paranjape et al., 2006; Bringall, 2002; Norreklit, 2000).

One important issue that also arises when implementing multiple performance perspectives is determining the relative weights to place on the various perspectives. Jensen (2010) argues that Kaplan and Norton did not deal with the critical issue of how to weigh the multiple perspectives represented by diverse financial and non-financial measures. Several different studies (Atkinson, Waterhouse, Wells, 1997; Banker, Chang & Pizzini, 2004; Lipe & Salterio, 2000) suggest that in practice companies do not weigh different perspectives equally, even though very little empirical evidence exists, that this somehow affects the effectiveness of BSC. However, contradicting literature exists on the weighting process of performance perspectives. Some studies stress the need to weigh different performance perspectives according to company's specific objectives (Cross & Lynch, 1989; Olson & Slater, 2002), while others argue that different performance perspectives should be equally balanced (Boulianne, 2008; Ittner, Larcker & Meyer,

2003; Moers, 2005), because weighting bias can cause that certain performance measures are overlooked and consequently informational benefits of these measures are weakened. Our last research hypothesis is thus:

H3: Companies using IPMS put equal emphasis on different performance perspectives.

3. RESEARCH METHODOLOGY

Our research setting is represented by a sample of companies operating in the Slovenian economy. Data for the study were collected during the survey "Cost management and contemporary management tools in Slovenian companies", which was conducted in the summer of 2008 on a sample of 323 Slovenian companies. It was based on an extensive questionnaire that consisted of three parts. Part one was related to general information about the company (such as size, industry, number of employees, number of competitors etc.), part two investigated characteristics of performance management (e.g. importance of different financial and non-financial performance measures, usage of integrated performance management systems etc.) and part three dealt with knowledge about cost management systems (e.g. familiarity with different cost management systems). The questionnaire was fully structured, with pre-coded responses and after a careful consideration it was decided to fill in the questionnaires by using personal interviews with top or middle managers. Personal interviews were conducted by 160 specially trained interviewers[1]. Each interviewer questioned 2-3 companies. When choosing companies to be included in the sample, we had no interest to exclude any company. However, our sampling technique corresponds to judgemental or purposive sampling (Churchill, 1999; Zikmund, 2000) as the population elements were selected based on the judgement of interviewers. Nevertheless, the sample is relatively big and offers a good representation of the whole population, as regards the geographical position of the companies and industry (branch) they belong to.

Before testing our research hypotheses we checked the accuracy of data and discovered some contradictions in numerical data (e.g. some companies reported that their return on assets was greater than return on equity). We therefore eliminated those cases from our final sample. Thus our final sample consists of 249 Slovenian companies, which is still an appropriate absolute sample size for both, principal component analysis and discriminant analysis (Hair, Black, Babin & Anderson, 2010). Our final sample consists of 82 (33%) micro companies, 46 (18%) small companies, 50 (20%) medium sized companies and 71 (29%) large companies. Companies are classified according to valid Slovenian legislation at the time of conducting the interviews[2]. 38 per cent of the companies operate in manufacturing, 55 per cent in service industries and 7 per cent in other (non-classified) industries (e.g. non-profit organisations). 55 per cent of companies in the sample conduct their business also in foreign markets, while others operate only in Slovenia. The sample consists of 67 per cent limited liability companies, 24 per cent joint stock companies and 9 per cent other legal entities. 55 per cent of companies in the sample do not use any performance measurement systems, 40 per cent of companies use some form of IPMS (among these companies 13 per cent use the Balanced Scorecard), while 5 per cent of companies use other (non-classified) systems.

In order to test our research hypotheses, we used the second part of the questionnaire. In the survey we asked companies to evaluate the importance of 70 financial and non-financial performance measures using a five-point Likert scale ranging from 1 (meaning "not important at all") to 5 (meaning "very important"). First, we wanted to find out whether the measures used by Slovenian companies can also be grouped according to four performance perspectives of the Balanced Scorecard and if yes – is there a significant difference in average overall importance of different perspectives between companies that use IPMS and companies that do not use such systems.

To examine whether the measures used by Slovenian companies can also be grouped according to four Balanced Scorecard performance perspectives, principal component analysis (PCA) is used. Before applying

[1] Interviewers were properly trained because the research was part of their postgraduate course work.

[2] "Micro company" fulfils two of the following criteria: average number of employees does not exceed 10, annual revenues are less than € 2 million, assets at the end of the financial year do not exceed € 2 million. "Small company" fulfils two of the following criteria: average number of employees does not exceed 50, annual revenues are less than € 7.3 million, and assets at the end of the financial year do not exceed € 3.65 million. "Medium company" is a company fulfilling two of the following criteria: average number of employees does not exceed 250, annual revenues account for less than € 29.2 million, average assets at the end of business year do not exceed € 14.6 million. Other companies were classified as "large companies".

PCA we have to examine if the method is at all applicable. In the first step we check the correlation matrix. The common rule of a thumb is to exclude all variables that have correlation coefficients lower than 0.3 or higher than 0.7 (Hair et al., 2010). Due to very high inter-correlations[3] we have to exclude all financial measures as well as some non-financial measures. Therefore, our final set of variables for PCA consists of 33 non-financial measures.

Table 1

Summary of Principal Component Results

	Rotated Component Loadings		
	Learning and Growth Perspective	Customer Perspective	Internal Business Processes Perspective
Labour productivity	**0.828**	0.158	0.213
Ratio of employees absent due to illness	**0.719**	0.143	0.046
Number of worker injuries	**0.718**	-0.176	-0.155
Use of working time	**0.690**	0.005	-0.039
Fluctuation	**0.682**	0.134	0.116
Ratio of highly educated employees to all employees	**0.597**	0.037	-0.057
Average age of employees	**0.590**	0.105	-0.016
Employee innovativeness	**0.555**	0.075	-0.124
Quality costs	**0.542**	-0.022	-0.304
Cost savings due to products' improvements	**0.514**	0.032	-0.313
Average number of customer complaints	**0.460**	0.010	-0.337
Environment management costs	**0.440**	-0.024	-0.345
Ratio of new customers to all customers	-0.003	**0.878**	0.001
Number of new customers	-0.134	**0.816**	-0.110
Number of active customers	0.171	**0.797**	0.112
Number of lost customers	0.211	**0.737**	-0.046
New customers' sales ratio	0.126	**0.687**	-0.133
Customer profitability	0.119	**0.666**	-0.059
Number of products (or services) removed	-0.110	-0.001	**-0.886**
Products (services) removal ratio	-0.059	0.018	**-0.846**
Number of new products (or services)	-0.150	0.315	**-0.710**
Time-to-market for new products	0.115	-0.001	**-0.688**
R&D cycle	0.143	-0.009	**-0.644**
New products' sales ratio	-0.131	0.368	**-0.635**
Costs of faulty products / services	0.308	0.014	**-0.588**
Average delivery time	0.170	0.041	**-0.583**
Revenue loss due to processes' errors	0.296	0.023	**-0.516**
Average customer size	-0.028	0.376	**-0.511**
Adequate quality of material	0.319	-0.058	**-0.492**
Average order value	0.040	0.289	**-0.476**
Percentage of unmet deadlines	0.357	0.101	**-0.459**
Increase in cost due to processes' errors	0.369	0.021	**-0.434**

[3] By reason of large number of variables, table of correlations is not reported. However, authors can provide it on request.

Order fulfilment ratio	0.384	-0.027	**-0.418**
Eigenvalues	**14.010**	**2.646**	**1.971**
% of variance	**42.454**	**8.018**	**5.973**
Cronbach's α	**0.903**	**0.904**	**0.942**

Note: Component loadings over |±0.4| are considered significant and appear in bold.

Next, we test the adequacy of chosen variables using Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). KMO (0.916) and statistically significant Bartlett's test (P=0.000) indicate that principal component analysis is appropriate. Also, KMO values for individual variables[4] are all well above 0.50 (most of these values range from 0.85 to 0.95).

As far as the missing data are concerned, we first conduct missing value analysis and find out that great majority of missing data can be classified as ignorable ("skip patterns"). Taking into account the nature of missing data we exclude missing cases pairwise. Hence, regarding the sample size question, with the chosen method of exclusion of missing cases, the desired ratio of at least 5 observations per variable as proposed by Hair et al. (2010) is achieved, which further confirms that statistical requirements for principal component analysis are met. Therefore, we are able to test if analysed non-financial measures can be grouped according to three non-financial performance perspectives (customer, internal business processes and learning and growth perspective). We extract three components, using a priori criterion. Because the interpretation of components produced in the initial extraction phase is difficult, we also use oblique rotation (Direct Oblimin). Further, we also check if any outliers are present. We compute component scores, but none have values greater that |±3.0|, so we are able to conclude that there are no outliers. Taking into account the sample size, component loadings of |±0.4| are considered significant for interpretative purposes, as suggested by Hair et al. (2010), even though nearly 80 per cent of component loadings are greater than |±0.5|.

Table 1 shows component loadings after rotation (for interpretation purposes the results of pattern matrix are reported). The variables that group on the same component imply that component 1 roughly represents learning and growth perspective, component 2 represents customer perspective and component 3 represents internal business processes perspective. Three components explain around 60 per cent of the total variance. 70 per cent of communalities are greater than 0.50 (and the rest are all greater than 0.41), suggesting that more than 50 per cent of variance in each variable can be explained by the three components (see also Table 1 in Appendix A).

After we confirmed that non-financial measures used by Slovenian companies can also be grouped according to three non-financial perspectives from the Balanced Scorecard, we are able to test our first research hypothesis:

H1: Companies using IPMS put more emphasis on non-financial measures as opposed to companies that do not use such systems.

In order to test our first research hypothesis we create three new variables that comprehensively represent each of the already mentioned non-financial perspectives. We create these replacement variables by calculating the average score of variables that load highly on each of the three components produced in PCA (i.e. summated scales approach).

Since we had to exclude all financial measures from PCA, we also have to calculate variable representing the importance of financial perspective. We do that simply by calculating the average importance of all financial measures (i.e. return on assets, return on capital, revenues growth, profit growth, liquidity, revenues to cost ratio, solvency, profit margin, value added, economic value added, weighted average cost of capital, return on investment, value added per employee, total revenues per employee, earnings per share, profit per employee, share price, debt-to-capital ratio).

A reliability check for measures representing four performance perspectives yields a Cronbach's alpha of 0.842, indicating good reliability. Mean of all four perspectives is then calculated to represent average overall importance of different performance perspectives (i.e. average overall importance score).

Next, we examine if there is a significant difference in average importance of different perspectives between companies that use IPMS (Group 1) and companies that do not use such systems (Group 0). The

[4] By reason of large number of variables, table containing KMO values for individual variables is not reported. However, authors can provide it on request.

results in Table 2 indicate that average overall importance of all performance perspectives is slightly higher for companies using IPMS than for companies, which do not use these systems. However, in order to statistically confirm this finding, also independent samples t-test is used. Levene's test for equality of variances proves to be statistically significant at $p \leq 0.05$ only for variable representing financial perspective, which means that this variable is tested under the assumption of unequal variances, whereas other variables are tested under the assumption of equal variances. With independent samples t-test the following hypothesis is tested (Churchill, 1999): $H_0 : \mu_0 = \mu_1$ and $H_1 : \mu_0 \neq \mu_1$. As can be observed from Table 2 the data allows us to reject null hypothesis and accept alternative hypothesis only for variables representing financial and learning and growth perspective, whereas for customer and internal process perspective the difference in average overall importance is not statistically significant. Also, if we calculate average importance of all non-financial perspectives as well as of all four perspectives (i.e. average overall importance score), we are not able to reject null hypothesis that there are no differences in means between two groups of companies.

Table 2

Group Statistics and Independent Samples t-test

	IPMS usage	Number of companies	Mean	Std. Deviation	t-test	Sig. (2-tailed)
Financial perspective	Do not use IPMS	149	3.5880	0.64346	-3.987	0.000*
	Use IPMS	97	3.8954	0.55403		
Customer perspective	Do not use IPMS	141	3.3781	1.00235	-0.500	0.617
	Use IPMS	96	3.4432	0.95445		
Internal business process perspective	Do not use IPMS	141	3.1295	0.96708	-0.446	0.656
	Use IPMS	95	3.1844	0.86570		
Learning and growth perspective	Do not use IPMS	145	3.2696	0.82914	-1.977	0.049*
	Use IPMS	97	3.4816	0.79996		
Non-financial perspectives	Do not use IPMS	148	3.2736	0.81645	-1.016	0.311
	Use IPMS	97	3.3790	0.75750		
All perspectives (average overall importance score)	Do not use IPMS	150	3.3559	0.72398	-1.672	0.096
	Use IPMS	97	3.5074	0.64823		

Note: * indicates $p<0.05$

Overall, the results suggest that companies using IPMS do not put more emphasis on non-financial measures as opposed to companies that do not use such systems, even though the results from the independent samples t-test procedure indicate that there is a statistically significant difference in average importance of variable representing learning and growth perspective. Contrary to our expectations we are able to reject null hypothesis and accept alternative hypothesis also for variable representing financial perspective, even though we expected that the difference in means for this variable would not be statistically significant for two groups of companies.

Further, we also examine if it is possible to distinguish between two groups of companies (i.e. IPMS users and non-users) based on overall importance of different performance perspectives. Our second research hypothesis, which is tested using discriminant analysis, is the following:

H2: Based on overall importance of different performance perspectives we are able to distinguish between companies using IPMS and companies that do not use such systems.

Before applying discriminant analysis, we check if underlying assumptions of the chosen statistical method are met. The key assumptions for deriving discriminant function are multivariate normality of independent variables and unknown (but equal) dispersion and covariance structures for the groups as defined by the dependent variable (Hair et al., 2010). The issue of equal dispersion of the independent variables is tested via Box's M test, which reveals a non-significant probability level, so we are able to continue with analysis. As far as multivariate normality of independent variables is concerned, we discover a slight variation from the normal distribution, but since our sample size is relatively big, this variation from the normal distribution can be considered as negligible. Therefore, we apply discriminant analysis and obtain the following discriminant function:

Y_1= -5.159 + 1.757*F – 0.211 * C – 0.972 * I + 0.726 * L

where:

Y_1 = Discriminant function score; F = Financial perspective; C = Customer perspective; I = Internal business process perspective and L = Learning and growth perspective.

Wilks' Lambda shows statistically significant association between two groups of companies and predictors, with discriminant function accounting for 11 per cent of variance (Λ=0.9, $\chi^2(4)$=23.66, p=0.00, canonical R^2=0.1). The standardised discriminant functions coefficients indicate the relative importance of four performance perspectives in predicting whether companies use IPMS or not. Financial perspective and learning and growth perspective have the largest relative contribution in predicting usage of IPMS, which is also in accordance with previous results. Namely, only for these two performance perspectives statistically significant differences between two groups of companies were found.

Furthermore, discriminant analysis enables us to predict group membership. Table 3 shows the prediction of group membership that identifies right and wrong classifications.

Table 3

Classification results

		IPMS usage	Predicted Group Membership		Total
			Do not use IPMS	Use IPMS	
Original	Number of companies	Do not use IPMS	84	50	134
		Use IPMS	35	59	94
	Percentage of companies	Do not use IPMS	62.7	37.3	100.0
		Use IPMS	37.2	62.8	100.0

By using discriminant function, we can correctly classify 62.7 per cent of original group cases.

As an assessment tool for the accuracy of classification we also use the "*I index*", which is an improvement-over-chance estimate. The "*I index*" indicates how much better than chance we can predict group membership and how much better we did by using a classification rule than by relying on chance assignment[5] (Hwang, 2001). It can be calculated as follows:

$$I = \frac{H_o - H_e}{1 - H_e}$$

where:

H_o = the observed hit rate

H_e = the hit rate expected by chance

The observed hit rate (H_o) is calculated as the ratio between number of correctly classified cases (o) and the number of all cases (n), whereas the hit rate expected by chance (H_e) is the ratio between overall chance hit rate (e) and the number of all cases (n). From Table 4 it follows:

$$n = 228$$
$$o = 143$$
$$e = \frac{84}{228} * 84 + \frac{59}{228} * 59 = 46.21$$

Therefore:

$$I = \frac{\frac{143}{228} - \frac{46,21}{228}}{1 - \frac{46,21}{228}} = 0.53$$

[5] Chance rate is determined using proportional chance criterion.

Our calculation reveals that the value of "*I index*" equals 0.53. We conclude that by using a linear classification rule, about 53 per cent fewer classification errors are made than if classification is done by chance. Even though the magnitude of "I index" is a matter of judgement (Huberty, 1994), we argue, that on the basis of overall importance of different performance perspectives, we are able to predict group membership and distinguish fairly well between both groups of companies.

In addition we also examine if companies using IPMS put equal emphasis on different performance perspectives or is there any weighing bias. Our last research hypothesis is therefore stated as follows:

H3: Companies using IPMS put equal emphasis on different performance perspectives.

The balance between different performance measures is estimated via standard deviation of average overall importance score. A large standard deviation indicates that four perspectives are not weighted equally, while a small standard deviation suggests that there is little weighing bias and that importance of each performance perspective is similar to the average overall importance score. In other words, the lower the standard deviation of the average overall importance score, the more equally balanced is the importance of different performance perspectives. Due to the fact that the value of standard deviation indicating presence of weighting bias is a matter of judgement, we test our last research hypothesis using independent samples t-test. We expect that there will be a statistically significant difference in the mean of standard deviation between both groups of companies. Namely, we anticipate that on average companies using IPMS have lower standard deviation as opposed to companies that do not use these systems. Levene's test is not significant, which means that our third research hypothesis is tested under the assumption of unequal variances. The results indicate that on average companies using IPMS have higher standard deviation as opposed to companies not using such systems, but this difference is not statistically significant (see Table 4).

Table 4

Group statistics and Independent Samples t-test

	IPMS usage	Number of companies	Mean	Std. Deviation	t-value	Sig. (2-tailed)
Standard deviation of overall importance score	Do not use IPMS	148	0.5216	0.28787	-0.732	0.465
	Use IPMS	97	0.5496	0.30005		

Contrary to our expectations the results suggest that companies using IPMS do not put equal emphasis on different performance perspectives. Moreover, companies that do not use IPMS seem to have less weighting bias in the importance of different perspectives as opposed to companies using IPMS, which is not in line with our expectations. However, previous results (see Table 2) imply that on average importance of every performance perspective is slightly higher for companies using IPMS than for companies, which do not use these systems.

4. ANALYSIS OF RESEARCH RESULTS

Using data from a survey of Slovenian companies, we investigated how importance of different performance perspectives differs between companies using IPMS and companies that do not use such systems. Reflecting theoretical background and previous research findings (Boulianne, 2008; Chenhall & Langfield–Smith, 2007; Ittner, Larcker & Meyer, 2003; Kaplan & Norton, 1996; Moers, 2005) we expected that IPMS users put much more emphasis on non-financial perspectives as opposed to the companies that do not use such systems. On the other hand, we did not expect statistically significant difference in average overall importance of financial perspective between both groups of companies. Contrary to our expectations, our research findings imply that there is a statistically significant difference in the average overall importance of financial perspective between both groups of companies, whereas for non-financial perspectives, statistically significant difference is found only for variable representing learning and growth perspective. Depending on existing theory (Bourne et al., 2003; Hoque & James, 2000; Michalska, 2005), which implies that companies not using IPMS measure their performance mainly on the basis of financial measures, whereas companies using IPMS measure their performance based on multiple performance

perspectives, our research results are rather surprising. Namely, the empirical results suggest that both groups of companies differ only with respect to the emphasis they put on financial and learning and growth perspective. Implicitly this could mean that Slovenian companies use IPMS inefficiently, because they still perceive financial performance measures as more important than non-financial (see also Marc et al., 2010; Peljhan et al., 2006 where we found similar results). One possible explanation regarding the results about the importance of non-financial perspectives is also that companies not using IPMS actually measure their performance from multiple performance perspectives, even though this explanation seems to be less likely. Also, companies not using IPMS may be neglecting financial perspective by not measuring it systematically, which would explain why statistically significant difference in average overall importance of financial perspective is found.

Next, we also wanted to know, if it is possible to predict group membership (i.e. IPMS users and non-users) based on average overall importance of different performance perspectives. By using discriminant function, we are able to correctly classify 62.7 per cent of original group cases. As an assessment tool for the accuracy of classification we also used an improvement-over-chance estimate. Our calculation reveals that by using a linear classification rule, about 53 per cent fewer classification errors are made than if classification is done by chance. Even though the magnitude of this result is a matter of judgement, we conclude, that on the basis of overall importance of different performance perspectives, we are able to predict group membership and distinguish fairly well between both groups of companies. Furthermore, our results also suggest that financial perspective and learning and growth perspective have the biggest relative contributions in predicting usage of IPMS, which is in accordance with previous results. Namely, only for these two performance perspectives statistically significant differences between both groups of companies were found.

Furthermore, we also investigated whether companies using IPMS put equal emphasis on different performance perspectives or is there any weighing bias. The results are inconsistent with our research hypothesis that companies using IPMS put equal emphasis on different performance perspectives (Boulianne, 2008; Ittner, Larcker & Meyer, 2003; Moers, 2005). Namely, our empirical results imply that companies using IPMS have higher standard deviation of overall importance score as opposed to companies not using IPMS. This suggests that companies not using IPMS measure different performance perspectives in a more balanced way as opposed to companies using such systems. However, our results (see Table 2) also imply that on average importance of every performance perspective is slightly higher for companies using IPMS than for companies, which do not use these systems.

In sum, the empirical results confirm our second research hypothesis (i.e. we are able to distinguish fairly well between IPMS users and non-users), whereas our first and third research hypotheses are not confirmed by our research findings (i.e. IPMS users do not put more emphasis on non-financial measures as opposed to IPMS non-users; moreover, these companies also seem to measure different performance perspectives in a less balanced way than IPMS non-users). However, based on our results, we are not able to conclude, that Slovenian companies use IPMS ineffectively. Namely, our findings should be interpreted with certain limitations in mind. First of all, we test all our hypotheses on average values of all variables. It is possible that results of Group 1 are biased by companies that ineffectively use IPMS, which is why the results of our empirical analysis may not reflect the real circumstances. Furthermore, results of the study may also be biased by some design choices made regarding the questionnaire. Also, the generalisation of research results is limited because only Slovenian companies are included in the survey. Finally, there is also possibility that companies emphasise specific performance perspectives in order to enhance their performance in areas where they might currently be underperforming, which would explain why we were unable to confirm our first and third research hypotheses. In spite of this, our study begins to reveal possible reasons that could influence the effectiveness of IPMS.

5. CONCLUSIONS

The purpose of the study was to find out whether the measures used by Slovenian companies can also be grouped according to four BSC's perspectives and if yes – is there a significant difference in average overall importance of different perspectives between companies that use IPMS and companies that do not use such systems. Also, we examined whether performance perspectives are weighted equally by companies using IPMS or is there any weighting bias.

Overall, the results confirm that non-financial measures can be grouped according to proposed non-financial perspectives. Also, the average overall importance of different perspectives differs between companies that use IPMS and companies that do not use such systems, even though this difference is statistically significant only for financial and learning and growth perspective. Furthermore, the results indicate that different perspectives are not weighted equally and weighting bias appears to be greater for companies using IPMS than for companies not using such systems.

The literature review revealed a deficiency of empirical studies about actual importance of different performance perspectives in IPMS. Our study fills this gap by analysing a large sample of Slovenian companies and provides relevant empirical findings regarding possible issues that could potentially influence also the effectiveness of IPMS. Moreover, the study exposes some interesting relationships that require further research. Further research should therefore focus on studying the relationship between IPMS's effectiveness (e.g. improved financial performance) and overall importance of different performance perspectives. In order to get a better understanding of this issue, case study approach should also be used in the future.

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APPENDIX

Appendix A: Additional PCA Results

Table 1

Communalities (Extraction Method: Principal Component Analysis)

	Initial	Extraction
Number of active customers	1	0.678
Ratio of new customers to all customers	1	0.769
Number of lost customers	1	0.739
Customer profitability	1	0.559
New products' sales ratio	1	0.632
Average delivery time	1	0.498
Average customer size	1	0.543
Percentage of unmet deadlines	1	0.584
New customers' sales ratio	1	0.662
Average number of customer complaints	1	0.493
Revenue loss due to processes' errors	1	0.529
R&D cycle	1	0.525
Environment management costs	1	0.458
Use of working time	1	0.508
Increase in cost due to processes' errors	1	0.504
Fluctuation	1	0.466
Labour productivity	1	0.636
Average age of employees	1	0.415
Employee innovativeness	1	0.438
Ratio of highly educated employees to all employees	1	0.414
Adequate quality of material	1	0.475
Ratio of employees absent due to illness	1	0.572
Quality costs	1	0.545
Average order value	1	0.455
Costs of faulty products / services	1	0.639
Number of new customers	1	0.680
Number of new products (or services)	1	0.670
Number of products (or services) removed	1	0.695
Products (services) removal ratio	1	0.679
Time-to-market for new products	1	0.569
Number of worker injuries	1	0.574
Cost savings due to products' improvements	1	0.550
Order fulfilment ratio	1	0.473

FIRM PERFORMANCE, CORPORATE DECISIONS AND THE ROLE OF MANAGERIAL OPTIMISM – THE CASE OF GREECE: LITERATURE REVIEW AND METHODOLOGY

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Abstract

Although corporate investment has been of great interest for researchers for many years, research on its correlation with behavioural corporate finance, psychology and investment decision process is quite limited. Since the mechanism of investment decision process is crucial for firms we hope that this study will demonstrate several ways in which managers could tackle with risk and personal, psychological biases in order to achieve greater outcomes. The investigation of managerial behaviour, its mindset and potential behavioural biases such as managerial optimism, is the main area of research in order to find out if these factors can be accounted for the underperformance of companies. Corporate investment decisions are among the most important decisions that firms have to deal with. In order to fully understand the investment decision process we have to focus on investment measures such as capital expenditures, investments in advertising, R&D and intangible assets (Glaser, Schafers and Weber, 2008). Investment decision process encompasses risk and thus, managers have to make decisions that are more or less risky. How managerial optimism as well as other psychological biases affect a firm's investment decision process (Behavioural Corporate Finance)? Is there an optimum procedure risk – averted or not in order to achieve the best investment opportunities for a firm? These are the main questions we deal with in this paper in order to read into managerial optimism and its impact on firm performance and corporate decisions. In our paper we link balance sheet and stock market data as well as optimism measures of managers based on their insider trades (directors' dealings). Our main sample is based on all non-financial Greek ASE stocks between 2008 to present as well as on insider trading data of all senior managers of companies listed in the Athens Stock Exchange.

Keywords: managerial optimism, decision-making, behavioural corporate finance, self-attribution bias, business performance.

1. INTRODUCTION

People, including managers and business leaders, normally associate the quality of a decision with the quality of the result. When managers observe a good result, they believe that they have made a good decision. However, decisions and results are two different things. Decisions are made at a specific moment in time; in the event, people apply these decisions, and the result is observed in the future which seems normally uncertain. The events that happen in the future are not being controlled by managers. Moreover, often managers cannot predict the events that happen. Such events can cause good decisions to have a bad result as well as bad decisions to have a good result. Therefore, the quality of the result is not demonstrative of decision quality (De Reyck and Degraeve, 2010).

Of course, results are not irrelevant for firms and managers. Managers are eventually responsible for the good results for the firm, and responsible to the stockholders who demand the maximising of their profit. Firms usually do two things to achieve, on average, better results. Firstly, they choose to employ the better possible process. Managers using knowledge are obliged to learn to become better business executives. They can learn how to apply the rules of decision-making, learn how to perform better and how to manage their firm using experience and knowledge which are imperative in decision making process. Secondly, firms try to manage the risk in any business project they undertake. That is why the manager must act responsibly for the overall results of the firm (De Reyck and Degraeve, 2010).

The starting point when analysing corporate investment policy decisions is commonly that a firm's investment should depend exclusively on the profitability of its investment opportunities. However, the evidence over the last years strongly shows investment depends on cash flow as well (investment – cash flow sensitivity). A rush of cash flow leads to the result that managers invest too much (Glaser *et al*., 2008). Based on the asymmetric information theories anyone might realise that managers themselves restrict external financing in order to avoid issuing undervalued shares. Recently many behavioural corporate finance theories have been found based on managerial biases in order to explain corporate decisions. Although there is a huge behavioural finance literature in investor behaviour, there is a little empirical research in behavioural corporate finance.

According to Tombaugh (2005) optimistic managers are more likely to see problems as challenges as well as opportunities, strive for longer periods to reach their goals, and search for and appreciate the positive aspects of difficult situations. Therefore, optimism generally influences work and eventually firm performance. Does managerial optimism play an important role in corporate decision making? Do overconfident managers act in the interests of their shareholders preserving their wealth? The overconfidence hypothesis states that managers are simply overconfident and over-invest (Doukas and Petmezas, 2007). However, due to their overconfident profile they tend to devaluate the risks and often make destructive decisions for their firms. Therefore, is overconfidence driven by managers' self attribution bias? All the above questions are going to occupy us trying to understand the power of managerial optimism in decision making process and the existence of self-attribution bias while tackling corporate investment policy decisions.

Heaton (2002) stated that two extremely important features emerge from a simple model of corporate finance with optimistic managers and efficient capital markets. First, optimistic managers state that capital markets undervalue their firm's risky securities, and may decline positive net present value projects that must be financed externally. Second, optimistic managers overvalue their own corporate projects and may want to invest in negative net present value projects even though they are feeling loyal to their shareholders eventually being related to free cash flow without appealing to asymmetric information or rational agency costs.

The basic objective of this study is, therefore, the investigation of what makes managers to run the process of decision-making within their firm and how psychological biases like optimism and overconfidence can drive their instincts and make them decide what is best for their firms' outcomes. The connection of optimism with the firm's performance is going to constitute the main aim of this study. More generally, this study is going to investigate and expand the link of psychological measures and economic variables in order to test behavioural finance models (Glaser et al., 2008; Puri and Robinson, 2007).

2. THEORETICAL BACKGROUND

2.1 Behavioural finance

Behavioural finance implies the study of finance that is based on solid assumptions regarding the way people behave and act. According to Shefrin (2005) behavioural finance is the consideration of how psychological effects have an impact on financial behaviour. The behavioural perspective of finance has emerged as a challenge and as an alternative new dimension opposed to the traditional finance based on neoclassical economics. Finance theory, like all other forms of economic theory, demands of some specific assumptions regarding investors' behaviour, decision making and attitude towards risk.

Rationality as a human characteristic has not always been doubtful. According to Jensen (1986) the resourceful evaluative maximising model (REMM) of the human behaviour is in opposition to the social victim model of a more sociological tradition. The REMM model is based on a series of assumptions

regarding human beings who care and evaluate, have infinite needs, have as an object of life to maximise their well-being and are creative and ingenious in seeking out their best interest. On the opposite, in the social victim model of human behaviour, movements and actions are principally determined by family background, social group categorisation or genetic structure. Any rational act illustrates both beliefs and desires of those who undertake the act. Consequently, any judgment regarding rationality of human actions postulates coherence in the beliefs and wishes of humans (Elster, 1986).

Behavioural finance incorporates some important implications for the practice of corporate finance. According to Forbes (2009), the traditional approach of corporate finance is based on rational behaviour, the existence of efficient markets and the capital asset pricing model (CAPM). Defenders of behavioural finance support that psychological forces intervene with the three components of the traditional approach that were quoted earlier (Roll, 1986; Weinstein, 1980; Malmendier and Tate, 2004, 2005a, 2005b). They argue that psychological phenomena prevent decision-makers from rational actions.

Behavioural corporate finance examines the impact of managerial psychological biases on a firm's corporate finance decision process. Traditionally, scholars have based their research assuming that managers are fully rational. However, they have also recognised that psychological biases of managers affect decision-making in financial markets and firms. Consequently, behavioural finance has emerged as a challenge to the traditional example during the last years. Behavioural finance is a complete approach that connects finance, psychology and sociology. Financial psychology research has shown that human cognitive biases have many irrational components, even when human beings try to make rational decisions. The cognitive delusions therefore are more likely to affect investment decision process (Kahneman and Riepe, 1998).

2.2 Heuristics and biases

In the late 1960s and early 1970s Amos Tversky and Daniel Kahneman revolutionised research on human judgment with the introduction of their "heuristics and biases" program. Consequently, any discussion of the contemporary history of research on human judgment must encompass the classical model of rational choice. This model was applied strongly in economics. However, its substantial influence can be regarded in all behavioural and social sciences. According to this model, the rational actor's job is the choice to optimally combine probability and utility.

Ritter (2003) argued that cognitive psychologists have established many ideas regarding the behaviour of human beings. They underlined the importance of heuristics, having a great impact on decision-making. They favoured the process of making decisions and make it easier. Heuristic refers to experience-based techniques for problem solving. This pattern is used to expedite the process of finding good solutions. Examples of this pattern incorporate a "rule of thumb", an educated guess, an intuitional judgment, or common sense. However, heuristics can often lead to biases, especially under changing circumstances. These can often lead to investment decisions that are below the optimal level or standard (Gilovich Griffin and Kahneman, 2002).

Humans tend to be overconfident regarding their abilities and efficiencies. Managers particularly are likely to be overconfident. Men also appear to be more overconfident than women. Overconfidence can be expressed in many ways. According to Ritter (2003) one characteristic is the existence of too little diversification. People tend to invest too much in what they feel more familiar with, so they avoid diversification in investment. Mental accounting is a concept first depicted by Thaler (1980). It attempts to describe the procedures whereby humans codify, categorise and appreciate economic outcomes. People sometimes tend to differentiate decisions that should, mainly, be associated. The mental accounting bias also influences investing. For example, some investors divide their investments into safe and speculative in order to prevent the negative returns that may affect their entire portfolio (Thaler, 1999).

Tversky and Kahneman (1981) have displayed that framing can influence the outcome of choice problems. This has led to the development of prospect theory as an alternative to rational choice theory. The form or framing of problems confronted by decision-makers is determined on one hand from exogenous guidance of the decision-options offered and on the other hand from forces endogenous to decision-makers (norms, habits, and unique temperament). The representativeness heuristic is a psychological term presenting people judge the frequency or probability of a hypothesis. Although it may eventuate as a very useful pattern in everyday life, it can also result in cognitive biases. The representative heuristic that was first proposed by Tversky and Kahneman (1973a, 1973b, 1974) can lead to a bias toward the belief that causes and effects will resemble each other.

2.3 Overconfidence and optimism

The cognitive psychology literature argues that most people usually display optimistic expectations about the future. On one hand, individuals are more optimistic when they believe that they control positive outcomes and when they are highly committed to them (Weinstein, 1980). Managers, on the other hand, are more optimistic when they control their firm's performance and they feel committed to this good performance because their personal wealth, employability as well as reputation are highly dependent on it (March and Shapira, 1987; Gilson, 1989). Given their leadership positions and managerial compensation, managers are likely to have an important impact on their firms' success (Kaplan, Klebanov and Sorensen, 2008).

The notion that specific managers may be overconfident regarding their own abilities to manage, the selection of upper investment projects and the precision of their knowledge is encouraged by psychological studies of judgment. The most significant finding in this area of study is the phenomenon of overconfidence. Specifically, overconfident managers tend to consider that future outcome of mergers are under their control, especially regarding outcomes of mergers that they are highly committed (Weinstein, 1980; Weinstein and Klein, 2002). A manager who is deceived regarding his power of control is likely to be extremely optimistic about the future prospects of a merger (Langer, 1975; Langer and Roth, 1975; March and Shapira, 1987).

Glaser et al. (2008) argued that there are two important and necessary conditions for a positive relationship between managerial optimism and risk-taking, pure chance related risk and imprecise probabilities. Apparently, this means that there is no relationship between optimism and risk-taking. However, in decision process it is difficult to relate optimism and the level of risk tolerance regarding tasks where risk is skill-related. According to March and Shapira (1987) managers use different principles for risk decisions than standard decision theory. Risk consequently is regarded as a choice based on the expected value of return of a different option. Additionally risk-taking does not seem correlated to adversity. Managers usually do not equate risk with diversity in potential outcomes because they regard risk mostly as a danger. The managerial definition of risk is that a risky decision contains a constant threat of a poor outcome. Hierarchy in management is also very important regarding risk-taking by managers of different level. Higher level managers are more risk-takers than lower level managers and very often try to encourage lower level managers to take more risk.

According to Doukas and Petmezas (2007) the overconfidence hypothesis states that managers are overconfident and over-invest. They also feel that are superior regarding others and more competent. Specifically, overconfident managers strongly believe that future merger outcomes are mainly under their control. Malmendier and Tate (2004, 2005a, 2005b) also tried to demonstrate that overconfidence helps explain merger decisions. Another interesting point in literature is self-attribution bias as reinforcement to individual overconfidence (Langer and Roth, 1975; Miller and Ross, 1975). According to Svenson (1981) this bias is similar to the "better than average effect" which suggests that individuals believe they have above-average abilities to make the correct decisions. Since self-attribution bias amplifies overconfidence, those managers who suffer from this bias are more likely to be highly overconfident regarding their judgment and overestimate or underestimate the positive or respectively negative outcomes of a possible merger.

Finally, regarding firm investment and optimistic managers, Glaser et al. (2008) underlined the fact that managerial optimism gives an explanation for corporate investment even when other variables are controlled for. This is mainly driven by managers' optimism regarding capital expenditures. The effects of managerial optimism on capital expenditures are stronger in small firms as well as stocks with a low percentage of closely held shares. Still regarding acquisitions there is a difference between the fact that all managers decide together as a group and an individual manager deciding alone. Optimism of all managers significantly increases the probability of an acquisition whereas single manager's optimism alone does not.

2.4 Decision-making under risk and prospect theory

To understand developments in behavioural finance we need to read into how financial decisions are made under risk and uncertainty. Luce and Raiffa (1957) give their definition of "risk" by distinguishing three types of decision-making situations. Most decision-makers make their decisions either under certainty, where every action is expected to lead to a specific outcome, under risk, where every action can lead to one of some specific outcomes occurring with a known probability, and under uncertainty, where each action may result in a set of outcomes occurring with no known probability.

Kahneman and Tversky (1979a and 1979b) first developed a theory that depicts decisions between alternatives which require risk where the probabilities are known, and was first displayed as a psychologically realistic alternative to expected utility theory. This theory is known as prospect theory and describes decisions that are based on judgments under conditions of risk and on psychophysical models such as those that originally inspired the expected value proposition. They applied these psychophysical patterns in order to investigate judgment and decision-making. People make decisions without knowing the exact computations their brain makes in editing and valuating choice.

Prospect theory upgrades the idea of "utility" in a very useful and precise direction and adds the extra information of the difference that exists between utility curves in domains of gain and in domains of loss. Moreover, the pattern of prospect theory's value curves is parallel among individuals. Explicitly prospect theory is also more flexible than a subjective expected utility model that would presuppose greater information about the individual utility curve before prediction would get possible (Kahneman and Tversky, 1979a, 1979b). It is also designed to rationalise the idea of a common pattern of choice. It is descriptive and naturally empirical; perhaps the foremost of the elements of behavioural economics and its application to the area of finance.

2.5 Main findings

According to Heaton (2002) the managerial optimism theory associates the costs and benefits of free cash-flow with two variables: managerial optimism and investment opportunities. Optimistic managers believe that capital markets value their firm's risky securities at low prices and consequently pass up projects with positive net present value that must be financed externally. It has been demonstrated that managers although they are loyal to shareholders, many times they wish to invest in negative net present value projects. These results suggest an overinvestment-underinvestment tradeoff connected to free cash-flow, without appealing to asymmetric information and rational agency cost theories. The adopted model suggests that the implications of free cash-flow are hazy.

The model of Malmendier and Tate (2004) predicts that overconfident managers tend to undertake value-destroying acquisitions when perceived synergies and the company's equity undervaluation are substantially large while the part of the deal that is financed by equity is significantly small. Additionally, they argue that an overconfident manager is more probable to conduct an acquisition than a "rational" manager.

Lin, Hu and Chen (2005) try to examine the relation between managerial optimism and corporate investment decisions by reading into the impact of managerial irrationality on corporate policies. Consistent with the vast majority of literature they accept that optimism is a personal characteristic, which leads managerial decisions into a systematic overestimation of a firm's future performance. Consistent with Weinstein (1980) and March and Shapira (1987) they find that individuals in general are more optimistic when they have full control of outcomes and particularly managers tend to be more optimistic when they have their firm's performance under their control.

Due to the lack of empirical evidence documenting that self-attribution bias matter to managerial decision-making, Billett and Qian (2005) explore managerial self-attribution bias in mergers and acquisitions by focusing on the sequence of deals made by individual acquirers. They find that there are two characteristics that are exhibited when managers by mistake attribute past acquisition success to skill rather than to good luck. The first is that acquirers will be more likely to acquire again if they become overconfident due to successful acquisition experience. The second characteristic is that acquirers eventually will do worse in their consequent acquisitions because of this overconfidence.

Additionally, Ben-David, Graham and Harvey (2006) document that overconfidence of individuals is strongly connected to personal characteristics and firm history. In their sample, overconfident managers generally are employed in firms that have grown quickly in the five years preceding to their survey and have optimistic ideas regarding the future of the US economy. Yet, consistent with the psychology literature (Heath and Tversky, 1991) they argue that managerial overconfidence and managerial optimism increase along with skill and education levels and decrease with professional experience of managers as well as firms with optimistic managers tend to keep up the higher debt ratios and longer debt maturity, usually pay out fewer dividends, repurchase fewer shares, have greater proneness to issue managerial forecasts, invest more vigorously and depend more intensively on variable performance-based compensation. Finally, their results indicate that overconfidence and optimism psychological biases are associated with both personal characteristics as well as firm culture.

While the majority of literature suggests that mergers and acquisitions display the agency relation between managers and shareholders (Jensen and Meckling, 1976), Doukas and Petmezas (2007) try to examine whether managerial overconfidence can explain the short-term and long-term performance of mergers. Their overconfidence hypothesis mainly argue that managers are simply overinvest and overconfident. Overconfident managers believe that they have upper skills and are more capable and efficient than others. These cognitive biases lead them to be arrogant regarding their decision-making and often to engage in extremely complicated and risky tasks such as acquisitions.

Glaser et al. (2008) underline the importance of behavioural finance in explaining corporate decisions while trying to add more empirical research in behavioural corporate finance. They mainly concentrate in a specific behavioural bias of managerial decision-making, optimism. They ascertain their basic hypothesis that managers are optimistic. Managers voluntarily increase their exposure to company specific risk, although they should try to avoid it and reduce their exposure. As a consequence they also find that firms which are being managed by optimistic managers invest more. The investment cash-flow sensitivity is greater for firms with optimistic managers mainly for financially constrained firms. Glaser et al. (2008) confirm the behavioural corporate finance models as previously Heaton (2002) and Malmendier and Tate (2005a, 2005b) had done. Their results are consistent with the notion that in some firms, managers are biased and make decisions that are often harmful for the firm.

Martin (2008) tries to shed light on managerial behaviour and on the behavioural biases that are responsible for the underperformance of firms. He draws his theoretical prediction both from the behavioural literature as well as from the rational expectations literature. Optimistic managers are identified by studying their personal trading behaviour. To test the optimistic manager hypothesis, Martin (2008) investigates the impact of the amount of new cash that was raised from primary shares, on firm performance, conditional on insider buying. Generally, Martin (2008) explores the differences in corporate investment decisions by optimistic and pessimistic managers.

With a survey-based approach Graham, Harvey and Puri (2009) try to provide new insight on corporate decisions. They focus on psychometric personality tests and other behavioural phenomena. Their study attempts to measure attitudes of managers directly through personality tests in order to connect them with firm level policies. The survey investigates managerial personal characteristics using information from educational and demographic criteria. Specifically, Graham et al. (2009) find that these corporate policies are significantly related to the personal characteristics of managers. Firms with risky managers tend to initiate more mergers and acquisitions. Additionally, optimistic managers usually expect the profitability of their firm will last a little longer, or they are extremely confident regarding the future.

3. METHODOLOGY, RESEARCH DESIGN AND DATA

We formulate our basic hypothesis that we will also test in our study (Glaser et al., 2008; Malmendier and Tate, 2005a) that is, the investment of firms with optimistic managers is more sensitive to cash flow than the investment of firms which do not have optimistic managers. The main variables we use are total assets, leverage ratio, sales growth, cash flow, lagged assets, capital expenditures and Tobin's Q. Tobin's Q that has substantial macroeconomic importance, will be calculated based on Baker, Stein and Wurgler (2003) and Glaser et al. (2008): Q is the market value of equity plus assets minus the book value of equity all over assets.

In this paper we try to link balance sheet data and stock market data correlated with optimism measures of managers. Our main sample consists of all non-financial Greek stocks of firms listed in the Athens Stock Exchange between 2007 to present. We exclude all financial firms due to the fact that these firms compile their annual statements using differing approaches. We run our basic regressions (disconnected from optimism measures) using data from the same period in order to analyse whether this period is rather special regarding the investment behaviour of firms.

Directors' dealings data will help us base our optimism measures. These deals are specifically all transactions of members of the Executive and Supervisory Board on their personal accounts. According to the Greek regulations of transactions in the Athens Stock Exchange a firm has to report any share transaction carried out by a member of its board of directors that has to do with the firm's shares to the Supervisory Authority of Athens Stock Exchange. During the period from 01/01/2007 to 31/06/2012 a total of 18,574 directors' dealings were reported according to Directors Deals – Global Data & Analysis, which is a specialist global market data company which monitors and analyses share transactions made by directors in

the shares of their own company. All transactions that were executed by legal entities were excluded because the study is based on individuals' transaction behaviour. For example, share repurchases, pension transactions, stock transfer to employees, securities lending and subscriptions rights, that are being executed by legal entities were excluded from the sample.

As a result, 17,061 transactions (14,655 bys and 2,406 sells) of insiders executed by members of the Executive and Supervisory Board will be used in this empirical analysis. 1,513 transactions were excluded such as zero stock price, subscribe, exercise, contract buys and awards. These rejected transactions will constitute a second data set that will be used for robustness check of our results. The directors' dealings data consists of information regarding the date that the transaction has been reported, the name of party that carries out the trade, the type of the transaction, the date and currency of the transaction, the number and price of shares traded and the number of buys/sells used to score the director in Dealing Rank.

The optimism measures we use are based on Glaser et al. (2008) who constructed for optimism models, using four measures; the number of purchases, the number of sales, the volume of purchases and the volume of sales which are accumulated on an annual basis. These optimism measures are based on transactions of members of the Executive and Supervisory Board on their personal accounts. In line with Glaser et al. (2008) we incorporate members of the Supervisory Board too in the estimation of optimism measures because very often the Supervisory Board influences the decisions on corporate and investment policy decisions.

The calculation of optimism measures first of all will help us divide the total of CEOs and CFOs that were taken into consideration in our research, to two groups. The first group will constitute of the optimistic managers and the second one of the non-optimistic managers. The correlation of optimism measures will help us examine the significance level of decisions made by managers (directors' dealings) regarding their position in firm (either CEOs or CFOs). Next, we aim to examine the relation between managerial optimism and corporate investment by implementing our basic regressions, using our main variables such as cash flow, leverage ratio, sales growth and total assets according to the managerial optimism constant. Finally, we intend to investigate the same relation based on firm size and ownership structure. Empirical results will also be quoted regarding optimistic managers versus rational managers; how the psychological bias of optimism affects their firms' performance.

4. DISCUSSION AND CONCLUSION

Although corporate investment has been of great interest for researchers for many years, research linked with behavioural corporate finance, psychology and investment decision process is quite limited especially in Europe and more specifically in Greece. Moreover since the mechanism of investment decision process is crucial for firms we hope that this study will demonstrate several ways in which managers could tackle with risk and personal, psychological biases in order to achieve greater outcomes. The implementation of Risk Management in corporate investment decision process is of great interest because risk is associated with any form of finance and investment.

Apparently it is crucial to examine the effect of losses in decision making under risk and uncertainty. It intrigues us to extend our research specifically in Greece because capital markets in Greece are still at an early stage. It is generally admitted by academics and businessmen that the theory as well as practice of financial management and corporate investment in Greece is somewhat primitive compared to the North American standard. The only stock – exchange in Greece, the Athens stock exchange, is almost motionless. Low savings rates and unsophisticated managers and investors are the chief reasons for the narrow financial markets.

Therefore, our basic aim is to appreciate the present understanding of corporate investment decision process, to examine in depth its mechanism, analyse managerial psychological biases such as optimism and risk aversion to examine risk management and its impact on corporate investment process and to update the research attempts worldwide, and especially in Europe, on corporate investment policy. Since no study has been yet conducted in Greece regarding the impact of behavioural corporate finance and risk managerial perspectives on corporate investment policy, we intend to empirically examine what drives managers to make decisions either risk-free or risky. We use two unique samples of Greek stocks as well as transactions made by managers of both private and public sector in Greece in order to investigate whether managerial optimism may analyse how the strict decision process works within a firm. Finally, we intend to explore, analyse and compare the results with other in other countries and make considerations and suggestions for Greek managers generally regarding investment policy decision-making.

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A STUDY OF INNOVATION BASED IT CONVERGENCE AS A STRATEGIC ROADMAP TO BUSINESS PERFORMANCE ACCELERATION FOR HIGH END IT VENDORS: AN INSIGHT TO THE DYNAMIC INTERACTIVE TV MARKET

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Abstract

Even though the technological diffusion and diversification and the associated market divergence and fragmentation have fueled up the global IT market, a significant trend is materialized during the past decade towards the technological convergence. This trend is observed both among companies that operate within the ICT market, where the technology is the business driver, but also among companies operating within different markets, where the technology is just one of the business enablers and attempts have been realized by researchers to study the effected dynamics in both cases.

The aforementioned trend seems to be shaped and encouraged by institutional bodies (The World Bank, EU, National Governments etc.) often leveraging regulation as a master tool, but also by major global field players (commercial vendors, operators, consultancy organizations, banks etc.).

Do diversification and market divergence continue to secure a sustainable competitive advantage in the context of the high – end ICT market or can the convergence of high end technologies empower the process re-engineering to the extend to become the key to the acceleration of the performance of the same businesses? Is innovation the exclusive product of technology diffusion alone or could the technology convergence also found and gear up innovative business services? The Interactive TV market is a typical example of a high-tech, dynamic, innovative IT market where technological divergence seems to compete against technological convergence over the market shares and the business performance consolidation award.

This study is intended to investigate and evaluate the association between IT convergence and business performance acceleration in the context of the high – tech innovative IT market. To serve the interest of the specific study, the dynamic Interactive TV market is going to be used as a typical example of a high-tech, rapidly evolving, intensely diffused and diverged, innovative IT market. Through the insight to the specific market, the contribution of innovation geared technology convergence to the convergence of the various business models operated within the different segments of the same high – tech IT market and the effected business process re-engineering is going to be analyzed. Furthermore, the relation and the dynamics of the associated business network simplification are going to be examined. Are there emerging opportunities for organizations to benefit from were technologies converge? Can organizations use the convergence of their utilized and commercialized technologies as a strategic tool to create and leverage market changes rather than spending resources and lining up to predict and respond to the latter?

Keywords: business performance acceleration, technology convergence, standardization, interactive TV, innovation, business model convergence, business process re-engineering, innovative IT, ICT convergence.

1. INTRODUCTION

At the time we set forth our research, technology convergence is realized and demonstrates a rapid dynamic trend towards a maturity phase (Raja and Singh, 2010). Convergence is already a reality within the ICT and high-tech industries themselves, between them and, last but not least, among them and other industries at multiple levels (Bengtsson and Johansson, 2011; Kim et al, 2010, 2011; Leker and Curran, 2010; Hwang and Yeon, 2011). In this setting, the evolving technology acts as a facilitator and as an enabler at the low and high levels respectively, the emerging business models serve as footprint frameworks and the associated regulation seems to assume a "gear – box" role that is often leveraged to shape and manipulate the dynamics of the above – mentioned dynamics of a "converging world" (Accenture, 2010; S&T Foresight ONSA Government of Canada, 2005; Stazi, 2007). Government - level organizations, global policy – setting institutions and financial pillars of the global economy are proactively involved on that front, forwarding, in many cases, the role of ICT convergence as an economic and regional development tool, put in various scale settings (Raja and Singh, 2010; Matrix 2011; Okuwada 2006; Nuno 2009; Stobbe A. and Just T., 2006; Jussawalla, 1999; Kolko J., 2012[6]).

An important part of this study draws on Frederick Hacklin's work as presented in his book *"Management of Convergence in Innovation. Strategic Capabilities for Value Creation Beyond Blurring Industry Boundaries"*. In his work, Hacklin suggests an empirical definition of convergence as the phenomenon realized at the "intersection of established and clearly defined industry boundaries" which effects dramatic industry boundary instability and erosion, issuing a systematic study of the convergence phenomenon with respects to the innovation dynamics through an evolutionary perspective. He also models, retrospectively and predicatively, a cyclical incurrence of the phenomenon of convergence, with different "high profile" industries intersecting and reacting during the course of each cycle[7]. Accepting Hacklin's broad, evolutionary definition of convergence and his finding, including the associated dynamic – capability based innovation management approach, we intend to study the same phenomenon under a different perspective: the inner – industry business performance perspective.

Through the business performance glance of the convergence phenomenon dynamics, we intend to examine whether Hacklin's model of the cyclical inter – industry convergence can be further complemented by a recursive inner – industry convergence – divergence succession phenomenon[8] milestoned by the effected business performance outcome. On the basis of the validation of the afore – mentioned integrated model, we plan to study the strategic dimension of the convergence phenomenon and systemize the strategic positioning of an organization within our concluded model.

The extensive research conducted on the modern convergence related scientific, academic and industrial literature, sets the high and low technology industries and, among them, the ICT industry in particular, at the eye of the contemporary industry convergence related discussion(Tiwari, Buse and Herstatt, 2006; Motanga, Bachmann and Magedanz, 2010; Schuurman, Moor, Marez and Evens, 2010; Slot, 2007; Schuurman, Marez and Evens, 2010; Alam and Prasad, 2007; Gutierresz and Perez, 2009; Ciesielska and Li, 2011; Xing, Ye and Kui, 2011; Serrano Orozco, 2012) 9. For the purpose of our study, our selected empirical setting is the rapidly evolving Interactive TV market, as an illustrative and pluralistic example of a high – profile, cutting – edge, intensely dynamic low technology industry, high technology industry and ICT industry intersected market, where both technological divergence and technological convergence have been successive "status quo" or co - existed at distinct periods in the course of the market timeline generating new business models and making previous, established business models obsolete (James J., 2003; Castellacci F., 2006; Hagedoorn

[6] The correlation between broadband availability and economic activity in the US articulated by Kolko (Kolko, 2012) is a typical example of the study of the contribution of ICT convergence to local growth.

[7] Hacklin F. (2008)

[8] The need for horizontal diversification has been identified by Hacklin as the initial response stage effected by the inter – industry knowledge spillover in both his models (cyclical change under rigid vs. changing industry boundaries), Hacklin (2008).

[9] Broadband networking, interactive media, mobile commerce and the digital home are featured as typical examples of contemporary IT convergence – centered activity. Particularly, Alam and Prasad (2007), Perez and Gutierrez (2009) and Ciesielska and Li (2011) have studied the digital home - related convergent technologies whereas Schuurman, Marez and Evens (2010), Slot 2007 and Schuurman, Moor, Marez and Evens (2010) are featuring different segments of the interactive media – related convergent technologies.

J., 199410; Bird A. and Kotha S., 1994; Langohr P., 2003; Braun D., 2004; Palmberg C. and Martikainen O., 2006; Pegels C.C. and Song Y. –I., 2000). How did players manage to survive and secure their business performance in this turbulent business setting? Is convergence an one – way road to business survival and business success in the ICT industry? Was the timely reflex - actions the survivor's sole survival tool or has market survival been a subtle component of strategic divergence against strategic convergence – oriented positioning? Last but not least, have there been cases where market players have actually embedded the convergence – divergence recursion to their strategic roadmap?

2. THEORETICAL FRAMEWORK OF THE RESEARCH

2.1 Technological convergence and technological divergence

Technological convergence was first acknowledged to take place in the context of the Industrial Revolution in England (Rosenberg, 1963)[11]. In that break – through context of systemized resource exploitation and goods production, it was then when the premature machine tools production industry set roots and started to shape boundaries and develop distinct segments. In the course of the following "technological" eras, those segments expanded and consolidated to independent industries that were in turn segmented to new ones though numerous product, innovation and industry lifecycles (Christensen, 2010). The dynamic, boundary – eroding activity that is realized at the intersection of established and clearly defined industry boundaries, is defined by Hacklin as the *phenomenon* of technological convergence (Hacklin, 2008). Lind, had earlier adopted a similar definition, which took its angle mainly on the industry and market restructuring dynamics that took place when and where hitherto separated markets started to merge (Lind, 2004). Both the aforementioned definitions trace back to Nichola Negroponte's early conceptual illustration of media convergence in 1979 as intersecting market / industry circles[12]. Later on, Kim T.-h et al, in the course of a systematic attempt to study the phenomenon of technological convergence through the lenses of various empirical settings and to develop scientific technology convergence evaluation and measurement tools, drew on the plurality of the modern technology convergence definitions (Kim et al. 2010; 2011) and argued about a second, core, "academic" view of convergence in addition to the aforementioned, industry merger principled, prevalent "industrial" one (Sung, Kong and Kim, 2011). According to Kim et al. (Sung, Kong and Kim, 2011), the academic world views technological convergence as a phenomenon of technological innovation that allows room for interaction between dissimilar circles, such as technology, policy, market, services and so on[13], a definition that is closer to Kodama's standpoint on technological convergence as expressed in his study of the techno paradigm shift in the Japanese industry (Kodama, 1991).

Our review of the literature so far clearly indicates that all the legacy and modern definitions of technological convergence that are articulated in academic and industry research works and that are cited in public domain dictionaries[14], are plenty and are all either attempts to narrow and refine the "industrial" and "academic" definitions or specialized conceptual interpretations of their combination. It is our belief that Nicholas Negroponte's capture as shaped in Hacklin's work (Hacklin, 2008), vague as it may be, is the definition that manages to encompass the phenomenon of technological convergence at its entirety. The

[10] Chapters 2 and 9 in Hagedoorn (1994) contain an early analysis of the techno - economic effects of the convergence and divergence phenomena in the international IT industry. Bird A. and Kotha S. (1994) attempt a systematic approach of the convergence – divergence debate through the glance of the, top – notch at that time, U.S. and Japanese manufacturing technologies, while ten years later, in 2004, Braun (2004) issues the same study through the perspective of Japan's and Switzerland technology policies.

[11] As cited in Kim et al. [Ed.], 2010.

[12] As cited in Wirtz, 2001 and Appelgren, 2004.

[13] Raj and Periasamy (2011) study the convergence between the enterprise architecture model and the technology of cloud computing whereas Mietzner, Karastoyanova and Leymann (2009) set out an in – depth study of the web service platform and the grid technology. Yovanof and Hazapis (2008) and Shin et al. (2011) profile the pervasive contemporary convergence trend among technologies, services and business models.

[14] The Cambridge Dictionaries Online cite that "If ideas, interests or systems converge, they become more similar to one another". The Concise Oxford English Dictionary describes *Converge* as "come together from different directions as eventually to meet". Wikipedia defines *Converge* as "the coming together of at least two things" and *Convergence* as , among others specialized definitions, "an act of becoming more alike as a relationship progresses".

acknowledged vagueness can be attributed to the complicated dynamic nature of the phenomenon rather than to a weakness of the definition itself. Accurate as they may be within their own lenses, all other definitions focus on specific angle aspects of technological convergence such as the drivers, the realization processes and the effects (Wirtz, 2001)[15] but fail to capture its full picture. A realization of this is also expressed by Yoffie, who positions industry convergence at the point in the industry lifecycle where formerly separated industries come together to give birth to a new industry creating new opportunities and economic ambiguities, while at the same time, he uses the innovation perspective to identify two distinct kinds of the phenomenon[16]. Notwithstanding the completeness of the description, the adopted inclusive definition of technological convergence is also expected to help us deal with one of the research challenges that is the plurality of the interpretations and perspectives of the phenomenon itself.

Technological divergence can be interpreted essentially as being the opposite of technological convergence. Merriam – Webster online dictionary's definition of *Divergence* as a "drawing apart", a "deviation from a course or standard" and the "acquisition of dissimilar characteristics by related organisms in unlike environments"[17], can be, similarly to technological convergence, depicted as a phenomenon evolving in an "industrial" or an "academic" context (Chen and Liu, 2006). The plurality of the definitions, reflections and interpretations of technological convergence and technological divergence is evident in the modern academic and industrial related research (Sung, Kong and Kim, 2011; Lind, 2004) and attests to the scientific interest of both phenomena; however, it is not of the essence for the research set forth hereinafter. Drawing on the aforementioned, inclusive description of both phenomena we shall be examining the dynamics, the associations and the causal relationships that are seeded by the acknowledgment that both technological convergence and technological divergence can be intentful business orientations, at a microscopic or a macroscopic scale.

2.2 Legacy and contemporary technological convergence vectors and components

There is a significant trend among the technological convergence related research efforts to kick – off by attempting to identify the vector – industries that are either constituting or catalyzing the phenomenon. Wirtz (Wirtz, 2001) and Appelgren (Appelgren, 2004) refer to Negroponte's original suggestion of a convergence trend among three primary overlapping industry circles: the broadcast and motion pictures industry, the print and publishing industry and the computer industry. In the same vein, Lind has slightly updated Negroponte's early visionary illustration structure profiling the computer, telecom, media and consumer electronics as the prevalent merging industries and also suggests the conformance of the technology convergence phenomenon to the Hype Cycle model[18] (Lind, 2004). Jones (Jones, 2007) and Jin et al. (Jin, Park and Pyon, 2011) adopt a more extroverted view, studying the convergence among the nanotechnology, the biotechnology and the information technology industries whereas Curran and Leker have extended their study to cover the convergence between the nutraceutical and functional foods (NFF) and the IT industries (Curran and Leker, 2001), covering all the components of the NSF (US National Science Foundation) converging technologies report's NBIC (nano – bio – info – cogno) model[19].

2.3 Typologies of convergence

At a microscopic scale, two types of technological convergence are identified in the eye of the phenomenon of technological convergence on the basis of the added user – end functionality value; which can be also identified as the innovation driver: the convergence *in substitutes* and the convergence *in supplements* (Greenstein and Khanna, 1997[20]). Greenstein and Khanna's initial model has been widely

[15] Wirtz (2001) identifies innovation, market evolution (as expressed in the user requirements and standards) and the regulatory regime as technological convergence drivers rather than technological convergence instances.
[16] Yoffie distiguishes two types of industry convergence, the convergence in substitutes and the convergence in complements, on the basis of the intended functionality driver (Yoffie, 1997).
[17] http://www.merriam-webster.com [10.06.2012]
[18] The Hype Cycle model is a model developed by the IT analyst firm Gartner to represent the maturity, adoption and social application of emerging technologies [http://en.wikipedia.org/wiki/Hype_cycle, 28.09.2012]
[19] As cited in the research report issued by the Government of Canada, Science and Technology Foresight Directorate Office [19].
[20] In Yoffie, 1997.

accepted by researchers and has been further elaborated with the introduction of a second *Demand - side* and *Supply - side* technology convergence dimension by Pennings and Punaram (Pennings and Punaram, 2001) which was later on evolved to *Technology - based* convergence versus *Product – based* convergence by Stieglitz (Stieglitz, 2003).

Under a different yet still introverted scope, the European Union presented four levels of convergence: the convergence of technology and network platforms, industry alliances and mergers, convergence in services and markets and convergence in policies and regulations[21] (COM(97)623, 1997). The Swedish government launched a similar approach in 1999, pointing out the four levels of market, electronic appliances, networks and services convergence (SOU 1999:55)[22] whereas, in the same vein, the World Bank (2010) identifies three primary types of technological convergence: service, network and corporate convergence. It becomes clear that at the policy – making level technological convergence is specified by the respective enabling means. According to the authors of this article, the convergence of core technologies remains an integral level of the aforementioned policy – making level taxonomy and a primary means of technological convergence in all cases.

Drawing on the inevitable interaction of the above macroscopic and the microscopic dynamics, recent academic research is also studying the convergence between dissimilar vectors such as regulation and business models, core technologies and services, access network and core technologies, markets and policies and so forth (Sung, Kong and Kim, 2011), adding a third dimension in Stieglitz's two dimensional evolved model of technology – based and product – based convergence (Stieglitz, 2003).

2.4 Global centers of related scientific activity

Even though the phenomenon of the technological convergence and the associated causal relationships and dynamics in the ICT industry and specific segments of the latter have drawn the scientific interest of institutions, organizations and researchers world – wide during the past decade, our study so far, clearly profiles Korea and the Scandinavian countries, as areas with high relevant scientific interest over the same period of time. This can be attributed to the advanced telecommunications industries and markets, a convergence – based business models dominated ICT segment, in those countries. Particularly, the Danish Research Unit for Industrial Dynamics (DRUID) has organized a series of biannual conferences, where it presented, among others[23], a theory on the dynamics between technological divergence, technological convergence and the open innovation paradigm, an empirical analysis of the effects of complementary technological convergence on the existing Schumpeterian industry trajectories and a new framework for a *convergence lifecycle model,* on the basis of the legacy industry and product lifecycle models, where patterns of a convergence – divergence sequence are suggested (Castellacci 2006, Christensen, 2006; Christensen, 2008[a], 2008[b]; Christensen, 2010). Aalborg University's Center for Network Planning has foreseen and attempted to high – level model a converged global ICT infrastructure (Madsen, 2006), while Bengtsson and Johansson (2011)[24] have tried to address the challenges faced by firms in converging industries. Braek and Floch (2005), Steen (2009) and Iden and Methlie (2012) based out in the Norwegian University of Science and Technology, the University of Oslo and the Norwegian School of Economics and Business Administration are examining the drivers of technological convergence in the context of next generation telecommunication markets and services. Still in Scandinavia, Palmberg and Martikainen (2006) and Karvonen and Kassi (2011; 2012)[25] are examining the convergence – divergence dynamics of the domestic telecom industry and are launching a patent – based analysis of technological convergence respectively.

In the Asian region, Korea seems to have the lead on the technological convergence related scientific and academic research. Yeon and Hwang (2011), based at the Korean Electronics and Telecommunications Research Institute, have systemized a digital convergence maturity model. In the same research organization,

[21] As part of an attempt to analyze the developmental gear of IT convergence.
[22] As cited in Lind, 2004.
[23] A full list of the conference papers, working papers and other resources presented by DRUID can be downloaded from the Unit's website: http://www.druid.dk.
[24] Department of Entrepreneurship, Umea School of Business, Umea University, Sweden.
[25] Karvonen and Kassi are based at the Department of Industrial Management of the Lappeenranta Unievrsity of Technology in Finland whereas Palmberg and Martikainen are Associates at the Research Institute of the Finnish Economy.

Bae and Kong (2010), Sung, Kim and Kong (2010; 2011) and Shin, Kim, Ryu and Park (2011), in partnership with domestic Universities, have articulated a qualitative meta – analysis of the convergence activity in the ICT sector, have studied the case of cloud computing as a convergence indicator, have suggested a business model development framework for next generation mobile convergence services and have also used a patent citation analysis to evaluate technological convergence citing Curran and Leker (2010). Hur W. M. from the School of Business Administration of the Pukyong National University of South Korea, in cooperation with Yoo J.J. ad Chung T.L. from Baylor and Iowa State Universities (Hur, Yoo and Chung, 2012) have published the analysis of the convergence products from the consumer perspective, whereas Jin, Park and Pyon (2011), based at domestic Universities, have identified research trends of convergence technology based on the Korean R&D network. Still in Korea, Al-mutawkkil A., Heshmati A. and Hwang J. (2009), Kim D. (2011) and Shin D.H. and Jung J. (2012) have published the results of specialized researches on the convergence dynamics of the telecommunications and broadcasting markets.

However, US, Italy, Spain, China, Australia, Germany and Switzerland – based researches have also shed light to some of the most important theoretical vectors of the technological convergence phenomenon[26]. Among the industry players with relevant work, British Telecom and IBM are also highly ranked, having issued technology convergence related studies, from their respective perspective of interest (Jones, 2007; Harishankar, Holley, High, Sanz, Giesen, Daley, Ibrahim, Antoun, Botros, Hamid and Vaidya , 2010).

3. RESEARCH PROBLEM AND RESEARCH OBJECTIVES

Our in – depth review of the legacy and the contemporary technology convergence and technology divergence literature, our careful identification of distinct trends in the business landscape as well as our study of the historical evolution of both phenomena has stimulated the following questions:

Research Question 1 (Q1): *Are convergence and divergence related to the organization's performance in the ICT sector*? Does the high market segmentation that is associated with the intense diversification threaten to exhaust the market's capacity and therefore compromise the organization's performance? On the other hand, could the same result be effected by extended periods of technological convergence that would drive the market to inertia? What are the other factors that are affecting the convergence – business performance and the divergence – business performance relationships in the technology markets?

Research Question 2 (Q2): Are the phenomena of divergence and convergence bundled in a recursive model within the ICT industry? The results of our research so far clearly indicate a sequential relationship between technological convergence and technological divergence (Hacklin, 2008; Christensen, 2008[a]). Can this sequential relationship, within the ICT industry, build an evolutionary, deterministic, recursive model in the course of the industry and product market lifecycles?

[26] The School of Management of the University of Canberra, the Graduate School of Business of the Curtin University of Technology in Perth, Australia have studied the alliance dynamics during the industry life cycle emergence and the potential for ICT – empowered emerging markets (Rice and Galvin, 2006). The Universities of North Dakota, Nebraska – Lincoln, East West Center - Hawaii, the Kellogg School of Management of the Northwestern University and the Open Technology Initiative Division of the New America Foundation in the USA, as well as the US – based World Bank have issued studies on the strategic, the development and the performance implications of the technological convergence phenomenon (Jussawalla, 1999; Menon, 2011; Langohr, 2003; Jeon, Park and Digman, 2008). The University of Finance and Economics and the Audit University of Nanjing in China has applied an input – output analysis to measure the convergence of China's extended ICT industry (Xing, Ye and Kui, 2011). Researchers from the Swiss Federal Institute of Technology and the University of Lausanne in Switzerland, have investigated the evolutionary aspects of the divergence and the technological convergence phenomena in the ICT industry context (Hacklin, Marxt and Fahrni, 2009) and have also narrowed a relevant research in the empirical setting of Switzerland's and Japan's science and technology policies (Braun, 2004). Bores, Saurina and Torres (2003) in the Departments of Economics and Industrial Engineering of the University of Girona attempted a thorough analysis of the strategic perspective of the technological convergence while, in Spain again, Gutierrez and Perez (2009) examined the convergence of emergent technologies for the digital home of the future. Last but not least, a number of German Academic Institutions have articulated study reports on particular contemporary ICT convergence paradigms (Mietzner, Karastoyanova and Leymann, 2009; Tiwari, Buse and Herstatt, 2006; Jarke, 2009; Motanga, Bachmann and Magedanz, 2010), on the structure of the competitive environment of the convergence – oriented telecommunications companies (Wulf J., 2011) and on ICT convergence monitoring tools (Curran and Leker, 2010).

Research Question 3 (Q3): *How should organizations plan their strategic positioning within the divergence - convergence recursive model in the timeline?* On the basis that technological convergence and technological divergence can be intentful business orientations, namely business strategies, is the reactive approach the most strategic way to plan business in the ICT industry in the course of the divergence – convergence recursions or could there be a more proactive approach that would leverage the recursions of the phenomena to the organization's benefit?

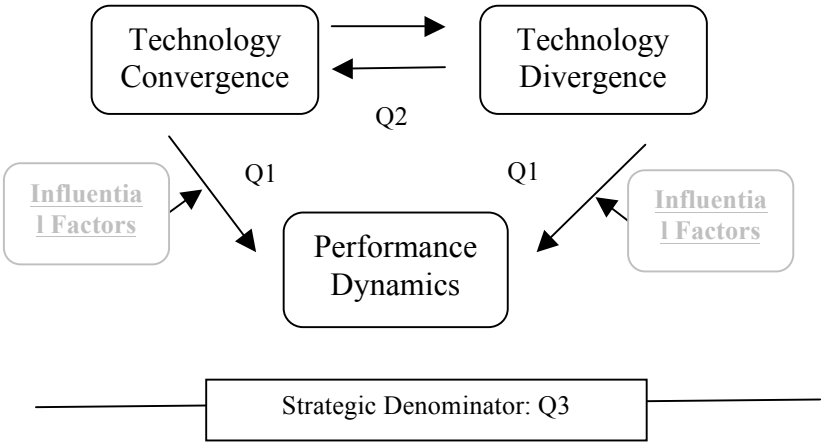

Figure 1. The research variables

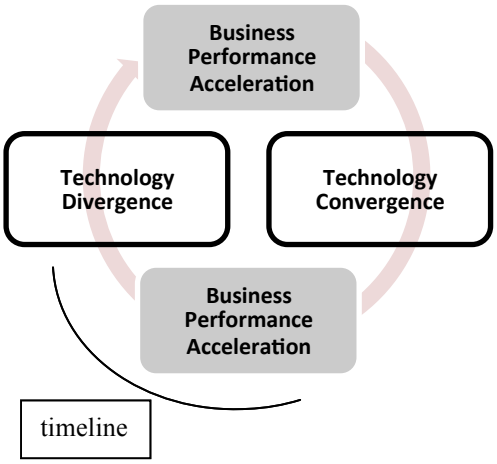

Figure 2. The scientific problem

4. CONCLUSIONS – FURTHER STEPS

In an attempt to methodize the scientific approaches to the phenomena of technological convergence and divergence it becomes clear that there is a significant amount of literature dedicated to the developmental[27], the evolutionary[28], the innovational[29], the strategic[30] and the regulatory[31] perspective of the phenomenon of technological convergence primarily and technological divergence in relation to the former. Efforts to establish evaluation metrics and frameworks so that the phenomena can be monitored and assessed through

[27] Kolko (2012), Jussawalla (1999), Hagedoorn (1994), James (2003), Braun (2004), Menon (2012), Kim (2011),
[28] Hacklin et al. (2009), Christensen (2006, 2008[b]), Stieglitz (2003).
[29] Hacklin (2008), Matrix (2011), Wirtz (2001).
[30] Hacklin (2008), Bores, Saurina and Torres (2003), Tiwari, Buse and Herstatt (2006), Palmberg and Martikainen (2006), Jeon, Park and Digman (2008), Greenstein and Khanna (1997), Pennings and Puranam (2001), Wirtz (2001), Wirtz et al. (2007).
[31] Matrix (2011), Singh and Raja (2010), Stazi (2007), European Commission (1997).

the course of their various stages and so that their results can be quantified and studied are also indicative of the progress of the related research activity to an early maturity phase[32]. Whereas there exists broad literature acknowledgment of technological convergence as an opportunity for business innovation and repetitive references to the effected business strategy implications, the association between the phenomena of technological convergence and divergence and business performance management needs additional exploratory, explanatory and rationalization research since it appears as a rarely systemized and modeled subject.

4.1 The research design

Similarly to relevant studies (Hacklin, 2008), the methodology of constructivist grounded theory is planned to be deployed as the most appropriate approach to the challenge of combining existing theoretical vectors to build a new theoretical model that shall address our research questions and that shall depict and interpret the recursions of the identified and described technological convergence and technological divergence phenomena and their interacting internal and external processes (Glazer and Strauss, 1967; Strauss and Corbin, 1994; Morse, 1994; Schwandt, 1994; Charmaz, 2006; Egan 2002). The empirical setting of the interactive TV market has been selected as a typical case of a high - velocity, mature, convergence – wise, IT business landscape (Slot, 2007; Matrix, 2011; Stobbe and Just, 2006; Schuurman et al., 2010,2011; European Commission, 1997, Appelgren, 2004; Iden J. and Methlie; Kim, 2011; Menon, 2011; Wulf, 2011; Shin et al., 2011; Shin and Jung, 2012; Tadayoni, Henten and Skouby, 2008; Sterling, O' Brien and Bennett, 2009; Shvartsman; Chen and Watanabe, 2006; Turina et al., 2009; Prario, 2007; Zhang and Zhang, 2010; Kung et al., 1999), where the original Negroponte's converging industry circles yet overlap [33] fueling convergence trends among mature and emerging products, technologies, markets and business models (Hacklin, 2008; Hacklin et al., 2009; Yoffie, 1997; Bores, Saurina and Torres, 2003; Stieglitz, 2003; Sung, Kong and Kim, 2011; Gutierrez and Perez, 2009; Motanga, Bachmann and Magedanz, 2010; Tiwari, Buse and Herstatt, 2006; Tranchita et al., 2010; Motanga, Bachmann and Magedanz, 2010; Al – mutawkkil, Heshmati and Hwang, 2009). In this context, data shall be collected from multiple industrial case studies and literature and shall be coded and compared to induce the theoretical model that can be thereafter projected to the technology industry as a whole (Stake, 1994; Huberman and Miles, 1994; Yin, 2008; Jones and Alony, 2011)[34]. The particular research methodology and design have also been intently selected to address the challenges of the complexity of the involved theoretical grounds, the diffusion of the associated terms and definitions and the variations in the various scholar's perspectives that are inherent to the nature of the investigated socio – economic phenomena of technological convergence and technological divergence (Charmaz, 2006).

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DOES FINANCIAL PERFORMANCE HAVE AN IMPACT ON CORPORATE SUSTAINABILITY AND CSR DISCLOSURE - A CASE OF CROATIAN COMPANIES

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Abstract

Purpose - The main objective of this research is to investigate the link between corporate sustainability and financial performance. The question of interest is why companies make voluntary CSR disclosure or, more precisely, is profitability possible determinant for CSR activities?

Design/Methodology/Approach - In order to test our hypothesis that financial performance increases the possibility that companies act socially responsible and disclose CSR reports we applied logistic regression analysis. The research is conducted on a sample of Croatian enterprises covering a period of nine years. Based on signalling theory, we expect that profitable companies have strong incentives to disclose information on social activities in order to enhance their competitive advantage and to avoid an incorrect assessment of their performance.

Findings - Results of the research confirm positive relation between sustainability concept of performance and financial result. Namely, companies with better financial performance and larger size companies are more aware of their corporate social performance and report on it.

Research limitations/implications - The study provides a starting point for further research on sustainability in developing and emerging markets.

Originality/value – This paper makes an important contribution to the knowledge of corporate social responsibility in developing countries like Croatia, which gradually accept the concept of sustainable performance. In contrast to developed countries, there has not been a sufficient amount of empirical research on the matter in these countries.

Keywords*:* sustainability, financial performance, Croatian enterprises.

1. INTRODUCTION

Corporate social responsibility (CSR)[35] is commonly associated with positive corporate virtues. It is understood to be the manner a company balances the economic, environmental and social aspects of its operations, addressing the expectations of its stakeholders and society-at-large. Although CSR is essentially

[35] Besides the term CSR another frequently used and related term is corporate social performance (CSP).

a very broad concept, it is based on a relatively simple idea that corporations have obligations to society that extend beyond mere profit-making activities (Godfrey & Hatch, 2007). From CSR point of view it is not only important what companies do with their profits, but also how they make them. In this regard, the concept of CSR is often used interchangeably with concepts of sustainable development, corporate citizenship, social enterprise, triple-bottom line, corporate ethics, and in some cases with corporate governance. Although companies may invest in social performance, the social reputation will be hard to achieve without proper disclosure of such information (Orlitzky, Schmidt and Rynes, 2003; Hasseldine, Salama and Toms, 2005). By disclosing on CSR activities companies are signalling that they are 'doing the right thing'. Signalling theory argues that the company gives signals to the shareholders and stakeholders in order to enhance its' value.

Even though the single bottom line in CSR context has become triple (i.e. economical, environmental and social), making a profit remains a fundamental concern for companies as it ensures their long term survival. Given the fact that the implementation of CSR is on voluntary basis, it can be questioned why some companies invest in CSR and other not? Does CSR increase profits, and if does not, why would companies invest in it anyway? Are social and economic goals compatible, and if not, is there a trade-off between these competing goals? Finally, if implementing CSR is a non-profit driven expenditure, how can it lead to profits? Notwithstanding extensive scientific research on this issue the link between CSR and corporate profitability still remains unclear. This is partly attributable to the differences in defining and measuring CSR and corporate profitability, as well as to differences in methodology being applied.

In this paper we analyse the possible link between CSR and corporate profitability in Croatia. We argue that different institutional settings can make differences in the degree of compatibility between corporate economic and social responsibility goals. Following the global trends, Croatian companies have been adopting the concept of social responsibility and international guidelines related to CSR activity reporting. The companies that have implemented the CSR concept are majorly members of the Croatian Business Council for Sustainable Development (CBCSD). However, the practice of adopting and reporting CSR activities is still rather modest and there is a need of better understanding the circumstances and effects of adopting CSR in Croatian institutional setting.

The reminder of the paper is organised as follows. Section 2 provides a brief literature review. Section 3 explains the sample selection, variable measurement and methodology applied. The results of the empirical research are presented and analysed in Section 4. Finally, the paper ends with Section 5 summarising the overall findings and with providing possible directions for future research on this subject.

2. THEORETICAL IMPLICATIONS AND LITERATURE REVIEW

Over the last 30 years substantial literature has been published on CSR, many containing different definitions of CSR and related concepts (Crane & Matten, 2004). The fuzziness of the concept and related research is well described by Carroll, one of the most prestigious scholars in the discipline (1994): "An eclectic field with loose boundaries, multiple memberships, and differing training/perspectives; broadly rather than focused, multidisciplinary; wide breadth; brings in a wider range of literature; and interdisciplinary."

Since a detailed review of this issue is beyond the scope of the study, the focus instead will be on two competing theories (Clarke, 1998; Lantos, 2001): neoclassical economic theory and stakeholder theory. The first theory describes the role of business in society in the purely economic profit making terms, focusing on the profit of the shareholders. The major proponent of this line of reasoning is Friedman (1970), arguing that: ''the only one responsibility of business towards society is the maximisation of profits to the shareholders within the legal framework and the ethical custom of the country''. However, the contemporary adherents of this theory (Sternberg, 1997; Barry, 2000; Jensen, 2001; Coelho, McLure and Spry, 2003; Sundaram and Inkpen, 2004; Henderson, 2005) consider shareholder value maximisation as the one of the objective function to all companies but are not necessarily against the social responsibility actions by companies. Moreover, some authors argue that CSR is often useful in generating a long-term shareholder value.

In the contrast, stakeholder theory is based on idea that companies have a social responsibility that requires them to consider interests of all parties affected by their actions. Donaldson and Preston (1995) explain that stakeholders are persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity. In this perspective, managers are not mere a shareholders' agents, rather they are builders of stakeholder relations (Rodriguez, Ricer and Sanchez, 2002). The introduction of stakeholder

theory allows these seemingly opposing views of management's responsibility to be combined (Freeman, 1984). Stakeholder theory places shareholders as one of the multiple stakeholder groups managers have to consider in their decision making process (Clarkson, 1995; Jones, 1995; Wood and Jones, 1995), while CSR is the strategy for dealing with stakeholders' demands. The shareholder perspective brings together social and economic aspects by considering a moral dimension of business. Carroll (1991) argues that the concept of stakeholder personalises social responsibilities by specifying groups or persons to whom companies are responsible and should be responsible.

Although there is an apparent difference between these two perspectives, the reason for a company to engage in CSR activities may reflect both aspects. Business that is not profitable has no future, and no CSR activities can be carried out without investing capital. On the other hand, while making a profit is critical for ensuring business continuity, it is not the one and only factor that can guarantee sustainability of the business. Therefore, it can be concluded that CSR seems to have a vague and complex impact on firm performance, and vice versa.

A special attention regarding the social performance is given to voluntary disclosure of such information. The sustainability reporting framework is usually based on three dimensions of performance widely known as the triple bottom line (TBL or 3BL) concept. The TBL reporting concept is driven from Elkington's call for an equal three part of approach (Elkington's 1997, 2001). This approach is base for current standards of the Global Reporting Initiative[36] and Integrated Reporting Framework where economic aspect of performing is still the main one. Voluntary disclosure is commonly explained by signalling theory. It argues that the most profitable companies provide the market with more and better information. The theory is based on information asymmetry between management and external parties. While management of the company has complete information about the company activities, shareholders and stakeholders lack the completeness of the information. Voluntary disclosure, therefore, signals the management's desire to disclose its superior performance to external parties, because it will enhance the reputation of the company and its position in the market. Based on that argument, we developed following hypothesis:

H1: Financial performance increases the possibility that company acts socially responsible and discloses CSR information.

While a number of research suggests that investment in CSR increases operating costs and makes the company less competitive (Friedman, 1970; Vance, 1975; Brummer, 1991; McWilliams and Siegel, 1997; Wright and Ferris, 1997; Moore, 2001; Jensen, 2002), other stream of research argues that through investing in social responsibility companies can achieve competitive advantage by attracting easily resources and high-quality employees, differentiating its products and services, reducing its exposure to risk, etc. (Cochran and Wood, 1984; Turban and Greening; 1996; Preston and O'Bannon, 1997; Waddock and Graves, 1997; Russo and Fouts, 1997; Ruf, Muralidhar, Brown, Janney and Paul, 2001; McWilliams and Siegel, 2001; Simpson and Kohers, 2002; Godfrey, 2004).

Margolis and Walsh (2003) have analysed 127 studies investigating the CSR/CSP and corporate financial performance (CFP) relation that were published during the period of 1972 to 2002.[37] In 109 of analysed studies CSR has been treated as an independent variable, predicting financial performance. The positive direction was reported in 54 studies, only 7 studies documented negative direction, 28 studies reported non-significant relationships, while 20 studies reported mixed set of findings. In 22 studies CSR has been treated as a dependent variable, predicted by financial performance. In these studies, the majority of results (16 studies) documented a positive direction, two studies found no significant relation and three studies reported mixed relationship. The mixed empirical evidence suggest that previously described differences in findings do not necessarily reflect mistakes or inaccuracies, but rather differences in perspective (observation periods, sample sizes and composition, measures of CSR and corporate performance, methodological approaches, institutional settings, mismatch between social and financial

[36] The GRI is a multi-stakeholder initiative intended to derive best practice guidelines for organisations wishing to report on voluntary basis (see www.globalreporting.org). Integrated Reporting Framework is an effort of IRRC to establish a basic structure that will be globally accepted as the corporate reporting norm. It combines sustainability and financial data to provide a holistic view of the company and its ability to sustain value over the short, medium and long term. (see www.theiirc.org).

[37] Four studies investigated the relationship in both directions but are counted only as one study. One study contains two separate studies and is therefore counted twice. That explains why there are more results than studies.

variables). It also suggests an empirical research broadening the scope of the analysis and integrating many of these considerations, may give us a more comprehensive picture of the effects of social responsibility on corporate performance.

For that reason the research on the link between CSR and financial performance in emerging countries like Croatia has valuable contribution to the broader perspective on CSR. This is especially due to social system in the past (i.e. from 1950 to 1991), when elements of the social behaviour of enterprises were incorporated in their performance. However, the issue of social responsibility as a new concept in the market economy and its impact on efficiency in the Croatian enterprises, and vice versa, has not been the subject of research or publications. In the past few years, corporate social responsibility and stakeholder approach were predominantly subject of theoretical and conceptual research in Croatia (Sisek, 2001; Krkač, 2007; Omazić, 2008; Vitezić, 2008; Tafra-Vlahović, 2009; Gregory and Tafra-Vlahović, 2010; Krkač, Volarević and Josipović, 2011), but rarely empirically investigating the economic causal aspects, particularly the relationship between enterprises financial performance (Vitezić, 2011) and CSR disclosure.

3. RESEARCH METHODOLOGY

In order to estimate the probability of CSR reporting we use sample of 42 companies, 22 large companies that report on CSR activities and 20 large companies that don't report on CSR activities. The companies are matched by industry. The companies that report on CSR are mainly drawn from CBCSD database. The financial data necessary for the research are extracted from annual financial reports database available at www.hanfa.hr, covering the period from 2002 to 2010. The final sample consists of total 345 company-year observations.

We used the existence of the corporate social disclosure as an indicator of CSR activity. CSR disclosure is often referred to as social disclosure, corporate social reporting, social accounting (Mathews, 1995) or corporate social responsibility (Hackston and Milne, 1996). Today companies disclose on their economical, environmental and social aspects of performance based on "triple bottom line" reporting system that is used mostly as a tool in order to demonstrate good citizenship. At the same time, this helps them to increase their revenue and profitability through enhanced reputation. The voluntary CSR disclosure indicates that company has a broader responsibility than merely looking for profits (Gray, Owen and Mandures, 1987), and a great deal of discussion on this issue is included in Integrated Reporting Framework (IIRC, 2012). Therefore, dependent variable (CSR) is referred to as CSR disclosure or CSR reporting. If company discloses on CSR activities the variable is equal to one, and zero otherwise. Since dependent variable is binary, we apply logistic regression analysis. The specification of the logit model is following:

$$\text{Prob(CSR)} = \beta_0 + \beta_1 \text{Profitability} + \beta_2 \text{lnSIZE} + \beta_3 \text{OWN} + \varepsilon \quad (1)$$

The model is rather simplistic due to data availability problems, as there is no comprehensive database on CSR in Croatia. The variable description and measurement is given in the Table 1.

Table1

Variable description

Variable	Symbol	Description/Measurement
CSR disclosure	CSR	One if a company discloses on CSR and zero otherwise
Return on assets	ROA	Net profit / Average total assets
Return on equity	ROE	Net profit / Average equity
Size of company	lnSIZE	Nature logarithm of total asset
Type of ownership	OWN	One if foreign ownership and zero otherwise

The corporate financial performance is measured using accounting based variables: return on assets (ROA) and return on equity (ROE). The profitability ratios (ROA & ROE) are used separately to determine a company's financial performance. We used accounting-based measures since accounting returns reflect a company's internal efficiency rather than market fluctuations. Variable lnSIZE is a logarithmic transformation of total assets. It is included to control the differences in size of companies and in other omitted variables. It is expected that larger companies are more likely to be scrutinised by both the general public and socially sensitive special interest groups (Roberts, 1992). Moreover, they are mostly on stock

market and may have more shareholders and other stakeholders interested in corporate social activity and for that reason are more likely to use formal communication channels to relate results of social activities. Variable OWN represents the type of ownership structure (i.e. foreign and domestic) and it's used to control for differences in ownership structure.

Table 2

Descriptive statistic of variables

Panel A: Continuous variables (n = 345)			
Variable	ROA	ROE	lnSIZE
Mean	0.0288	-0.0370	13.7861
Median	0.0211	0.0441	13.6501
Std. dev.	0.0847	1.4954	1.30459
Panel B: Categorical variables (n = 345)			
Variable	CSR		OWN
Frequency	175		58
Percentage	50.1%		16.8%

Source: estimated according to data from authors' data base

4. ANALYSIS OF RESEARCH RESULTS

Analysis of the specified model was first performed by observing each variable separately (univariate approach), and then by observing all variables together (multivariate approach). Univariate analysis is used to examine characteristics of selected variables between two alternative groups, depending on whether companies that report on CSR activities or not. To test the difference between mean values of independent groups, we used both parametric t-test and the non-parametric Mann–Whitney U test. To test for significance of the relationship between categorical variables we used the Pearson Chi-square.

Table 3

Analysis of explanatory variables for alternative groups of CSR disclosure

Panel A: Continuous variables								
Variable	CSR disclosure (n= 175)			Non CSR disclosure (n= 170)			t-stat.	z-stat.
	Mean	Median	St. Dev.	Mean	Median	Std. Dev.		
ROA	0.0562	0.0437	0.0727	0.0006	0.0077	0.0870	6.436[a]	-7.595[a]
ROE	0.1052	0.1014	0.1386	-0.1834	0.0177	2.1189	-1.798[c]	-7.461[a]
lnSIZE	14.540	14.388	1,2345	13.010	13.095	0.8377	13.428[a]	-11.189[a]
Panel B: Categorical variables								
Variable	Modality		CSR disclosure (n= 175)		Non CSR disclosure (n= 170)		Chi sq	
OWN	Yes		35 (20%)		23 (14%)		2.582	
	No		140 (80%)		147 (86 %)			

Notes: a, b, c means significant at 1%, 5%, 10% level respectively. Student t-statistics are adjusted for heterogeneity of variances when necessary.

Source: estimated according to data from authors' data base

Table 3 presents the results of the univariate analysis. The table highlights some basic differences between the companies that have CSR disclosure and companies that don't have CSR disclosure. The results show that companies that report on CSR activities are more profitable than companies that don't. The difference in mean values between groups of all continuous variables (ROA, ROE & ln SIZE) is significant at 1% level, while there is no statistically significant difference between groups based on ownership structure.

Although the univariate analysis gives some useful insights, logistic regression results facilitate the assessment of the incremental contribution of each variable in the CSR disclosure decision.

The results based on both models show that profitability increases the probability of CSR disclosure. The company size is also statistically significant determinant of CSR disclosure in both models, while ownership structure type is not statistically significant predicting variable.

The likelihood ratio chi-square of 180.31 for "Model 1" and 177.67 for "Model 2" with a p-value of 0.000 indicates that both models as a whole fit significantly better than an empty model. The calculated

multicollinearity tests suggest that collinearity is not serious issue in both samples (i.e. variance inflation factors are lower than 5, and tolerance factors are higher than 20%). Although the strength of association is not so strong (pseudo R square is 38% for "Model 1" and 37% for "Model 2"), area under ROC curve signifies that the discriminating power of both models is good. A percentage of overall correct classification is almost identical in both samples.

Table 4

Logistic regression on CSR disclosure

Independent variable	Model 1		Model 2	
	Coeff.	z-value	Coeff.	z-value
Intercept	-22.5413	-8.38[a]	-22.7086	-8.40[a]
ROA	11.5373	4.46[a]	-	-
ROE	-	-	4.9182	4.13[a]
lnSIZE	1.5889	8.32[a]	1.6230	8.42[a]
OWN	0.4922	1.19	0.2127	0.55
LR chi^2 (3)		180.31[a]		177.67[a]
Pseudo R sq		0.3771		0.3715
Area under ROC curve		0.8830		0.8814
Correctly classified		79.42%		80%
Sample size		345		345

Notes: a, b, c means significant at 1%, 5%, 10% level respectively.

Source: estimated according to data from authors' data base

5. CONCLUDING REMARKS

Corporate social responsibility has been mostly analysed from the aspects of economy benefits that a company has from its social orientation, because financial aspects of the performance will always dominate in market economy as bottom line. However, corporate social responsibility and sustainability as a broader concept includes a whole number of responsiveness actions that companies make to demonstrate their positive polices toward environmental and social issues beyond merely economical. It is determined by management and owner attitudes towards the social aspects of the performance by respecting the interests of all stakeholders. It doesn't matter if CSR is sometimes attributed as PR invention only or as a new way to gain profitability, the idea of sustainable development is valuable and needs to be promoted as a way of doing business in future since in its very essence it is an ethical concept. Finally, the benefits that companies and society could have from applying this concept would overcome invested costs at the long run.

Although many researchers have found positive relationship between CSR and financial performance so far, still there is a challenge how to estimate quantitatively that impact. For that reason our study has an aim to investigate if financial performance of Croatian companies enables them to disclose about corporate social responsibility. In last decade it is recognised that companies more disclose on that issue. They are many reasons: improved image and reputation, revenue increases, higher profitability, employee motivation, cost savings etc. In our research profitability is measured by standard indicators ROA and ROE. Using logistic regression we found that profitability and size of the company increase the possibility to of acting socially responsible. Companies, mostly the large one that have higher profitability, have more willingness to disclose on their social and environmental business acting and strategy.

However, the analysis in this paper is limited in several ways and many other aspects of the issue can be investigated in the future. Firstly, it would be interesting to extend the research by including other emerging countries and by adding variables that are not only related to financial performance, but also represent cultural, regulatory and governance aspects that may have impact on the development and nature of corporate social responsibility. Also, our measurement of CSR is rather simplistic and it could be improved by using questionnaires and constructing disclosure indexes. Finally, the contribution can be made by applying better methodological solutions that account for individual unobserved heterogeneity and other forms of endogeneity, which is important and widespread problem in economic research generally.

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THE ROLE OF ACCOUNTING IN MEASURING EFFICIENCY IN PUBLIC EDUCATION: A LITERATURE REVIEW

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Abstract

Purpose – During the current financial and economic crisis, public sector efficiency is at the heart of debate. Since education investment can have a lag of 20 years and is faced with lower budgets, many countries invested less in education arguing that they had been so far inefficiently spent. However, academic literature is not unanimous in the type of accounting measures to be used to measure public education's efficiency. Therefore, the aim of this paper is to determine which efficiency measures are most widely used in academic literature, and what influences their design. In addition, we would like to find out if and how efficiency measures of public education changed over time, and which is the role of accounting in its contemporary understanding.

Design/methodology/approach – We performed a comprehensive literature analysis of research papers published in public sector, management and accounting journals since 1990 to answer the following research questions: 1) how is efficiency of education defined in research literature, 2) how is efficiency of education measured in accounting system of education providers, and 3) how these measures changed over time.

Findings - The analysis confirms that most efficiency measures are still oriented towards cost minimization. However, over time due to a growing diversity of accounting data, efficiency measures have become more sophisticated and multidimensional to encourage education providers not only towards cost minimization but also towards increasing of output quality. Furthermore, our survey indicates that the research focus has shifted from measuring efficiency towards the evaluation of implementation measures in terms of social responsibility by application of contemporary accounting methods.

Research limitations/implications – The study reveals that simple efficiency indicators frequently used for allocation of public funds to education providers often leads to undesirable results in terms of lower quality output. However, the literature review is limited to research papers published in English, addressing mostly education providers in developed countries. To get a better understanding of efficiency measures in public education, there should also be analyses of studies conducted in other cultural environments and published in other languages.

Keywords: efficiency, accounting for public education, literature review.

1. INTRODUCTION

Despite the prevailing agreement that the main reason for financial crisis is financial sector's performance, searching for solutions to improve general economic situation soon brought efficiency in the public sector to the heart of the debate. Particularly welfare states are looking for the ways to cut spending without undermining the values on which these countries are based. By comprising the largest share of public spending and with straight impact on citizens' social status, health care, education, and pensions are

areas where eligibility of expenditure levels heats the public discussion. For example, OECD countries spent on average 6% of GDP in 2008 on education, more than three-quarters of it came from public sources (OECD, 2011). Since education investment can have a lag of 20 years (Psacharopoulos & Patrinos, 2004) and they are faced with lower budgets, many countries in financial distress, including Slovenia, invested less in education arguing that funds had been so far inefficiently spent. On the other hand, United States, Britain, Germany, Canada and China education was granted even more funds (Newsweek, 2009) claiming education represents "*a platform of early recovery*" (UNESCO, 2010, p.29). Regardless of whether educational funds were increased or decreased, there is common agreement that public funds should be spent effectively (Gill & Raiser, 2012).

However, academic literature is not unanimous in the type of measures to be used to measure public education's efficiency. For this reason efficiency is measured by comparisons of various quantitative indicators (e.g. literacy rate, student/teacher ratio, enrolment ratio, and graduation rates), with cost indicators (e.g. like educational funds as % of GDP, and public spending per student). Measurement of public education's efficiency is difficult not only due to nonexistence of a generally accepted indicator of (in) efficiency, but it also depends on how developed is public sector's accounting information system.

Therefore, the purpose of this paper is to determine which efficiency measures are most widely used in academic literature and what influences their design. Also, we would like to find out if and how efficiency measures of public education changed over time and which in this context is the role of accounting in its contemporary understanding. Therefore this paper focuses on the following research questions: 1) how is efficiency of education defined in research literature, 2) how is efficiency of education measured in accounting system of education providers, and 3) how these measures changed over time. The main contribution of our paper is that it gives a comprehensive insight into the diversity of education efficiency measures. We employed a narrative literature review method by detailed consideration of papers published in the public sector, management and accounting journals since 1990 to assess current status of education efficiency research area and provide guidance for further research.

The rest of the paper is organized as follows. Section 2 provides a brief overview of various efficiency definitions. Section 3 explains the input and output selection problems in the process of educational efficiency calculation. The overview of the functional forms used to measure efficiency is presented in Section 4. Section 5 summarises the overall findings and provides possible directions for future research on this subject.

2. DEFINING EFFICIENCY

Even though efficiency of extremely diverse industries is calculated daily, and comparisons across highly different countries are made, economic and business academic literature is unanimous in the spirit of its calculation: when estimating efficiency, you need to make a comparison of outcome to the resources. Farrell (1957) emphasized the need to get a better output with the given set of inputs, and this is particularly important for public sector operations. Further attempts to use Farrell's methodology of valuating performance of the public sector to estimate production or technical efficiency helped to develop the Data envelop analysis (DEA). Namely, the first application of now widely used methodology was based precisely on the evaluation of efficiency in publicly financed education.

In their seminal papers considered as the foundation of the DEA methodology, Charnes, Cooper & Rhodes (1978, 1981) set out to evaluate the efficiency of various public education programs. They introduced the idea that in order to determine true program efficiency, management efficiency has to be identified first and disentangled from program efficiency (1981, p.668). Their goal was to identify programs that appear to be better off than they truly are (i.e. they actually have low program efficiency) due to good management (i.e. high management efficiency). They claim that such "contamination" (1981, p.678) should be eliminated first in order to avoid "imputing the results of good management to bad programs and vice versa" (1981, p.668). Since this distinction is based on reliable determination of production technology (1978, p. 430), such separation is particularly difficult in the public sector and consequently only "relative efficiency" based on ranks can be estimated (1978, p.430): program's efficiency is determined by the reference to other competitive programs. Charnes, Cooper & Rhodes (1981, p.669) define program as inefficient if it is possible to improve any output without increasing any input and/or without decreasing any other output (i.e. output orientated determination of program's efficiency), and/or if it is possible to reduce

any input without increasing any other input, and/or without decreasing any output (input orientated determination of program's efficiency).

Definition of (in)efficiency that was provided by Charnes, Cooper & Rhodes (1981) doesn't require input and/ or output prices, as efficiency is determined by quantitative parameters only. On one hand, elimination of parameters affected by market fluctuations purifies program's efficiency calculation, since it can expose the source of production's inefficiency (Green, 2007) without requiring assumptions about functional form of production function (Mandl, Dierx & Ilzkovits, 2008). On the other hand the elimination of prices artificially sets up a presumption that technically efficient programs are also allocatively efficient. Nonetheless, Charnes, Cooper & Rhodes's definition of efficiency (1981) allows the identification of either efficiency frontier or production possibility frontier, which is: highest achievable level of outcome for a specified level of input or/and lowest possible level of input required to get a given amount of output (Afonso, Schuknecht & Tanzi, 2003).

However, Green (2007, p.92) notes that an ideally efficient program produces not only a maximum output possible given a set of inputs (is technically efficient), but also at "*the minimum cost of producing that output given the prices of the inputs, or the maximum profit attainable given the inputs, outputs, and prices of the inputs and outputs*" (i.e. economically or cost efficient). Since private goods are sold on a market, prices of private sector's outputs are available. On the other hand, public sector's outputs are frequently not sold on the market; as a result their price of is unknown or is barely assessed. Related to education, questions like "How much should we pay for Harvard graduate?" frequently arise. The answer can only be estimated, since it doesn't only depend on the educational program completed, but also on individual's abilities. On top of it, public spending has multiple economic and social objectives. Mandl, Dierx & Ilzkovits, (2008) point out that public spending should be effective: outputs should not only be cost effectively produced, but also have to be judged against the economic and/or social goals to be achieved. As shown in education, it is not sufficient to compare public educational spending to graduation rates or test scores, but also to the increased competitiveness of workforce.

Even though input prices are easier to obtain, scholars disagree about the definition and measurement of costs of education or *"the value of the resources a community must consume in the production of a given level of student achievement"* (Duncombe, Ruggiero & Yinger ,1996). Specifically, many researchers point out that identical annual expenditure per student across different programs doesn't guarantee that all students will have an equal opportunity to get quality education, since prices of inputs vary across programs among other reasons due to varying ability to attract teaching personnel of given quality (Wentzler, 1981). The use of the cost of education index developed by Chambers (1981) and now applied as an adjustment factor in several US states, should eliminate price affecting factors that lie beyond control of program's managers from cost efficiency estimation. If such adjustment is not made, we can come across programs that are technically efficient by quantitative variables but cost inefficient because of expensive resources on certain geographic locations.

3. INPUTS AND OUTPUTS OF EDUCATION

What is the true cost of education and what are true results of money spent has been a key issue ever since the question of education investment's eligibility was raised. Because theoretically ideal variables which should be used in education efficiency calculation (e.g. teaching quality as in input and market competitiveness of a graduate as an output) cannot be reliably measured, various proxies are used. This increases the likelihood of specification error that occurs due to the wrong choice of inputs and outputs which in turn induces systematic errors in efficiency measurement (Green, 2007). Consequently, some programs may appear more efficient than they truly are and vice versa. Additionally, model over-identification (i.e. model with more inputs and outputs than necessarily) will also boost efficiency (Chalos, 1997). Recent developments of accounting information systems' enhanced the measurement accuracy within educational institution, and consequently improved program efficiency estimation within specific education institution, however efficiency estimations of various educational institutions as a whole remain a challenge. Table 1 shows most frequently used proxies for inputs of education process. This is followed by Table 2 showing proxies for educational outputs.

The basic premise is that quality of education is reflected in the labour performance of graduates shown by their higher income and/or higher employability (Barro & Lee, 2001). However, increase in income resulting from education is not easily estimated. Usually, conclusions are based on income by educational

attainment distribution obtained by population census (see for example US Census Bureau, 2011). However, income fluctuates from year to year depending on general economic conditions and on current situation on the labour market. One should also take into account, that not all programs offered at certain educational institution are of equal interest to potential employers. Kempkes & Pohl (2007) tried to investigate the efficiency of German universities as a whole and concluded they "*are too heterogeneous to be compared*". Based on their research, Mandl, Dierx & Ilzkovits (2008, p.24) concluded that cross-country comparisons of efficiency of tertiary education are "*hardly possible*" for the time being.

Table 1

Key inputs used in education efficiency estimation

Financial variables	**Reference**
Annual education expenditure per student	Hanushek, Rivkin & Taylor (1996) Barro & Lee (2001) Afonso & Aubyn (2004) Sequeira & Robalo (2008)
Annual education expenditure per student (as % of GDP pre capita)	Aristovnik (2011)
Total education expenditure (as % of GDP)	Jafarov & Gunnarsson (2008) Ahmed (2012) Aristovnik (2011)
Average teacher salary	Heckman, Layne-Farrar & Todd (1996) Hanushek, Rivkin & Taylor (1996) Barro & Lee (2001) Sequeira & Robalo (2008)
Quantitative variables	**Reference**
Length of school year (in hours)	Afonso & Aubyn (2004)
Length of school year (in days)	Heckman, Layne-Farrar & Todd (1996) Barro & Lee (2001) Sequeira & Robalo (2008)
Teacher to student ratio	Hanushek, Rivkin & Taylor (1996) Heckman, Layne-Farrar & Todd (1996) Barro & Lee (2001) Afonso & Aubyn (2004) Jafarov & Gunnarsson (2008) Sequeira & Robalo (2008)
Number of teachers at certain program	Charnes, Cooper & Rhodes (1981)
Share of teachers in total employment	Gonand (2007)
Parents' education	Charnes, Cooper & Rhodes (1981) Bevc, Dolenc, Ložar, Novak, Perič-Mulac & Smrekar (2001)
Parental school visits	Charnes, Cooper & Rhodes (1981)
Parent counseling index (i.e. hours spent with child on school-related topics)	Charnes, Cooper & Rhodes (1978) Charnes, Cooper & Rhodes (1981)
Employment rate	Gonand (2007)

Indicators used in efficiency analysis aim to measure schooling (service) quality while controlling for students' quality. Typical indicators of student quality are family factors like parent's education (Charnes, Cooper & Rhodes, 1981; Barro & Lee, 2001; Bevc et al., 2001), parental school visits and parent counseling index (Charnes, Cooper & Rhodes, 1978 and 1981). As a proxy for parent's income, Barro & Lee (2001) use GDP per capita, while there is no uniform agreement whether dropout rates and repetition rates are an indicator of student or schooling quality. Some inputs are fairly easy to measure and record (e.g. length of school year, teacher to student ratio and teacher salary) while others are based on less reliable survey data (e.g. time parents spent with child on school-related topics).

While there is no apparent market for education output, universally accepted proxies for quality of primary and secondary schooling are student scores on various tests (most frequently OECD program for International Student Assessment PISA), completion rates, and school length. PISA is a common choice among researchers since it is the largest available data set on students' performance collected by same criteria. Some researchers classify teacher salary as an input indicator (see for example Sequeira & Robalo,

2008; Barro & Lee, 2001), whereas others believe that teacher salary depends on the level of education expenditure and is therefore classified as an output (see Aristovnik, 2011). This dilemma can be avoided by the use of regression analysis, which contrary to the more popular DEA model doesn't require input-output classification of efficiency indicators. Additionally, contemporary accounting methods based on "*lean enterprise*" management tools help identify value added processes and consequently detect true value adding input parameters with higher reliability.

A few decades ago teacher to student ratio and annual education expenditure per student were key indicators for education policy making (Hanushek, Rivkin, & Taylor, 1996). Today public policy focuses on highly educated unemployed workforce. Consequently, measures like unemployment with tertiary education, measured as a % of total unemployment are coming to the forefront of education efficiency analysis (see for example Gonand, 2007; Aristovnik, 2011).

Table 2

Key outputs used in education efficiency estimation

Outputs	Reference
Performance of students (assessed by various national or international evaluation programs like PISA[38], IEA[39] or IAEP[40])	Charnes, Cooper & Rhodes (1981) Barro & Lee (2001). Afonso, Schuknecht & Tanzi (2003) Afonso & Aubyn (2004) Jafarov & Gunnarsson (2008) Sequeira & Robalo (2008) Aristovnik (2011)
Self-esteem measures	Charnes, Cooper & Rhodes (1981)
Completion rate	Hanushek, Rivkin & Taylor (1996) Tajnikar & Debevec (2007) Jafarov & Gunnarsson (2008) Aristovnik (2011)
Years of schooling completed	Hanushek, Rivkin & Taylor (1996).
Repetition rates	Barro & Lee (2001) Sequeira & Robalo (2008)
Dropout rates	Barro & Lee (2001) Tajnikar & Debevec (2007) Sequeira & Robalo (2008)
School enrolment	Afonso, Schuknecht & Tanzi (2003) Jafarov & Gunnarsson (2008) Aristovnik (2011) Ahmed (2012)
Teacher to student ratio	Aristovnik (2011)
Employment rate	Gonand (2007)
Unemployment with tertiary education (% of total unemployment)	Gonand (2007) Aristovnik (2011)
Labor force with tertiary education (% of total labor force)	Aristovnik (2011)
Adult literacy rate	Ahmed (2012)
GDP growth	Gonand (2007)
Productivity gains	Gonand (2007)

3. EVALUATING EFFICIENCY AND THE ROLE OF CONTEMPORARY ACCOUNTING METHODS

In addition to variable selection, the selection of statistical methods applied to evaluate educational efficiency and assumptions required that the chosen method can again induce systematic errors in the efficiency measurement. According to Green (2007, p.98), function itself is "*a relationship between inputs and outputs*": function selection should therefore follow a careful consideration about relationships among

[38] OECD program for International Student Assessment.
[39] The International Association for the Evaluation of Educational Achievement.
[40] International Assessment of Educational Progress.

variables of interest and not vice versa. As multiple factors can affect quality of output, cost functions are often used in efficiency analysis since they allow the inclusion of multiple inputs (Green, 2007). On the other hand, Duncombe, Ruggiero & Yinger (1996) point out that production functions typically assume separability between outputs. Therefore main advantage of production function is that it enables production efficiency estimation separately for each output. Estimation of production or cost function in education is commonly done by one of the statistical methods presented in Table 3.

Most common method for education efficiency estimation is the Data Envelopment Analysis, widely known as the DEA method. The main advantage of nonparametric methods (including DEA) compared to parametric ones is that they don't make assumptions regarding the underlying distribution. For this reason, non-parametric tests are more stringent than parametric methods: if an education program is efficient under non-parametric method, it is also efficient under the parametric one. Nevertheless, non-parametric tests have less power than parametric ones: using non-parametric tests usually requires larger sample sizes to get a reliable estimation.

Table 3

Methods used in education efficiency estimation

Nonparametric methods	**References**
Data Envelopment Analysis (DEA) developed by Charnes, Cooper & Rhodes (1978)	Afonso & Aubyn (2004) Gonand (2007) Kempkes & Pohl (2007) Jafarov & Gunnarsson (2008) Aristovnik (2011)
Free Disposal Hull Analysis (FDH)	Afonso & Aubyn (2004) Afonso, Schuknecht & Tanzi (2003)
Parametric methods	**References**
Seemingly unrelated regression method	Sequeira & Robalo (2008) Barro & Lee (2001)
Fixed effects regression	Barro & Lee (2001)
Two stage regression	Heckman, Layne-Farrar & Todd (1996)
Generalized least squares regression	Hanushek, Rivkin & Taylor (1996)
Tobit regression	Kempkes & Pohl (2007)

Both DEA and Free Disposal Hull Analysis (FDH) are used to estimate production frontier using most efficient education programs. However, unlike DEA, FDH doesn't assume that production frontier is convex and is therefore less stringent (Afonso & Aubyn, 2004). Similarly to DEA, the rarely used FDH method helps estimate "*wastefulness of public spending"* (Afonso, Schuknecht & Tanzi, 2003) by quantifying inefficiency.

Unlike the DEA method and the FDH analysis, regression analysis is not sensitive to classification of variables as inputs and outputs. Additionally, regression analysis allows for testing the quality of the model (Berg, 2010). Consequently, DEA as well as regression analysis are increasingly used to simultaneously test the robustness of results (see for example Kempkes & Pohl, 2007). In addition, contemporary management accounting tools like *Balanced Score Card,* popularized by Robert S. Kaplan and David P. Norton, provides a reliable identification of value added inputs by clarifying education institution's "*strategic objective with coherent set of performance measures*" (Kaplan & Norton, 1993) connected to socially responsible behaviour, social and economic goals.

4. CONCLUDING REMARKS

Our analysis of education efficiency estimation literature confirms there is no unanimous agreement regarding either education efficiency parameters or estimation methods. Since education efficiency researches diverge in the definition of efficiency of education, and its measurement, these two research questions cannot be answered straightforwardly. Due to difficulties in assessing the value of learning outcomes (i.e. outputs) most financial measures of (in)efficiency are still oriented towards cost minimization. On the other hand, while investigating our third research question, we discovered that accounting data efficiency measures have become more sophisticated and multidimensional to encourage education providers not only towards cost minimization but also to increase output quality. Furthermore, our survey indicates that

the research focus started to shift from measuring pure education efficiency with traditional accounting performance measures towards the evaluation of social impact of education using contemporary statistical and management accounting methods: increasingly education programs are judged against the economic and/or social goals to be achieved. Financial crisis combined with growing unemployment among young well-educated adults has forced policy makers to opt for firmly justifying education spending. For this reason we believe it is essential that further research should focus on education spending effectiveness, not only on efficiency.

This study also reveals that simple efficiency indicators frequently used for allocation of public funds to education providers often lead to undesirable results in terms of lower quality output. However, the lack of research in this area as well as not fully comparable data sets and various methods employed, led to the fact that we were not able to statistically quantify the results (by using meta-analysis) to reliably determine the parameters that increase and those parameters that reduce education efficiency. Additionally, technical advancement is ongoing and so production function is not static (Green, 2007): yesterday's highly efficient combination of inputs is already outdated today. Finally, with the exception of one study, our literature review is limited to research papers published in English, which mostly address education providers in developed countries. To get a better understanding of efficiency measures in public education, there should also be analyses of studies conducted in other cultural environments and published in other languages.

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ACCOUNTING MEASUREMENT OF LONG-LIVED ASSETS: A CASE OF IMPAIRMENT PRACTICE

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Abstract

In accounting practices long-lived assets evaluation based on the current market situation is one of the most complex issues. For companies making large-scale investments in long-lived assets this question becomes vitally important because impairments of tangible assets and goodwill are significantly associated with future cash flows. The procedure for the evaluation of long-lived assets is regulated by the national accounting laws and international financial reporting standards, in particular IAS 36 "Impairment of Assets". However, many questions related to the practical application remain unresolved and lead to different interpretations and subjective judgments. Therefore, in some cases shareholders' expectations of future economic benefits from the use of long-lived assets are not fulfilled.

This article reveals the theoretical and practical relevance of the researched topic examines the existing approaches used by Latvian companies for measuring the value of long-lived assets and considers the peculiarities of information disclosure in their financial statements. Particular attention is paid to the importance of measuring assets impairment using the example of a Latvian fuel retail company. The authors' conclusions based on the study of Western publications and analysis of Latvian practices will be useful for the company management when forming the company's accounting policy for measuring and valuing long-lived assets, and may be taken into consideration by investors when developing investment strategies.

Keywords: long-lived assets, measurement, impairment, information disclosure.

1. INTRODUCTION

For the Latvian theory of accounting the term '*impairment of assets'* is an entirely new research topic, and the need for its serious examination has been urged by practical needs. Theoretically both researchers and professionals understand that the value of company assets is subject to significant changes due to the influence of external and internal factors. The opinions expressed by foreign researchers that depreciation and amortization expense is informative about a firm's investments and positively associated with future cash flows (Barth et al., 2001) sound convincing and logical, as well as the opposite positions stating that impairments will be indicative of a firm's inability to generate future cash flows (Gordon E.A., Hsu H.-T., 2012).

The global financial crisis started in year 2008 emphasized attention to business evaluation process by side of management and investors. Usually a company invests in long-lived assets with the goal to earn profit and generate positive cash flows in the future. In situations of asset impairment there is a risk of significant negative changes in future cash flows.

The authors of this article agree that if accounting standards allow managers to reveal private information about long-lived assets value, asset impairment is expected to be related to future cash flows. The major question is how to expect the effect of changes in the value of an asset due to impairment and how to provide transparent information to investors.

The main principles of accounting regulation of assets impairment are formulated in IAS 36, but do not provide detailed instructions how to do that. The practical application of the standards has always been challenging and problems have been brought into focus during the recent economic uncertainty. This fact determines the relevance of the research topic from both the theoretical point of view and the analysis of the current practice of impairment testing as the key element of Accounting Measurement of Long-Lived Assets.

The study *goal* was to examine how the Latvian companies measure a value of their long-lived assets, whether they use impairment testing and how this information is disclosed in their financial statements.

The results of the study allowed the authors to identify specific problems and patterns in accounting practice as well as formulate directions for further research aimed at developing an accounting policy for accounting measurement of long-lived assets for a large Latvian company.

The article may be of interest to financial statement users, regulators and standards setters.

2. RESEARCH RELATED TO IMPAIRMENT

2.1 Research problem description

Economic literature contains different interpretations of the term '*impairment'*. In any case '*impairment*' means a reducing book value of an asset due to certain circumstances. If something has lost its value, the logical question is whether it will be useful in the future. The authors believe that lost value measurements are always subjective, even if the calculation of impairment effect is based on mathematical models. Nevertheless the question of measuring the magnitude of possible losses due to impairment of assets is vitally important to companies in the rapidly changing economic environment and, therefore, is an important indicator of financial performance, which is also true in case of Latvian companies.

The laws of the Republic of Latvia, i.e. the Law "On Accounting" and the "Annual Accounts Law", contain only general guidelines, which are limited to the requirements to recognise a loss in case of asset impairment and disclose information in financial statements. In addition, certain provisions of laws pose more questions than answers. For instance, according to the "Annual Accounts Law", if it is impossible to determine the useful period for some long-lived asset (including goodwill), it shall be valued according to the acquisition costs from which there are deducted all accumulated losses from the reduction in value. Such interpretation makes it possible to accrue depreciation if you can set a useful period for some long-lived assets (including goodwill – *the authors' comment*).

In her study of the Latvian accounting legislation Inga Bumane, a Latvian researcher, notes that there are no particular time-limits of useful period for goodwill provided by the legislation of Latvia (Bumane, 2012), and offers a contrary point of view - goodwill is a non-amortisable asset and it should not be the subject to a regular calculation of amortisation costs.

The global financial crisis has also affected the operation of Latvian companies, forcing them to use the international standard IAS36 "Impairment of Assets". There is a common opinion among Latvian accountants that this is the vaguest and most undefined standard. Such position is understandable as this standard most clearly combines two concepts: the basic accounting principle – Conservatism and the basic concept of IFRS – Fair value, which presents two problems for the practical application of the standard:

1. How to ensure the objective measuring the reduction in carrying amount?
2. How to implement the concept of Fair value?

Conservatism directs the accountant to choose the alternative that will result in less net income and/or less asset amount (GAAP, US). Regarding the principle of conservatism a company should apply to ensure its assets in its balance sheet are carried at no more than its recoverable amount. Thus, conservatism requires impairment testing upon detection of asset value reduction factors. Recoverable amount implies the greater of the two values: fair value minus the costs to sell and value in use. In turn, impairment testing implies the process, which results in finding out whether the asset book value corresponds to the current market situation.

The practical application of the Fair value concept by Latvian companies is hampered by the factors investigated previously in 'The Concept of Fair Value and the International Financial Reporting Standards (IFRS)' (Kuzmina, 2006), which include:

- in most cases, there is no active market of corresponding valuing asset;
- inaccessibility of market prices for many assets and liabilities measured at fair value;

- strengthening institutional risk (coordination of state agencies' actions with respect to regulatory issues);
- problems related to the mathematical calculation of a hypothetical market value (fair value).

The practical reality is that accountants apply subjective assessment for many assets that will be required to be measured at fair value. The fundamental question is whether such hypothetical amounts are sufficiently understandable, reliable, relevant and comparable to be suitable for financial reporting? These circumstances call for improvement in accounting regulation of measurement and evaluation of long-lived assets in Latvia.

2.2 Research related to impairment in scientific literature

Given that the term 'impairment of assets' is still an incomprehensible phenomenon, so there are mixed views in Latvia on the nature and techniques of its measurement and evaluation, the authors of this articles reviewed the research publications by foreign authors in order to study the degree of this topic development in the international scientific literature. On the basis of the results of the theoretical study the authors concluded that the interests of foreign researchers are focused on the following research fields:

- History;
- Goodwill accounting and performance management;
- Long-term asset impairment under GAAP U.S. and IFRS: comparable analysis;
- Connection between impairment losses and impairment indicators;
- Long-lived asset impairments and predicting future cash flows;
- Practical issues of impairment testing.

Table 1 summarizes the results of the study of the viewpoints of some foreign researchers in the research fields listed above.

Table 1

Impairment of assets: researchers' views on the problem

Researcher(s)	Main research idea/conclusion *(by the opinion of the authors of the paper)*
History	
Riel (2004)	Reveals that there were write-offs of long-lived assets and nevertheless the statement (SFAS121, U.S. – *authors' comment*) was issued there were a lot of write-offs reported in decreasing quality.
Yamamoto (2008)	The asset impairment accounting comes from United States in order to imitate not allowed activities by side of companies' directors. Accounting of long-term asset impairment in Japan was only since year 2004.
Goodwill accounting and performance management	
Seetharaman, Screenvasan, Sudha and Yee (2006)	Goodwill is intangible asset that is not recommended to separate from the whole entity. Authors explored that it is crucial and necessary to developed new strategies in order to ensure that the goodwill has not to be impaired.
Comiskey, Mulford (2010)	Goodwill triggering events factors are following: significant changes in legal factors and in business climate; unanticipated competition, change in company's key personnel, market value decline; negative changes in technology, markets, the economy or laws, and internal sources (e.g. obsolescence of physical damage, etc.).
Lhaopadchan (2010)	Quite often in practice managers are interested to motivate various decisions related the goodwill impairment and therefore investors and analysts very often totally ignore reporting figures that also decreases reliability and relevance of the corresponding financial statements.
Schultze W., Weiler A., (2010)	The information required by US GAAP and by IFRS very often can be used in order to measure performance of the value creation and its realization within the company for internal purposes as well.
Giuliani M., Brännström D., (2011)	Stated that there are no any references to one common definition and the goodwill still could be defined as "*black box*". And that these definitions in real life are different from ones in other studies.
Long-term asset impairment under GAAP,US and IFRS: comparable analysis	
Comiskey, Mulford (2010)	Authors discussed various issues arisen by application of these standards and also indicating areas significant improvements need to be implemented.
Impairment losses and impairment indicators, information disclose	
Erlend Kvaal (2005)	Assets write-offs are associated with change in management (also Strong and Meyer 1987,

	Moore 1973, Francis et al.,1996)
Riedl (2004)	The results reveal weaker effects of economic factors on long-lived asset write-offs after the SFAS, US No. 121, Anda higher association with so called "*big bath*" reporting behavior.
Vanza et al. (2011)	Authors find that impairments disclose private information to reduce uncertainty about firm value in the period prior to the global financial crisis in 2008 in Australia.
Peetathawatchai, Acaranupong (2012)	Found out that there is connection between impairment losses and indicators. Management of many companies uses in practice the recognition of impairment losses in order to smooth earnings in its increasing periods.
Long-lived asset impairments and predicting future cash flows	
Meeting and Luecke, (2002)	Gave the detailed explanation of the Statement No.144 on tests to be performed for recoverability long-lived assets.
Ullah, Farooq, Niazi (2010)	Investigated the effect of asset impairments on analysts' choices of valuation models by the UK sample firms and find significant preference in discounted cash flow method after IAS 36 is applied.
Gordon E.A., and H.T.Hsu (2012)	The authors investigate the role of long-lived asset impairments in predicting future cash flows under U.S. GAAP and IFRS.
Practical issues of imparment testing	
Ullah, Farooq, Niazi (2010)	Accounting of impairment was still issue under discussions and there were no definite rules for amounts, timings, methods of impairment recognition, etc.
Lander, Reinstein (2004)	There is difference in timing when indicators of asset impairment and measurement will arise.
Christian Peterson, Thomas Plenborg (2007)	Two factors might explain why errors are present – the lack of an impairment manual and not involving employees with rigorous experience in firm valuation.
Erlend Kvaal (2005)	Goodwill impairments have little relationship with economic fundamentals. Accounting standards give little guidance on the techniques of discounting; for analytical as well as empirical research this area may be a promising challenge.
Lonergan (2010)	Describe the way how value in use has been required to be assessed in accordance with the IAS36 and how this process is prone to application misstatements developing conceptual and financial mismatches with other requirements of the accounting standards.
DeLisle and Grisson (2011)	Traditional valuation methods are not effective enough when there is a downward direction in the market.
Alexander Tsoy (2012)	Examining impairment accounting practice and impairment testing methods in Russia and Kazakhstan.

The results of study of foreign researchers' opinions show that despite the fact that it has been a long time since the adoption of standards SFAS No.121 (issued in 1995) and IAS 36 (issued in 1998), many questions related to the practical application of these standards are relevant and are still up for debate. Monitoring the trends that have been taking place in the regulation of the application, in particular IAS 36, the authors can agree with the conclusion drawn by Seetharaman et al. in 2004. In their research stated idea that "nevertheless there are accounting standards stated and various explanations performed by international professional bodies the common treatment for goodwill has not and will not be defined in the nearest future" (Seetharaman, Balachandran, Saravanan, 2004). This conclusion can be attributed not only to the goodwill, but also to other categories of long-lived assets, which actually could be named as a "black box", taking into account the practical situation in Latvia in the field of accounting.

3. RESEARCH METHODOLOGY

The review of theory conducted in the previous section of this article allowed the authors to form a general idea of the interest in the topic "Impairment of assets" as well as the extent of its development in the scientific literature and formulate the basic research questions (RQ):

RQ1 Do Latvian companies recognise asset impairment and how is long-lived assets write-off information disclosed in their financial statements?

RQ2 Did the depreciation policy of companies change when the impairment loss was recognised?

RQ3 How are impairment losses measured and what problems arise throughout the application of IAS36?

In order to answer RQ1 the analysis of financial statements of Latvian companies for 2010 and 2011 was performed to reveal the fact of impairment of various categories of assets. For the selection of companies the following main criteria were established:

- Non-financial and non-public private companies;
- Net sales volume is more than 10 mln Latvian Lats;
- Company's long-lived assets book value constitutes a substantial part of the total assets.

In this article Riga Stock Exchange listed Latvian companies are not taken into account as they all starting from 1995 have been required to prepare financial statements in accordance with IFRS. Listed companies have thus been applying IAS36, and for this reason can be researched in another more in-depth study, for example, methods for calculating impairment losses and its impact on cash flows.

In this case lursoft.lv database was used to study financial statements of 52 companies. The information on impairment of assets was disclosed in the financial statements of only 19 companies (36.5% of the total number of companies). However, out of 19 financial statements 7 were selected as only they contained the information useful for the analysis and conclusions. The researched companies represented 7 different industries. On the basis of the data presented in the financial statements a list of indicators were calculated in order to develop an understanding of the long-term impairment of non-financial assets and the extent of the impairment loss as well as to determine some peculiarities and relationships among the financial indicators.

The analysis of IAS36 application was conducted using the example of a Latvian fuel retail company, which, according to the annual survey done by a local magazine «Lietišķā Diena», was included into the Top 10 best reputation companies in Latvia in 2011 and recognised as the best service provider among trading companies. The company was founded in 1992 and is now a part of an international holding company. The enterprise employs 750 people. In 2011 the company turnover reached LVL 279.8 million (about EUR 398 million). The main sources of information used were the company financial statements for the period of 2003 – 2011 as well as additional information in the form of clarifications and explanations obtained during a focused personal interview with the financial officers the company. The authors examined the depreciation policy of the company as well as the method used for calculating the impairment loss. The study detected the most problematic areas of measurement and evaluation of long-term assets and disclosure of information in financial statements. The authors' conclusions and recommendations can be used to improve the long-lived asset management policy in the company system of corporate governance.

4. IMPAIRMENT ACCOUNTING PRACTICE IN LATVIAN FIRMS

4.1 Measure of the level of compliance with IAS36

The aim of *RQ1* was to check whether Latvian companies were following the concept of fair value in respect of their long-lived assets and whether they were striving for objective information disclosure in the interests of the investors. While reviewing the financial statements of the companies and attempting to answer *RQ1* the authors came to the conclusion that each company has its own approach to the disclosure of information, the logic of which is sometimes difficult to understand. Table 2 presents financial indicators calculated on the basis of reported data about long-lived assets, impairments and reversals by industries (where, LLA – long-lived assets; IA – intangibles; TA – total assets – *authors' comment*).

Table 2

Companies' reported data about long-lived assets and impairments by industries

Industry	LLA to TA ratio, %	IA to TA ratio, %	Accumul. depreci-ation to LLA, %	Net profit to Sales, %	Impair-ment for the year to equity, %	Impairment at the end of the year to equity, %
Food processing industry						
2010	77.6	0.30	51.8	-11.8	-	-3.5
2011	75.3	0.21	57.3	-20.1	+3.5	0.0
Fuels retailing						
2010	54.8	0.33	66.7	1.9	+1,01	+1,01
2011	51.9	0.27	71.3	1.08	-1,06	-0,01
Logistic						
2010	9.6	4.9	10.3	4.1	+0.33	+0.33

2011	11.3	7.5	10.5	-6.8	+0.83	+0.83
Transaction with real estate						
2010	70.0	0.01	1.65	-1354.0	-4.53	-28.7
2011	58.2	0.01	3.60	-168	-3.83	-13.4
Real estate management						
2010	14.0	0.0	1.4	-278	+0.20	-1.24
2011	13.4	0.0	3.2	5.10	+0.98	-0.15
Metal processing industry						
2010	21.1	0.01	98.0	-2.97	-13.5	-13.5
2011	17.2	0.01	117.01	-0.76	-1.7	-15.2
Wood processing industry						
2010	31.6	0.05	0.0	5.3	-1.85	-1.85
2011	25.4	0.07	0.0	3.8	+1.85	0.00

Source: The authors' calculations based on the companies' financial statements, years ending December 31, 2010 and 2011; www.lursoft.lv/data_bases_of_companies.html.

The general conclusions on the information disclosure in financial statements of the companies are presented below:

1) Accounting for long-lived asset impairment divides the assets into three categories:
   - property, plant and equipment with a definite-life,
   - intangible assets with a definite-life, and
   - goodwill.

   (Intangible assets with an indefinite life other than goodwill are not presented in the financial statements of investigated companies – *the authors' comment*).
2) None of the companies applies impairment testing to intangibles; depreciation is the primary method for subsequent evaluation of intangible assets. Moreover, in the balance sheet all the companies show the initial cost of the asset minus the accumulated depreciation.
3) The companies use different approaches to the disclosure of information about the impairment in their financial statements. For example, some companies disclose information about investment property separately; others consider investment property as part of fixed assets.
4) The data on impairment are shown as both negative and positive. If a company has accumulated impairment losses from the previous periods, then a positive value in section 'Assets impairment' in the reporting year means recovery of loss. However, there are cases when the positive value appears in section 'Assets impairment' for the reporting year even if there are no losses accumulated in the previous years.
5) The highest impairment losses as a percentage of equity were registered in a real estate company (impairment of land) and a metal-processing enterprise (impairment of investment property).

4.2 Impairment of assets and depreciation (amortization) policy

The concepts of 'depreciation' and 'impairment' have a lot in common. Both are the methods for the subsequent evaluations of long-lived assets, both are based on the management vision of the future economic benefits an asset can bring to a company. For instance, the choice of the depreciation method for a company with high investments in then long-lived assets must be connected with the revenue earning policy if that company is willing to control its production costs. However, at their core, these are two fundamentally different concepts.

Impairment accounting is a concept within the historical cost model. The depreciation method is a system for allocating the investment cost over economic life. Depreciation does not reflect current value changes of the asset. Impairment accounting is a supplement to depreciation within the historical cost model that may apply if the book value of an asset exceeds its recoverable amount. It can be argued that the development of the write-down concept is inextricably linked with the development of depreciation, nevertheless these two methods are based on different accounting concepts: the depreciation method is the demonstration of the concept of conservatism, whereas assets impairment is the method for implementing the concept of fair value.To answer *RQ2* the authors analyzed the depreciation policy of a fuel retail company (further Company Y – *authors' comment*) for the period 2005 - 2011. The data presented in Table 3 show average depreciation rates and the changes in the context of the company's individual long-lived assets for the period 2005 - 2011.

Table 3

Company Y: Depreciation and Amortization of long-lived assets

Period	Tangible assets			Non-goodwill Intangibles			Goodwill		
	Historical cost, *thsd LVL*	Depreciation per year, *thsd LVL*	Depre-ciation rate,%	Historical cost, *thsd LVL*	Amorti-zation per year, *thsd LVL*	Amorti-zation rate,%	Histori-cal cost, *thsd LVL*	Amorti-zation per year, *thsd LVL*	Amorti-zation rate,%
2005	37698	2275	8.1	772	116	15.0	418	241	57.7
2006	40433	2432	7.8	442	62	14.1	177	177	100.0
2007	43461	2855	7.6	600	60	10.0	245	0	0
2008	61703	3421	8.3	328	57	17.3	245	245	100.0
2009	65197	3567	8.5	266	41	15.5	0	0	0
2010	65877	3604	9.2	236	30	12.6	0	0	0
2011	67895	3508	8.8	209	27	12.7	0	0	0

Source: The company Y financial statements, years ending December 31, 2005-2011; www.lursoft.lv/data_bases_of_companies.html; authors' calculations.

Table 3 data show that the average depreciation rate of tangible assets did not change significantly, despite the fact that in the analyzed period the company assets increased 1.8 times. With regard to the tangible assets, the company adheres to the straight-line method of calculating provisions for depreciation.

The intangible assets represent a small part of the total company assets, so amortization rate deviations that occurred during the period, could not have had a significant impact on financial performance. With respect to goodwill, the depreciation policy had been applied up to 2009; in 2008 goodwill disappeared from the balance sheet.

General conclusion: during the studied period the company adhered to a stable depreciation policy for the tangible assets, which constituted more than the half of the company total assets (see Table 2). The depreciation policy for the intangible assets was revised in 2009.

4.3 Actuality of accounting measurement of long-lived assets

In this part of the paper key financial indicators are calculated to show effectiveness of use of Company Y tangible assets and the analysis of their dynamics is conducted for the period from 2003 to 2011 (*source*: Published financial statements of the company for the reporting period). The set of indicators is designed to measure:

- a company's ability to generate revenues from long-lived investments (Tangible assets turnover);
- profits generated by tangible assets (Return on tangible assets);
- involvement of fixed assets in generating cash flow from operating activity;
- the trends in indicators' performance and to determine the relevance of the problem from investors' point of view.

The research results presented in Table 4 show improvement of the financial situation in 2010 after a significant decline in 2009. However, in 2011, despite the gasoline price increase, tangible assets generated lower net income (9.5%) and lower cash flow from operating activity (only 14 santims per each Lat of the value of depreciated tangible assets). Tangible assets turnover ratio, which measures a company's ability to generate revenues from long-lived investments also decreased compared to 2010.

Table 4

Company Y: Long-lived assets performance financial indicators

	2003	2004	2005	2006	2007	2008	2009	2010	2011

Return on tangible assets,%	9.6	8.2	15.5	17.2	26.7	7.1	4.1	16.7	9.5
Tangible assets to Total assets ratio, %	65.3	62.9	51.4	47.2	45.6	52.7	55.6	54.8	51.9
Tangible assets turnover ratio, LVL*	324	457	626	974	1045	1112	839	1008	986
Operating Cash Flow* to tangible assets, LVL	0.18	0.29	0.18	0.10	0.44	0.18	0.43	0.55	0.14
Return on Equity, ROE, %	10.1	7.4	15.4	17.4	29.0	7.0	3.7	14.3	7.4
Price in LVL/Liter**	0.49	0.54	0.55	0.61	0.64	0.76	0.61	0.78	0.96

Source: The authors' calculations based on the company Y financial statements, years ending December 31, 2003-2011; www.lursoft.lv/data_bases_of_companies.html.

* Only the assets for which depreciation is calculated are taken into account.

**Price notification for type of gasoline Super (*sources: http://gasoline-germany.com/international.phtml?land=11* in 2007-2011*, and http://www.spoki.lv/aktuali/Degvielas-cenas-95/329946 in* 2003-2006*).*

Significant fluctuations of ROE coefficient can cause a lot of questions from the users of financial statements; one of the first questions might be "Are the methods used for the measurement and evaluation of long-lived assets adequate to the current market situation?" Perhaps, long-lived assets book value is overstated?

4.4 Measurement of impairment losses

RQ3: How are impairment losses measured and what problems arise throughout the application of IAS36?

The Company Y started to apply IAS36 in year 2009 – due to recent global financial crisis the owners asked to value asset impairment. In 2010 the company used impairment testing for the first time to measure and evaluate the amount of potential impairment losses for certain objects of real property (the total amount – LVL 386 thsd.). DSF method and discount rate equal to 9.5% were applied for the calculation of the impairment loss. Having examined the calculation of impairment losses, the authors concluded that the most difficult are the issues related to the calculation of recoverable amount, including the discount rate used as well as the organisation of the re-evaluation process. The appropriate way to calculate the discount rate is complex subject, and one about which there is much academic literature, but at the same time there is no general consensus. Also many questions arose when studying financial statements of other companies that have been mentioned earlier in this article. The most debated issue is the discount rate, on the basis of which future cash flows are projected. For example, companies operating in the same industry for the same date use different discount rates: 9.5% and 16%. Can investors trust the provided information? The practical reality is that accountants apply subjective assessment for many assets that will be required to be measured at fair value. Determining an appropriate discount rate that reflects current market assessments and the appropriate risks will often be difficult and will require consideration and input from financial management, corporate management and valuation professionals.

By the opinion of researcher Kvaal Erlend (Erlend, 2005), as impairment losses generally contain unfavourable information about expected future performance, the question arises as whether firms attempt to provide transparent information to help investors better assess the implications of the impairments for future cash flows.

5. CONCLUSIONS

The results of the research conducted by the authors of this article show that the topic of accounting measurement and evaluation of long-lived assets and there financial performance remains the subject for considerable debate among scholars and professionals. Latvian companies are making their first attempts to implement IAS36 but facing a number of challenges, i.e. they now need to address serious issues of both organizational and methodical nature. The studies conducted in this field of knowledge and the provisions of

international accounting standard IAS36 are more focused on various aspects of accounting measurement of goodwill impairment and information disclosure, and to a lesser extent, deal with the issues related to accounting regulation of a company's tangible or fixed assets impairment. This explains the attention of the authors of this paper to the category of long-lived assets.

The authors came to the following conclusion. The problems connected with the practical application of the above standard can be explained by the fact that impairment of assets is a *multidimensional issue*, and one person - an accountant – is obviously unable to solve it, even if the company may have developed a detailed accounting policy. This conclusion is based on the following arguments:

1) In accordance with the provisions of the standard, for each reporting date the organisation must identify the signs of possible impairment of an asset, which can be attributed to the factors of the external and internal environment. It is within the competence of the financial analyst or economist, possibly with the participation of the technical director responsible for purchases of production equipment, but not the competence of the accountant.
2) When conducting impairment testing a question arises "How to calculate the recoverable amount, i.e. the economic benefits that the asset will bring to the company in future?" Here it is necessary to choose the highest out of two values: the fair value of the asset being tested minus the costs to sell or the value in use. In order to determine the fair value there must be an active market for the object of evaluation and the knowledge of that market (the competence of the marketing department). Objective measurement of the value in use can only be made by a professional evaluator.
3) Under the IAS36 impairments of tangible assets and goodwill are significantly associated with future cash flows. If it is not possible to determine the future cash flow for a separate object, the notion of cash generating unit (CGU) is introduced, i.e. the smallest identifiable group of assets that generates cash flows, which are largely independent from cash flows of other assets. In this case the most widely discussed issues are the criteria, level, and number CGU's defined. In the case of Company Y, an organisation with an extensive organizational structure, a department, which is responsible for the sale of gasoline and services and which independently generates cash flows, can be considered a CGU. In other words, for the company it is now important to develop a financial structure with allocated centres of financial responsibility. Resolving this issue is within the competence of the company's management.

The range of problems considered above proves that measurement and evaluation of long-lived assets is directly related to corporate governance and cannot be ignored when developing investment strategies.

Large variations in terminology and presentation in the companies' financial statements increase the need for individual interpretation and urges the need for further research aimed to develop methodological approaches to the accounting measurement of long-lived assets as well as to research the impact of individual elements of long-lived assets recoverable amount calculation on generation of the cash flows in the context of the strategic management of the company.

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IMPACT OF NOTES TO FINANCIAL STATEMENTS ON THE QUALITY OF FINANCIAL REPORTING: SELECTED EVIDENCE OF ISSUERS AT THE PRIMARY STOCK MARKETS IN CROATIA AND SERBIA

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"If you can't convince them, confuse them."
Harry Truman

Abstract

Purpose – The purpose of this study is to investigate the current practice and the quality of notes to financial statements. The focus is on theirs role in improving the process of financial reporting based on International Financial Reporting Standards (IFRS) of the primary issuers quoted at the local stock markets in Croatia and Serbia.

Design/methodology/approach – In the paper it is used the standard IFRS methodological approach to notes, financial statements and integral process of financial reporting of the leading primary issuers at only two stock markets in these republics, e.g. Zagreb in Croatia and Belgrade in Serbia.

Findings – Research results shall reveal the real information content and quality of notes to financial statements on the Zagreb and Belgrade Stock Exchanges, the materiality aspect, real information content and integration with relevant audit reports, all that in the context of proper informing of the investment community.

Practical implications – The practical implications of the research are to point out to the results of the research that practice of too extensive but not much revealing notes is in the sharp contrast of the concept of IFRS, and mostly notes are translated IFRS without giving any significant insight into the materiality of reporting.

Social implications – On-going process of reforms in financial reporting internationally and on the level of EU is strengthening the importance for transition economies to be the part of these changes regarding some possible form of further more precise and much less extensive approach to the information content of the notes.

Originality/value – Based on our preliminary research the information content of the notes and criteria of materiality shall be one of the main topics of accounting and financial reporting development internationally and in the EU. In this broader context this research should give better insight what is really going in practice in two selected transition economies, one which is the new EU member as Croatia is, and Serbia as a candidate.

The research provides an extensive literature research and a systematic review of recent developments in sustainable performance management systems. The paper also provides background for identifying further research and development of sustainable performance management systems in the area of hotel industry.

Keywords: notes to financial statements, financial reporting, primary issuers.

1. INTRODUCTION

The transition to market economy and development of corporate governance in the Republic of Croatia and Serbia required an accounting transition, which was also prerequisite for capital market development and the investment promotion. This process was also under the impact of global accounting harmonization, which made the accounting regulatory framework global. The process of accounting harmonization in Croatia and Serbia is a long process and there are some important changes that have been done during the last 20 years.

Changing the accounting regulatory framework doesn't mean efficiently participating in globalisation process, which could be realized by acceptance and implementation of IFRS directly or as the basis of national standards. Both countries chose at begin the first alternative, i.e. the direct implementation of IFRS, wherein the Croatia after 15 year of IAS implementation changed in 2007 Law on Accounting and developed its own national accounting financial reporting standards for non-listed companies.

Belonging to the Roman law system, the accounting regulation in both countries is traditionally encompassed by the Law on accounting. Law on accounting is the main accounting regulation that consists of main parts such as entity classification, accounting instruments, financial reporting, auditing of financial statements. Both countries also established accounting boards, usually within the framework of the accounting and auditing associations.

Although both the FASB and IASB stress the importance of high quality financial reports, one of the key problems is how to operationalize and measure this quality.

The research conducted by van Beest, Braam and Boelens (2009) suggest that the measurement tool used in the study is a valid and reliable approach to assess the quality of financial reports. The measurement tool contributes to improving the quality assessment of financial reporting information, fulfilling a request from both the FASB and the IASB to make the qualitative characteristics operationally measurable.

Jara et al. (2011) analyses the quality of financial information using financial and economic ratios, assessing if the quality is affected by financial reporting standards. A group of factors for measuring accounting information quality is determined. They indicate that financial information quality is affected by financial reporting standards, and present a group of factors that show an alternative to analyse accounting information. This study shows that accounting information is affected by financial reporting standards.

This research gives more detailed insight on what is really going in practice of implementation of IFRS and their impact on the notes and quality of financial reporting in two selected transition economies, one which is to become the new EU member as Croatia and Serbia as a candidate.

2. ACCOUNTING REGULATORY FRAMEWORK IN CROATIA AND SERBIA

2.1 Accounting regulatory framework in Croatia

The development of the accounting and auditing profession in the Republic of Croatia began in 1992 with its first Law on Accounting (NN 90/92) and Law on Auditing (NN 90/92). According to the first Law on Accounting, International Accounting Standards were adopted as the national accounting standards for all companies in Croatia (listed and non-listed). In 1992 the Croatian Association of Accounting and Finance Professionals (HZRIFD founded in 1954) became a member of EAA and in 1994 a member of IFAC. In addition Association of Croatian Accountants and Association of Auditors were also founded, with its role to adopt IAS and IFAC's International Standards on Auditing in Croatia. To adjust the accounting regulations to EU directives, Croatian Law on accounting underwent some changes in 2005 (effective from January 2006) and in 2007 (effective from January 2008). Namely, in 2004, the Republic of Croatia was awarded candidate status for the membership in the EU. This reflected on the accounting and auditing profession in Croatia because in order to join the EU the economic and political conditions, known as the 'Copenhagen criteria', would have to be fulfilled. According to these criteria, a prospective member must (Ljutić, Klikovac, Janković 2009):

- ✓ Be a stable democracy, respecting human rights, the rule of law, and the protection of minorities. Fulfilling this criterion is the key for starting of accession negotiations.
- ✓ Have a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the Union.

- ✓ Adopt and enforce the common rules, standards and policies that make the body of EU law.

According to the third criteria stated above, the Republic of Croatia has to consolidate all the accounting and auditing standards with the EU standards. With regard to auditing Croatia complied with the EU's Eight Council Directive on Statutory Audit of annual accounts and consolidated accounts. To achieve this task, a new Law on Accounting and Auditing were adopted in 2005.

New provisions in the Law on Auditing were the following: (Ljutić, Klikovac, Janković, 2009)

- Croatian Auditing Chamber is a professional body that performs quality control over the performance of audit firms and certified auditors and reports it to the Department of Finance every six months.
- Department of Finance performs public oversight over Croatian Auditing Chamber.
- Providing non-audit services to audit clients was prohibited.
- Clearer terms for auditor's independence were set.
- Statutory auditor or audit firm can only be dismissed if there is a significant reason why the statutory auditor cannot finalize the audit, but the Act doesn't require the reasons for dismissal or resignation to be disclosed. The client or an audit firm or an independent auditor can notify the Croatian Auditing Chamber and Department of Finance if unjustified dismissal of an auditor occurred.
- All companies of public interest are required to set up an audit committee with at least one member of the committee with knowledge in accounting and/or auditing. The role and tasks of an audit committee are in line with the requirements of the EU's Eighth directive.
- Audit firms have to be insured for possible damages to the third persons, and the minimum liability is set at 300,000 kunas. Minimum liability for banks, pension and investment funds and insurance companies is set at three million kunas.

For further harmonization of the audit regulation in Croatia with the new EU Eighth Directive, a new changes of the Law on Auditing was enforced in November 2008. New provisions of this law are the following:

- Auditors from the third countries can provide audit services in the Republic of Croatia, based on the reciprocity between the Republic of Croatia and the third countries.
- Department of Finance is no longer performing public oversight over Croatian Auditing Chamber. Instead, public oversight is to be performed by the special body independent of the profession comprising non-practitioners members knowledgeable in the areas relevant to auditing. The public oversight will be performed by the independent Public Oversight Board, and the Board has to publish its report on the findings of the oversight.
- Statutory auditor or audit firm can only be dismissed if there is a significant reason why the statutory auditor cannot finalize the audit. The reasons for dismissal or resignation must be disclosed to the Public Oversight Board.
- Key audit partners responsible for carrying out a statutory audit rotate from the audit engagement within a maximum period of seven years from the date of appointment and are allowed to participate in the audit of the audited entity again after a period of at least two years
- Audit firm and independent auditor must publish on their websites, within three months of the end of each financial year, annual transparency report consisting of all the elements as stated in the EU's Eighth Directive.
- Public Oversight Board cooperates, provides help, transfers information and provides other forms of cooperation with a competent authority of a member state.
- Penalties for audit firms and independent auditors, if they do not publish transparency report, do not rotate key audit partners, and do not confirm their independence to the audit committee, range from 20,000 to 100,000 kunas.

After 15 years of their implementation, according to current Law on Accounting (NN 109/07), IFRS became obligatory only for large companies, listed companies and companies who are preparing itself for initial public offering. Other companies (unlisted - small and medium-sized companies) are using Croatian Financial Reporting Standards. The structure of financial statements is not prescribed by current Law, but by Committee for Financial Reporting Standards that made the Decision regarding the structure of financial reports, following the fourth EU directive. The layout and nature of notes are not prescribed by Decision of Croatian Board. External financial reporting in Croatia is nowadays regulated by:

- Law on Accounting (NN 109/77)
- International Financial Reporting Standards

- Croatian Financial Reporting Standards
- The Corporation Act (NN 111/93, 34/99, 52/00)
- Commercial Court Registry Act (NN 1/95, 57/96, 1/98, 30/99, 45/99, 54/05 and 40/07)
- EU Directives

2.2 Accounting regulatory framework in Serbia

In Serbia the Accounting and Auditing Law (2002) applies to all enterprises, cooperatives, banks, insurance companies, and other financial organisations, as well as sole proprietorships. It requires that all enterprises from the largest listed companies to the smallest unincorporated proprietorships must comply with IFRS from 2004.

The accounting and auditing profession in Serbia has been more or less under the dominant influence of the so called "German tradition" and from the historic point of view accounting and auditing activities were performed almost on the same legislative and institutional framework as in model European countries for Serbia like France and Germany. The period after the Second World War, during the existence of Second Yugoslavia as a communist oriented state, was somehow close to the Russian model. Approaching the end of the 1980's regulation has become closer to the market economics criteria, but surely not adequate. After the break away of Yugoslavia, Serbia was in prolonged isolation from the regional and global cooperation and influences. Reintegration of Serbia as a country and economy into regional and global framework of free market institutions under the rule of law is stressing the new role and significance of the economics of information.

The development of the accounting profession in Serbia has been initiated by two different forces. First, the strengths of the Association itself played an important role in steering the desired changes, but also the entry of foreign investors and funding agencies triggered the speed in development of the profession. The initiation of the South East European Programme for Accounting Development (SEEPAD) played an important role in bringing the accounting profession in different countries in the region together to consider mutual recognition of certificates, enabling the members to practice in different national jurisdictions. It is certain that the accounting profession is there to stay and survive, contributing significantly to changes in the national economies and facilitating professional communication with other countries (Šević, 2008)

Function of financial reporting, availability and transparency is significant for stability of the national financial system and, from early 2009, for existence and survival. Serbia's financial system is more of a concept of growth than a real, system of small numbers of stable, reliable, predictable, transparent and well functioning efficient financial institutions. Prolonged economic and political sanction of the UN Security Council against Serbia has created some form of intellectual "Splendid Isolation". The general impression and prevailing opinion in public and professional debates is that Serbia is much closer to the EU regarding legislature and regulatory reforms and institutional framework that is based on our intuitive assessment. Unfortunately that is not the case. Accounting and auditing standards are adopted from the formal standpoint like International Financial Reporting Standards (IFRS), and International Standards on Auditing (ISA). Full professional implementation of the framework of financial reporting and auditing in Serbia as a country with poor legal system and government regulatory institutions is still in the process of self-creation and institutional reconstruction. There is a general perception and acceptance that the new auditing regulation harmonized with the EU regulatory framework is *sine qua non* of any future reintegration of the country into the regional and global financial and economic institutions. But, from the verbal pledge to the real changes there is a long and bumpy road awaiting Serbia.

Generally, the financial information in Serbia is not of the highest quality and has been characterized by a tradition of unreliable financial reporting for many decades during the socialist economic system. During the period of democracy development government corruption, criminal activities (organized crime, white collar crime, etc.) were more than undermining formal orientation of the government to implement strict financial reporting based on the stringent IFRS and IAS standards. Since any system of standards in accounting and auditing professions is merely the system based on the general social, economic and market order, values and valuation. All those mentioned aspects are more than rudimentary in Serbia. Consequently, the implementation of the IFRS is theoretically more superficial than technical exercise, while the real market valuation is rather distant practical concept and approach. (Ljutić, Klikovac, Janković, 2009)

Economic crisis, illiquidity, tycoons and political patronage is still protecting the largest monopolistic illiquid companies, while profitable and liquid smaller ones and small and medium sized enterprises are carrying most of the burden of economic reforms, taxation and liquidity. For instance, in Serbia larger

companies are not fully obeying the rules for payment settlements, although from the legal point of view analysis would show that the rules are obeyed. Financial regulatory institutions are very liberal regarding the illiquidity of the "big-shots", while the others must cover all liquidity demands, even pay VAT in advance. However, large companies don't pay invoices from 3 to 6 months and even longer. Those are more than significant aspects of the real role of auditing, since this activity is not adequately prepared to audit the complex cross-ownership deals and transaction between banks, insurance companies, real sector and emerging conglomerates. (Gielen, at al., 2005)

The real problem for these two countries is that the process of establishing the public regulatory and self-regulatory institutions and bodies require civil society and citizens with high regard for free market institutions, democracy and the rule of law. That is the only solid foundation to construct the pyramid of audit institutions, since it makes no sense to expect the tycoons to be interested in developing national audit profession and institutions. On the other hand, big international auditing firms also have more than a strong interest to monopolize the market which is a negative impetus to develop a local respected audit profession.

3. CREATION OF METHODOLOGICAL FRAMEWORK

Methodological approach is based on IAS/IFRS framework with an emphasis on the IAS 1 – Presentation of Financial Statements (Summaries…, 2012; SRRS, 2011, Greuning, 2006). Notes to financial statements are enclosing information imposed and standardized by the International Financial Reporting Standards (IFRS) which propagate and stimulate to publicize and present all the necessary information in order to fulfil to main goal of the information content and analysis of financial statements, especially the transparency aspect, which based on our research is predominantly determined by the information quality of the notes itself (IASPLUS Standard 01, 2012; Deloitte, 2012; David, 2008). The role of external auditors is well defined by the International Standards of Auditing (ISA, IFAC, 2012). Financial reporting and external auditing practice do heavily rely on professional standards. There is a long and heavy road from standards to full implementation, much longer and with lots of obstacles in transition economies than in most EU member countries. Financial reports accompanied by the notes are the sole responsible of the reporting company, while the audit report is of the auditor, and this simple statement is more blurred in practice in Croatia and Serbia for many reasons. This demarcation line of who is responsible for what, how and why should be more precise and clear in practice (The Institute of Chartered Accountants of Australia, 2012). Feng and Shroff are pointing out complementary significant aspects of the quality of financial reporting as a sound base of local economic growth, aspect that is not well understood in Serbia particularly (Feng, Shroff, 2009). Our methodology is complementary and eventually more extensive and broader research on the long run could give better insight in the trends of financial reporting in transition economies, with a focus to a west Balkan countries, including Slovenia, Croatia, even Hungary, Bulgaria and Romania (Annual…, 2011). In developing an application of our methodological approach we have noticed significant points that in both countries it is not officially binding and applied the EC approach to presentation of financial statements but only the IFRS stance (EC…, 2011).

Current discussion on how to improve year-end financial reporting communication is leading towards an appealing and useful platform for necessary and unavoidable reforms in the process of corporate financial reporting in EU (EFRAG, 2012). A new trend and way of thinking can be noticed to dismantle and reject all that is unnecessary baggage and real information overload (NZICA, 2012).

In our explanation of the research method focused to measure the quality of information contained in the notes to financial statements we would like to stress few significant insights, that might be helpful to fully grasp the phenomena in two neighbouring transition economies e.g. Croatia and Serbia, with different institutional structures and pertinent financial and accounting regulation, that in turn is not helpful at all to achieve full methodological compatibility, but still leaves enough space for some joint analytical ground and comparative conclusions based on the findings. The only stock exchange in Serbia - Belgrade Stock Exchange (BSE) or BELEX consists of two parts - regulated market (Prime Listing and Standard Listing); and MTP Belex which together form an open market trading platform (Belex, 2012). At the BSE on the Prime Listing only five issuers have listed shares, so we have opted to select all the leading corporate issuers on this stock market. Analysed stocks admitted to the listing complied with all procedure carried out by the BElgrade SE Listing Committee. All analysed issuers have submitted to the Listing Committee Listing Application along with the documentation and evidence set forth by the Rules of Listing. Most of the relevant registration and listing information is based on the annual report, pertinent financial statements and

the audit report, e.g. Information for the Current Year, Stock Market Prospectus, Prospectus for the Securities Distribution, financial reports with quarterly reports, Notes to Financial Statements, Summary Financial Statements, etc. URL internet Web-Sites of issuers are closely and functionally connected to the BSE Portal, and financial information are presented with full regulatory compliance with the Serbian laws and by-regulations, also with the BSE regulation. Combined Codes of Corporate Governance, additional information services to shareholders are provided with the information about General Shareholder meetings, regular and irregular ones.

At the Croatian regulated market of Zagreb Stock Exchange (ZSE) there are three segments: Prime Market, Official Market, and Regulated Market. Highest requirements for quotation exist on the Prime Market where only listed instruments are traded with required Prospectus which is providing the information which may be required for the purpose of instrument evaluation by investors. Official market requires issuer to present only minimum information according to the Law of Capital, while for Regulated as well as afore mentioned Prime market there are additional obligations prescribed by Stock exchange rules (Zagreb Stock Exchange, 2012).

The organization of ZSE differs from BSE due to the existing regulation given by HANFA Croatian Agency for supervision of financial services (www.ripe-hanfa.hr). The financial and auditing reports are published at the web site of FINA, leading Croatian financial agency as publicly available reports (www.fina.hr).

The comparison of the comparative sources of data from the two national stock exchanges in Croatia and Serbia, shows that there is no fully coherent methodology, since we have actually applied somewhat different criteria for each of cases studied in Croatia and Serbia. Since results are not fully comparable, the observed limitation is not of a magnitude to influence the results and conclusions.

4. ASSESSMENT OF SELECTED CRITERIA OF THE QUALITY OF NOTES TO FINANCIAL REPORTS

At Belgrade Stock Exchange Primary Issue Market with its official title only in English as a "Belex Index Prime Market" are listed and quoted the leading Serbian companies whose shares are of the prime quality (Belgrade Stock Exchange. 2012). We have selected five leading listed companies which are the only ones listed at the Prime Market. Our decision to select only these listed entities has been based on the fact that these companies have passed the registration process with the Serbian Security and Exchange Commission, although even the mentioned issuers are not rely a fully-fledged primary issue, based on the more stringent and conservative international regulation and standards. Our previous remark would only like to point to the fact that some of these companies are in reality party para-governmental, which is not the focus and goal of our research. The sample consists of the following entities: International Airport Nikola Tesla, Belgrade (Aerodrom Nikola Tesla a.d., Beograd, Belex symbol: AERO), Energoprojekt holding a.d. , Belgrade (symbol ENHL), Serbian Oil Industry Co. (Nis a.d., Novi Sad, symbol NIS), Soja protein a.d., Becej (symbol SJPT), Rubber Tyre Co Tigar (Tigar a.d., Pirot, symbol TIGR). We have analysed the primary issue prospects of the selected companies on the primary issue market, and we have named these as a group of five (G5). We have gathered and implanted a proper ex-post compliance audit review of the information supplied in the annual reports for the fiscal and reporting year 2010, as well as the accompanying audit reports. Analytically as relatively homogenous units of observation have been pinpointed the information presented in the stock market prospects of the selected companies as listed issuers. At the Belgrade Stock Market Internet site are listed selected and reclassified processed information from the annual and audit reports, based on the standards and guidelines for stock market trading information requirements. We simultaneously observed the information at the official Web site present URL locations of the selected five companies where full annual reports and complete audit reports have been published for the 2010 (Ljutic, 2012).

At the Table 1 we have been able to observe and analyse information supplied to the public at the BSE Web-Site, while extensively at the web-sites of the individual issuing companies. Financial reports are published at the Zagreb Stock Exchange site, and additionally to them auditing reports and notes to financial statements at FINA and individual enterprise websites.

It is very significant to point out the main characteristics regarding the existence or non-existence of the relationship in the context of the Notes to Annual Financial Statements which are defined in the primary context and goal of our research. As such qualitative descriptive observations do not at all express the views and assessments of team of researchers regarding the intensity and quality of relationship, feedback

mechanisms, or about the quality and other relevant characteristics which imply any form of assessment or expressing definitive judgements, conclusions or recommendation. We have created this methodological approach only as a mean of objective social science research, while the authors do not exclude at all that other points of view, explanations or approaches are possible and most welcome. Previous paragraph should be viewed in the light of privatization process and presence of corruption in late transition economies like Serbia and this area of public and political interaction is highly sensitive and slippery ground in many subtle and not so subtle points of view.

Table 1

Comparative Sources of Information Contained in the Notes to Annual Financial Statements: Belgrade Stock Exchange-Prime Market and Web-Sites of Issuers in Serbia

		Internet Presentation at the Belgrade Stock Exchange Web Site				
No.	**Belgrade Stock Exchange: Qualitative Elements of Information**	AERO	ENHL	NIS	SJPT	TIGR
1	Information about issuer on the Belex site	1	1	1	1	1
2	Direct Transfer to the official site of the issuer	1	1	1	1	1
3	Information interconnected: Review, Historical Data, Prospect, News	1	1	1	1	1
4	Stock market prospect for the distribution of shares - Timeliness	1	1	1	1	1
5	Information content of the Prospect is easily accessed information to the user	0	1	1	1	1
6	In the annual reported data contained Notes to Annual Financial Statements	0	0	0	1	0
7	Report on the Significant Event: Financial Report for 2010 approved at the General Meeting of Shareholders	1	0	0	1	0
		Internet Presentations at the individual Web Sites of issuers				
	Information Supplied by the individual companies on the Internet: Qualitative characteristics	AERO	ENHL	NIS	SJPT	TIGR
1	Report on the Significant Event: Financial Report for 2010 approved at the General Meeting of Shareholders	1	1	1	1	0
2	Annual Financial Report for 2010	1	1	1	1	1
3	Notes to 2010 Financial Reports	1	1	1	1	1
4	Reference in the balance sheet and profit and loss account on numerous notes to financial statements	1	1	1	1	1
5	Notes to 2010 Financial Report are integral part of the report	0	1	1	1	1
	Notes to Financial Report placed after audit report	1	0	1	1	1
6	Cleary denoted number of pages which are strict responsibility of the auditor and which of the issuing company	0	1	0	0	0
7	Extension of the notes, elaboration and information content	1	1	1	1	1
8	Summary of the 2010 financial report	1	1	1	0	0
9	Notes to financial statements are separately revealed as an integral document	1	1	0	1	0
10	Quality of notes to financial statements: Presentation and content	1	1	1	1	1
11	Annual Report of Operations and Doing Business in 2010 as a complementary information to the Annual Report	1	1	1	0	1
12	General assessment on the methodological approach of the whole annual reporting process part which is revealed in notes	0	1	1	1	1

Methodological Note: Number 1 denotes some kind of relationship, while 0 points out that there is no relationship

Source: Belgrade Stock Exchange official web-site (2012) and individual corporate web-sites (2012)

Analytical review (Table 1) has pointed out to a conclusion that at the Primary Market of the Belgrade Stock Exchange, Serbia, it is present and obvious a strong qualitative and functional positive relationship between the official stock exchange Web site related to the publicized financial and operational data for the five companies as listed on the market, that is logically and efficiently connected to the individual web sites of issuers. Financial information is presented based on the IAS/IFRS, on the way easily accessible to the layman user. We also point out that this statement does not qualify at all regarding the quality of the whole financial reporting process vis-à-vis international accounting and reporting standards, subject beyond the area of interest of our research. From the other viewpoint the lack of significant and meaningful information published in the notes to financial information of issuers is obvious.

Financial reports prepared for the local stock markets were fully complied with the pertinent regulation, but since the volume of trade is more than negligible and there is no significant demand for the financial information for trading and investments needs. Only one company (Sojaprotein, Becej) within the reported data at the Stock Exchange have included the Notes to Financial Statements. Analysis of the quality of information at the individual web sites of issuing companies is pointing out to the fact that the most companies reveal information about the significant event, e.g. of the approval of annual accounts and report at the annual general meeting of the shareholders for the year 2010. All the reporting companies have publicized highly structured and more than extensive elaborated notes to the financial statements, with the exact referencing in the balance sheet and profit and loss account. Four out of five companies have structured the notes as an integral part of the annual financial report for 2010 and placed their notes just after the audit report. It is noticeable a significant shortcoming that pages of the annual report which are the sole responsibility of the issuing company have not been clearly marked to be distinctive from the numerated pages of audit reports which are the responsibility of the audit company. Our finding and recommendation is that it is much better to separate consequently the numbered pages which are responsibility of the reporting company with notes to that report, and pages of the audit report and if any notes of the auditor. The average reader and user of financial information could not make any precise distinction which part of the whole report is responsibility of the reporting entity and which of auditor, and who has changed or not changed or altered what and why (Ljutic, 2004). Only CPA or external skilled auditor would make a clear distinction of these sections of the annual financial statements with notes and audit report, with or without accompanying notes of the auditor, based on the different logotypes and graphical design of the memorandum papers, when such reports are printed out on legal memorandums, but taking into an analytical focus that nowadays more and more reports are in the electronic form, or scanned printed out pages, in Serbia where an electronic signature is at its beginnings, is more scholastic discussion than a practically precise approach or a solution. This shortcoming, intentional or not, is even more pronounced when we take into a consideration local managers skills and not so adequate knowledge of accounting, financial reporting and auditing. Average user of financial information in Serbia in the world of business and public life does not at all possesses elementary knowledge and understanding of international financial reporting; Clear recommendation for the regulatory bodies, reporting companies and auditors is to (Ljutic, 2005). In all financial reports the information quality and content of the notes could be assessed as adequate, while the pertinent information in notes has been well presented. Main goal of this research was not to assess the quality of financial and audit reports, adherence and proper application of the IAS/IFRS/ISA but only the form, structure, and methodological creation of the notes, not the accounting procedure for the proper preparation of the notes. Based on the previous obvious limitations the level of credibility and persuasiveness of financial reports and audit reports has not been examined at all. Four out of five companies have publicized the annual report on operations which itself is actively contributing to a quality of information from a financial report, which in turn could only rely heavily on the substantive high information content of the notes based on the concept of materiality.

Croatian enterprises were chosen on the basis of the top 10 net income according to the research conducted by Deloitte on 100 top in the region for 2010 (Adria Top 100 Company Ranking). The sample consists of the following entities: Adris Group, Rovinj - Zagreb (Adris Grupa d.d., symbol: ADRS), Agrokor a.d., Zagreb (symbol AGRO), Croatian Electric Power Co. (HEP d.d., Zagreb, symbol HEP), Croatian Telecom a.d., Zagreb (Hrvatski telekom d.d., symbol HT), Croatian Railway, Zagreb (Hrvatske željeznice d.d., symbol HZ), Croatian Oil Company (Industrija Nafte d.d. Zagreb, symbol INA), Podravka a.d. (symbol: PODR), Vindija a.d. (symbol VIND), VIPNet a.d. (symbol VIPN) and ZG Holding, Zagreb (symbol ZGHol) We have analysed the primary issue prospects of the selected companies on the primary issue market, and we have named these as a group of ten (G10).

able 2

Comparative Sources of Information Contained in the Notes to Annual Financial Statements: 10 Selected Croatian Corporate Issuers at ZSE.

		Internet Presentation at the Official Public Internet Portal FINA, Zagreb, Croatia									
No.	**Descriptive Qualitative Criteria of the Notes**	1 - ADRS	2- AGRO	3 – HEP	4 - HT	5 - HZ	6 - INA	7 - PODR	8 - VIND	9 – VIPN	10 – ZGHol
1.	Number of pages of the narrative report	0	41	116	63	41	59	45	33	0	36
2.	Number of Pages of the Integral Financial and Audit Report	61	46	116	63	41	135	87	21	36	117
3.	Separated Narrative Report of the Operations	0	1	1	1	1	1	1	1	1	1
4.	Statement of The Responsibility of the Management Board		1	1	1	1	1	1	0	1	1
5.	Consolidated Report for the Group Ltd.	1	1	1	1	1	1	1	1	1	1
6.	Basic Business Activity and Development of the Co.	1	1	1	1	1	1	1	1	1	1
7.	Affiliated Companies	1	1	1	1	1	1	1	1	1	1
8.	Results of Operations and Market Position	1	1	0	1	1	1	1	1	1	1
9.	Risks and Risk Management	1	0	1	0	1	1	0	1	0	1
10.	Staff and Human Resources	1	0	1	0	0	1	0	1	0	1
11.	Corporate Governance Code	1	0	1	1	0	0	1	1	1	1
12.	Corporate Social Responsibility	0	0	0	1	0	0	0	1	1	1
13.	Activities of R&D and Co., Development	1	0	1	0	0	1	1	1	1	1
14.	Environmental Protection and Management	0	0	1	0	1	0	1	1	1	1
15.	Significant Events after the End of Reporting Year	1	0	1	1	0	0	0	0	0	1
16.	Signed and Sealed by the Co.	1	1	1	1	1	1	1	1	1	1
17.	Independent Audit Report on Year End 2010 Consolidated Statements	1	1	1	1	1	1	1	1	1	1
18.	Audit Report Signed and Sealed, on the Memorandum Paper of the Audit Co.	1	1	1	1	1	1	1	1	1	1
19.	Notes of the Auditor as an Integral Part of Audit Report	0	0	0	1	1	0	0	0	0	0
20.	Consolidated Financial Statements Cleary Singed and the Memorandum Paper of the Co.	1	1	1	1	1	1	1	1	1	1
21.	Notes to Financial Statements Clearly Market as an Integral Part of the Financial Report of the Co.	1	1	1	1	1	1	1	1	1	1
22.	Notes to Financial Statements well Referenced	1	1	1	1	1	1	1	1	1	1

Methodological Note: Number 1 denotes some kind of relationship, while 0 points out that there is no relationship

Source: Croatian Financial Agency FINA, Annual Reports http://rgfi.fina.hr/JavnaObjava-web/pSubjektTrazi.do(1 to 12 August 2012); individual corporate web-sites (1 to 12 August 2012); Condensed Balance Sheet and Profit and Loss Accounts for Quarters, Half-a-year and a Whole Fiscal Year from 2004 to 2012 on http://zse.hr/default.aspx?id=36774&ticker1=&Page=198 (accessed 14 August 2012)

The previous data analysis is not intended to give a full valuation of the information content of the notes to financial statements, but only to serve for analyzing accounting trends and techniques of the prime issuers at two comparative leading national stock markets in Croatia and Serbia (AICPA: Accounting Trends & Techniques, 2011). Our research is a form of initial survey of illustrative examples given to us by the selected financial statements of 5 issuers from Serbia and 10 issuers from Croatia. Selected companies do

cover major industries in both countries, and information is compiled and focused on the presence and extend of the notes, with initial insight into methodology of the preparation of notes. In both countries based on our research there are no studies about the obstacles and real results of the IFRS framework application in the practice, since cumbersome and inherited complex legislation and public inertia is not overly supportive environment for this most public consider more than radical approach.

Since annual reports are almost the same but not identical in two analysed countries, we consider as consistent to reflect as much as possible new insights and criteria into our analysis, at the same time fully aware of the limitation of this approach, but we consider that new, and in some matters not fully compatible survey criteria are not inconsistent.

5. RESEARCH RESULTS

Before reaching or even less suggesting any clear-cut and unquestionable conclusion we once again would like to stress the fact that main goal of this initial research is to open up a discussion what should really the notes to financial statements contain, framework of information content, while at the same time balancing the increasing need not to overload the users of information with a heavy useless burden. This angle is stressing an urging and ever increasing need and necessity to reconsider the structure, volume, framework in information quality of the notes in countries like Croatia and Serbia. Our preliminary findings is revealing the simple message that the notes should really be short and explanatory and not some sort of defence of corporate accountants, executives and auditors in the court cases and public hearings. Notes should assist an average users of financial information to grasp and get a clear picture of financial situation and the results of operation, and should be presented in a systematic and consistent way- It should be borne in mind that the form should be serving the content, and not the opposite where there is the impression that the form is primary goal to dissimulate user of financial information to come to better conclusions and decisions. Financial reporting in Serbia and Croatia based on IAS/IFRS could be drastically improved regarding qualitative characteristics via improvement of the notes to financial statements, in a few not so drastically but significant steps. One of these steps is for the international and regional regulatory bodies (more precisely EU regulators) to review the whole segment of reporting within the notes and to follow reforms within IASB more closely and without any administrative delays. National regulatory bodies in Croatia shall be in a much better position in this process since the country is an EU member state, while in Serbia some kind of hesitation and slow down of the process of negotiation for the candidate state shall be probably used by the accounting and audit profession not to follow to international reforms and trends in this area with the speed that is really necessary. The expected slowness in accounting reform process shall be even more pronounced as we expect in the next few years regarding the unfavourable economic climate, slowing down of economic market reforms and the lack of adequate institutional framework in Serbia. Although level of demand for even medium quality financial information from the Statements is not so high in Serbia, but much higher in Croatia, the national regulatory bodies should more energetically and directly influence the practice of financial notes preparation, like some kind of limitation of the size, and even some better pronouncements regarding practical implementation of the IFRS, since we do expect that the needs of users of financial information to increase drastically regarding not only the form but much more the content of the notes (A Descriptive Study…, 1938-1968).

Analysis of annual financial reports of the top corporate issuers at the Zagreb Stock Exchange (Table 2) and their narrative reports of operations, financial and accompanying audit reports gave us more than a valuable initial insight into position of notes in the reports. General conclusions are valid and pointing out that we preliminary see somehow higher quality of financial and audit reports, that is logical and expected as Croatia is more institutionally developed and very soon EU full member state. This obvious integration into financial institutional framework of EU is also a strong support for a better and higher quality of financial reporting. Generally in both countries Croatia and Serbia we have noticed that notes are too extensive, in many instances only a mere retyping or copying of the IFRS standards without any obvious need for such an approach. We consider that such a practice does not at all contribute to improve the quality of the whole process of financial reporting, just the contrary. Our preliminary results of research are stressing that significant reform and improved standardization of notes is more than necessary not only on the global level of standardization lead by the IASB, IFAC and IOSCO but also at the EU level and on the national regulatory level in Croatia and Serbia. At the same time we are aware of the fact that the processes in Croatia are in a full control of the EU intuitions, and motivation of the Government, professional bodies and

businesses is obvious, while at the other hand Serbia shall face that challenge, and we could not assess what would be the response with this process taking into account the speed of changes and reforms.

6. CONCLUSION

We have come to a certain conclusion that the further development of the national regulatory framework in Croatia and Serbia based on the IFRS shall go towards significant revision and updating of the IFRS framework on the global level, which shall in turn better define the approach to the notes to financial statements, while introduction as a cornerstone the concept of materiality with an only goal that the notes should only contain information on material reporting items. Expected consequence of a such scenario of events shall be probably that the leading global auditing companies shall adjust their practice to a more efficient regulation that is at the same time significant profitability benefit for them, and clear consequence shall be the drastic cut of the volume of notes and theirs extensity. Some estimates are envisaging the cutting down of the volume of notes even up to 40%, with the parallel increase of financial information which is more useful to the real and potential users of financial information, and better servicing of those information future needs.

It has being relatively easy to make a conclusion that in to imaginary triangle of financial reporting two corners are the set of financial statement and notes, or just we dare to say that the notes are the two corners of that triangle and support of its stability. Regardless whichever line of reasoning it is to be adopted, the notes to financial statements are a fine structure and supporting pillar of complete information which in turn gives to financial statements such needed preciseness, completeness, structure, broad framework and debt of information, with significant feedback relations. High quality notes are connected not only through references in financial statements, but even more to the financial statement is integrative and integral information. Such notes are also serving as a form of information highway in the process of financial reporting, revealing true and fair picture on all important material aspects. We accept such an approach that the materiality is first of all an approach which is reflecting professional judgement of reporting accountants and auditors, primarily based on the facts and specific circumstances. The specific threshold or standard rules for the materially does not exist and it is even more impractical to introduce anything that would standardize common sense and logic of a human being. This approach we are in favour of is balanced and taking into account a significant fact – the information glut should be avoided at any cost in the notes with the intentional over-supply of the information in the notes with a more than insignificant and useless data. The common goal of reforms of notes to financial statements on all levels (international, regional, national, profession, businesses, etc.) should be only the consistent structuring, size and information content of the notes based on the concept of materiality, the concept this paper is trying to support and make it favourite.

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EFFICIENCY ASSESSMENT TOOL FOR CREDIT GRANTING PROCESS

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Abstract

Credit granting process has experienced considerable changes in the last years. Households as well as bank officials admit that a credit granting process has become more complicated, excessively time-consuming and non-transparent. A pre-research conducted by the authors pointed out that commercial banks lack tools for proper reflection and evaluation of decision-making process in credit granting. This implies that commercial banks have little control over the process and are unable to measure its efficiency.

The purpose of the research presented in the paper is to develop a tool for assessment of efficiency of decision-making process in credit granting and to provide practical recommendations for its improvement.

To achieve the purpose of the research, the authors used a qualitative method – the modified Delphi method and a graphical tool – decision tree. In order to design it the authors applied two criteria – event probability and time component, which reflect time, spent by credit specialists to proceed each activity in all stages of credit granting process.

Results and findings of the research – The authors have developed a decision tree of credit granting process, which proved to be a credible tool for efficiency assessment of decision-making process in credit granting. Moreover, the developed tool ensures transparency and accountability of decision-making process and provide an opportunity to measure and analyze different parts of the decision making process. The authors have elaborated recommendations for efficiency improvement of credit granting process, which implies necessity of changes in the order of data proceeding in credit granting process. This means that information with higher degree of influence on the final decision has to be clarified during the first stage of decision-making process, whenever it is possible, and information that has less degree of influence on the final decision has to be left for clarification on the later stages of decision-making process. That sort of structure of decision-making process in credit granting ensures less time consumption leading to a negative decision on credit granting and, therefore, improves efficiency of the whole credit granting process.

Limitation of the research – This research is limited to the study of the decision-making process applied by commercial banks in granting mortgage credits to households.

Keywords: lending, credit granting, process analysis, decision making, decision tree.

1. INTRODUCTION

Credit granting process has experienced considerable changes in the last years. Households as well as bank officials admit that a credit-granting process has become more complicated, excessively time-consuming and non-transparent. It might be the result of the world financial crises that has taken place recently. Commercial banks under pressure of the state regulators and bad financial results were forced to revise their existing credit granting procedures and supplement them with new rules and standards. Introduced changes immediately complicated the way commercial banks assess credit risk and creditworthiness of credit applicants. Moreover, commercial banks have reduced the power of credit granting

decision-making to the only credit committees, which made the credit granting process less transparent and time-consuming.

There is no doubt that bad economical and financial results on the financial market required stiffening of standards in credit granting. Together with changes in the credit risk assessment the whole credit granting process was affected – it became more complicated, non-transparent and time-consuming. To the mind of the authors these drawbacks should be excluded and credit granting process should stay as simple and transparent as possible. Implementation of this strategy is a key element to balance drawbacks of changes in the credit risk assessment and keep a high level of customers' satisfaction.

The purpose of the research presented in the paper is to develop a tool for efficiency assessment of decision-making process in credit granting and to provide practical recommendations for the improvement of decision-making process in credit granting.

The authors of the paper define the following objectives to achieve the purpose of the study: (1) To design a process assessment algorithm based on the application of a graphical tool – decision tree and qualitative method – modified Delphi; (2) To itroduce a time component to a decision tree framework, which make it possible for the authors to evaluate duriation and probability of each alternative solution in the developed decision tree; (3) To identify both disputable areas of credit granting process and areas that have potential to be improved; (4) To develop practical recommendations for the improvement of decision-making process in credit granting.

To achieve the purpose of the research the authors used a qualitative method – the modified Delphi method and a graphical tool – decision tree. In order to design it the authors applied two criteria – event probability and time component, which reflect time, spent by credit specialists to porceed each activity in all stages of credit granting process.

The paper consists of 4 sections. Section 1 focuses on the background of the research. Section 2 deals with the research that has been taken to develop a decision-making efficiency assessment tool for credit granting. Section 3 represents the authors' recommendation for the improvement of credit granting process. And finally, section 4 presents the conclusions.

Limitation of the research: The research is limited to the study of decision-making process applied by commercial banks for granting mortgage credits to households.

2. BACKGROUND OF THE RESEARCH

The authors have conducted the pre-research to explore the process of granting credits to households applied by commercial banks in different European countries. The results of the pre-research displayed that there is no significant difference in credit granting process between commercial banks from different European countries and identified that credit granting process consists of two interrelated components: credit-granting procedures and a decision-making process.

The credit granting procedures represent methodology of credit risk assessment and evaluation of creditworthiness of the credit applicants. A decision-making process, at the same time, represents a set of consistent and sequential actions that are carried out by credit specialists in order to meet all standards and requirements established in credit granting procedures leading to a decision on credit granting or denial.

The pre-research helped to identify that commercial banks lack a tool for proper reflection and evaluation of decision-making process that takes place in credit granting. Some commercial banks have made an attempt to reflect the credit granting process either in descriptive or visual way. However, such techniques as flow-charts and Entity-relationship model are not sophisticated enough to provide comprehensive precept of a complicated, multiple staged and diversified process of a credit granting decision-making process. This led to the understanding that commercial banks have not enough control over the decision-making process that plays significant role in credit granting. They are unable to measure effectiveness of decision-making process due to the lack of appropriate tool. According to the authors decision-making process is underestimated by commercial banks and encloses significant potential for improvement that would streamline to the desirable simplicity and transparency of the credit granting process. The decision-making process encloses considerable opportunities to improve customers' satisfaction as well as the efficiency of the whole credit granting process by consuming less human and financial resources.

Credit granting is a trade-off between the perceived default risk of a credit applicant and potential returns from granting credit (Keasey, Veronesi, 2008), which makes crediting to be the most risky products offered

by commercial banks. However, the pay off from bearing this risk is so attractive that commercial banks are highly interested in being presented on this market. In their attempt to minimize losses from the potential default risk of a credit applicant, commercial banks pay a lot of attention to opportunities for risk minimization. They are still eager to find a sophisticated credit risk assessment system, which would help them to identify good applicants and exclude bad ones on an early stage of credit granting process.

High interest of commercials banks and importance of the problem triggered a series of research that made attempts to solve the addressed problem by proposing different approaches for credit risk assessment. Over the period the researchers tried to address the problem by paying attention to deferent components of credit risk management. For example, Myer and Forgy (1953) introduces a numerical credit evaluation system that is based on discriminant and regression analysis. Liebman (1972), however, highlights the importance of a better credit control in order to lower total costs that crediting (granting and monitoring) causes. This approach is based on the Markov model, which is transformed into equivalent linear program. Orgler (1970), however, admits that the biggest concern of commercial banks and state regulators is loan review and control. Orgler addresses the problem of credit evaluation to improper standard and techniques used by commercial banks in credit-granting process. The author introduces a solution that is supposed to deal with evaluation of credit applications and decrease rate of granting credit to "bad" applicants.

While earlier studies concentrated mostly on the development of a system (scoring, numerical, liner regression or credit portfolio risk management) based on mathematical and statistical methods, later studies have tried to research credit granting process based on information applied by commercial banks in their decision-making on credit granting or denial. For example, Kim (2004) in the research investigates the importance of financial statements in credit granting decisions in large commercial banks comparing to small ones. Kim proves that large commercial banks rely on hard financial information, computer models and centralized decision-making, but small banks rely more on non-financial information collected by personal contacts, community ties and close lender-borrower relationships. Cole, Goldberg and White

(2004) in their research also came to the conclusion that lending decisions in large banks are more likely to be a function of financial variables, versus the lending decisions of small banks, which are more likely to be a function of variables indicating pre-existing relationships between a bank and a loan applicant. Taking into account the results of above-mentioned researches Liberti (2005) analyses the hierarchy of the credit granting process and the importance of transmission of soft and hard information across and within an organization. Liberti supports the view that hard information is relatively more important than soft information as a loan moves up the hierarchy. However, Liberti admits that the importance of hard information decreases and reliance on soft information increases when hard information is questionable or unreliable. E.Zelgalve (2004) has made an attempt to combine the above-mentioned approaches and designs the scheme to systemize indicators and create the optimal set of indicators that would shorten the time spent on investigation of a customer's creditworthiness. The scheme combines a financial and non-financial analysis, as well as the analysis of the past and the future.

Though, there are a lot of researchers, who attempt to solve complex and ambiguous problems related to the credit risk management, but only some of them tried to solve the addressed problem by application of a decision tree framework. One of them is Mehta (1968) whose research focuses on credit-granting process and develops a system of indices. The developed system is supposed to become as a control mechanism for credit-granting process, which helps to assess the efficiency of credit-granting process in monetary terms. In order to develop an indices system Mehta used a decision tree framework and suggested assessing efficiency of credit-granting process by evaluating bad credits, credit receivables and other measurements, which correspond to the particular stage of credit-granting process. Johnson and Stowe (2007) continued the development of the approach suggested by Mehta (1968) and in their research they used a decision tree framework to identify the efficiency of credit-granting process by assessing credit granting and credit denial costs to commercial banks. The main condition of Johnson and Stowe research is enclosed in the fact that applicant's credit rating should be obtained from rating agencies. The offered approach assumes that banks in their credit granting policies trust credibility of the outsourced credit rating. However, currently, commercial banks prefer to have their own credit risk assessment procedures or internal rating systems for evaluation of creditworthiness of a credit applicant and are not willing to trust and outsource ratings from rating companies.

Notwithstanding the fact that some of researchers applied a decision tree framework in their research to solve the addressed problems in the field of credit granting the authors assume that this approach has not fulfilled its potential yet and might help to solve the problem addressed in the paper. For example, Magee (1964) considers a decision tree framework as a suitable and valuable a tool for the evaluation of decisions

under uncertainty, which is the case for credit granting. Magee introduces readers with basic concept and variables used for the development of a decision tree. Magee considers a decision tree framework as a unique tool that combines analytical techniques with clear visual representation of the impact of the future decision alternatives and events.

Taking into account the results of the pre-research and brief literature review, the authors came to the conclusion that decision-making process in credit granting has never been properly emphasized. And this research provides a valuable insight into acknowledgment of interdependencies, critical issues and areas for improvements in the decision-making process of credit granting.

The aim of this paper is to examine decision-making process in credit granting process as a set of consistent and sequential actions that is carried out to reach the final decision - approval or denial of granting a credit. The aim of this paper is not to introduce new standards and rules for credit risk management. The authors' intention is to propose a solution for optimization of the decision-making process to improve the efficiency of the credit granting process.

3. EFFICENCY ASSESSMENT TOOL

During the first stage of the research the authors made the experiment – structured interviews with credit specialists from different European countries having extended working experience (not less than ten years) in credit granting. To define experts groups the authors applied the methodology of formalization of experts' opinion provided by T.Reizinsh and D.Rutitis (Reizinsh, Rutitis, 2006). This methodology implies development of an expert group consisting from three to six experts with a condition that for each two interviewed credit specialists there is at least one expert, who had taken a leading role in the development of a credit granting process. The methodology suggests adjustments of Classical Delphi method for the reason to be implemented in a decision tree approach as it shown in Figure 1.

During the 1st iteration of formalization of experts' opinion, the selected experts were interviewed by the authors to provide detailed information on decisions that have to be taken in credit granting to achieve a final decision – approval or denial of granting credit to a credit applicant. After that the authors became aware of the exact sequence of decisions that take place in credit granting process.

According to the authors, credit-granting process might be divided into 6 stages having 40 statements. This means that before decision-making process can be moved to a credit committee, a credit specialist has to proceed information obtained from a credit applicant to all 40 statements.

At the end of the first iteration the authors can draw an initial decision tree. A decision tree is an instrument that explicitly interprets any process and can be stated as strategy where actions of decision makers can be determined and the stochastic state of nature can be kept as given. The main purpose of creating a tree is that afterwards the decision makers can easily decide how to act in each decision node and follow their decision further in depth. Decision tree provides the possibility for decision makers to analyze and compare different paths of the decision tree. These characteristics make application of the decision tree method relevant to solve the addressed in the research problem and provide a tool to ensure accountability and transparency of the decision-making process in credit granting.

The 2nd iteration is about validation and adjustment of the drawn decision tree. This stage of formalization of experts' opinion includes: (1) adjustments to the need of legislation framework of each particular country and (2) revision and changes of some parts of previously identified statements in the drawn decision tree. This stage of process's formalization proved to be the most time-consuming and hard for explanation to the experts.

The 3rd iteration is the most crucial part of formalization of experts' opinion and consists of setting empirical distribution of probabilities for each alternative branch of the drawn decision tree. Afterwards a combined probability has been formulated as a product of all probabilities enclosed in a particular decision tree branch. In the same way the experts shared their experience regarding the time required to perform tasks enclosed in each statement. In the end of the third iteration the authors calculated the cumulative time that describes particular decision tree branch.

After formalization of the experts' opinion had been finished the authors were able to develop stable decision tree of decision-making process in credit granting, consisting of 1st meeting, 1st analysis, intermediate stage, 2nd meeting, 2nd analysis and credit committee. The developed decision tree appeared to be excessively voluminous and unsuitable for graphical representation in the paper. Due to this drawback the

authors in Figure 2 offer light insight to the developed decision tree and propose a tiny fragment of the decision tree that corresponds to 1st appointment.

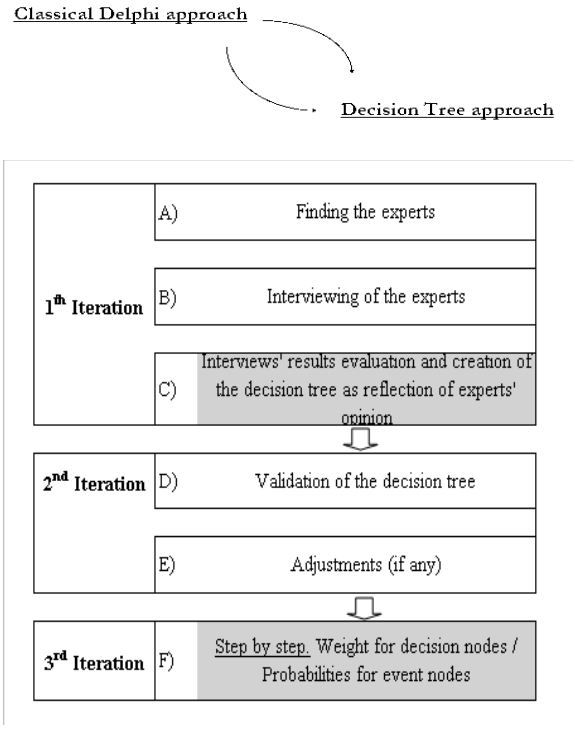

Figure 1. Transformation of Classical Delphi approach to Decision Tree approach

At the second stage of the research the authors worked on the interpretation of the results derived form the developed credit granting decision tree. To perform the analysis of the decision-making process the authors transformed the developed graphical decision tree into numerical matrix and applied mathematical statistics to proceed data. This approach gave leave to identify that positive decisions (approval of credit granting) take place in 14,60% cases of realized alternative solutions, but negative decisions (denial of credit granting) take place in 85,40% cases of realized alternative solutions. To verify the result the authors refer to the credit granting statistic data provided by the experts. The experts' statistic data state that from 100 experts' meetings with credit applicants per month only 15 results in signing of loan agreements. The conducted verification confirmed that the developed credit granting decision tree provide reliable and truthful results. This made possible to conclude that the developed credit granting decision tree is valid and can be used as a credible tool that provides an opportunity to measure the efficiency of credit granting process by setting relevant criteria and variables.

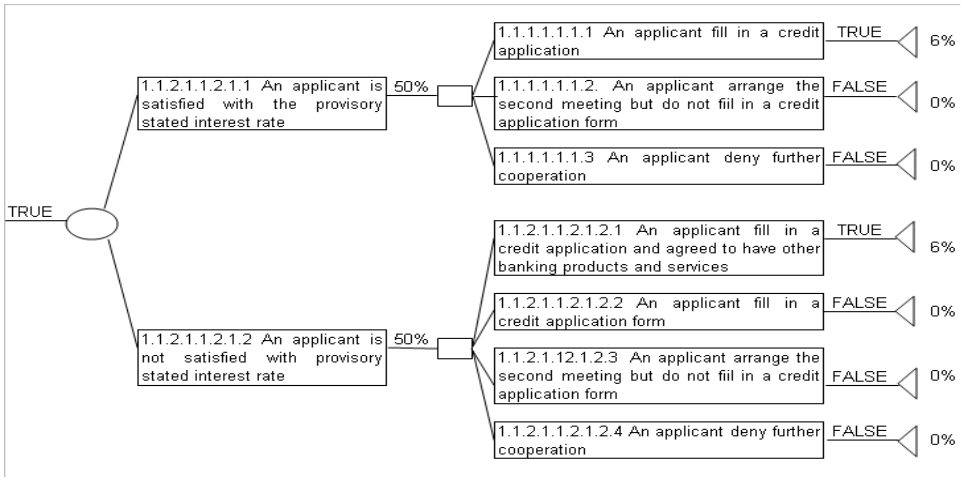

Figure 2. Graphical fragment of the credit granting decision tree

To achieve the purpose of the research the authors decided to set a time standard for optimal duration of the alternatives solutions. This stage of the research consisted of calculation of several variables, including the average decision duration, the median and the mode. The results of calculation are shown in Table 1 and present measurements that can be applied for evaluation and description of the decision-making process in credit granting.

Table 1

Measurements for evaluation of decision-making process in credit granting

Alternative solutions with	*Variable*	*Value*	
		minutes	*working days*
Positive decision	*Maximum duration*	*4064*	*8.47*
	Minimum duration	*564*	*1.18*
	Average duration	*2412*	*5.03*
	Mathematical expectation	*782*	*1.63*
	Median	*2441*	*5.09*
	Mode	*1591*	*3.31*
Negative decision	*Maximum duration*	*3764*	*7.84*
	Minimum duration	*3*	*0.01*
	Average duration	*2130*	*4.44*
	Mathematical expectation	*107*	*0.22*
	Media	*2081*	*4.33*
	Mode	*2431*	*5.07*

Presented in Table 1 variables are valuable measurement criteria for commercial banks to compare duration of each alternative solution that take place in the credit granting process and get understanding of how efficiently is organized a credit granting process in a particular commercial bank. Alternative solutions which decision-making duration exceeds the average duration have to become a subject for further analysis, because they are a source for improvements of the decision-making process in credit granting.

A considerable dispersion between the maximum and the minimum duration time of the alternatives solutions is appropriate for both - positive and negative decision branches. Therefore in order to set standards for optimal duration time of the alternative solutions, new variable - the "Mathematical expectation" was introduced. This variable identifies the highest probability of the decision to take place and represents the most common duration time to achieve a final decision – credit granting approval or denial. According to the data provided in Table 1 the Mathematical expectation for the alternative solutions with a positive decision corresponds to 782 minutes or 1.63 working days, but in case of a negative decision corresponds to only 107 minutes. These ranges should be considered as a standard for optimal duration of the alternatives solutions to achieve a decision on credit granting approval or denial.

The value of mathematical expectation for positive and negative decisions of the alternative solutions indicates that negative decisions can be achieved faster than positive decisions. This should be considered as a reasonable approach, because each minute spent to reach a decision generates expenses and can be defined as a waste of time for both participants of the credit granting process - commercial banks and credit applicants. Negative decisions of alternative solutions don't generate income for commercial banks and is waste of time for credit applicants. Therefore duration time of the alternatives solutions with negative decisions should take as less time as possible to ensure efficiency of the credit granting process.

4. DEVELOPMENT OF RECOMMENDATION

After the efficiency assessment tool for credit granting process was developed and tested the authors turn their attention to the development of recommendation for process optimization. The authors followed the assumption that optimization of credit granting process could be achieved by changing the order of statements enclosed in 5 stages of the developed credit granting decision tree. This approach would provide an opportunity for commercial banks to decrease duration time of credit granting process, which would result in more efficient employment of their human resources.

At this stage of the research the authors have analyzed and compared the influence of different factors to the decision to grant a loan. All information enquired and assessed by credit specialists to lead a credit

application to the final decision should be classified according to its influence on the final decision. The authors followed the classification suggested by I.Purinsh (Purinsh, 2010), which implies that all information can be grouped in five groups consisting from 23 factors. However, each commercial bank can develop its own criteria for factors and groups formation according to their experience and preferences. At this point experts of a commercial bank should agree on the scale, which will be used to measure factors influence to the final decision. The authors suggest to rank all identified factors only from the point of its influence on the final decision, for example, no influence, irrelevant influence, influence and high influence. This approach brings clear understanding of what kind of information plays essential role in decision of commercial banks to grand a loan.

During the following stage of the research the authors worked together with the experts groups to combine two approaches and identify place of all 23 factors within the developed credit granting decision tree. This implies that the experts had to trace the moment, when each of the factors appears for the first (and preferably also the only) time in 5 stages of the developed credit granting decision tree. Afterwards, the authors were able to establish a comparative image showing appearance of the factors within the developed credit granting decision tree according to the factors' ranking scale. The image, presented in Figure 3, is a key element for getting understanding about importance of each stage in crediting granting process.

By looking at the image it becomes obvious that decision-influencing factors are clarified during all stages of credit granting process. This observation implies that credit granting process does not have an optimal structure and this might cause inefficient utilization of commercial banks' resources. The authors suggest rebuilding of credit granting process's structure in the order when the factors having high degree of influence on the final decision are clarified and analyzed before the factors having less degree of influence. This approach would help to build an optimal structure of credit granting process and reduce time required by commercial banks to achieve a final decision. Following the authors' recommendation on the structure of credit granting process, commercial banks will be able to make a negative decision on earlier stages of credit granting process, which is a key element to achieve efficiency of whole credit granting process.

Application of the suggested approach implies that commercial banks have to identify the existing structure of credit granting process and evaluate homogeneity of each stage of credit granting process. Afterwards they have to consider an opportunity to change the place of the factors by transmitting the most influencing factors on earlier stages of credit granting process. This implies that commercial banks have to analyze whether a factor transition might cause distortion of credit granting process or not. If not, then a factor should be transmitted and change in structure of an interview with a credit applicant should be applied. After each factor and each stage of credit granting process have been analyzed in that way an optimal structure will be established. The last stage of the suggested process optimization requires development of a new credit granting decision tree, which results should be compared to the results provided by the existing credit granting process.

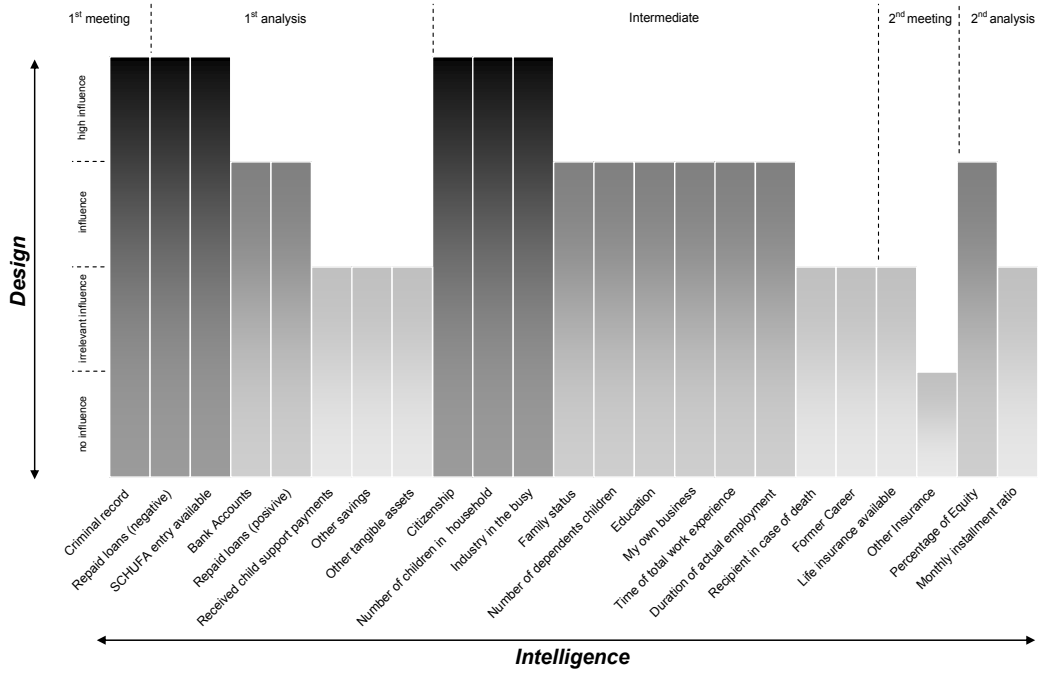

Figure 3. Factors distribution within credit granting process

Credit granting process efficiency will be achieved at the moment when commercial banks will develop a structure of credit granting process that ensures better results of the developed credit granting decision tree.

5. CONCLUSIONS

Credit granting process significantly influences the speed of decision-making in commercial banks. That is why it is so important to organize credit-granting process in most efficient way it is possible. Efficiently structured credit granting process is a source for better customers' satisfaction, efficient employment of human and financial resources and commercial banks' competitiveness.

The authors have developed efficiency assessment tool - credit granting decision tree that provides clear understanding, transparency and accountability of credit granting process. Statistical mathematics method applied by the authors to derive and interpret the results of the developed credit granting decision tree provide an opportunity to measure efficiency of the process. Better efficiency of credit granting process is achieved at the moment when time spent by commercial banks to achieve a negative decision (refusal to grant a credit) is shortened to minimally possible.

The authors have developed the recommendation for commercial banks to reduce the duration of alternatives solutions with a negative decision. This approach implies incorporation of decision-making factors into the developed decision tree. The result of the introduced approach indentified that decision-making factors that have the most considerable influence on a final decision are clarified during all stages of credit granting process. This implies that commercial banks will be able to achieve better efficiency of credit granting process at the time when factors with higher degree of influence on a final decision will be clarified on earlier stages of credit granting process.

The main benefit of the developed efficiency assessment tool is ability to measure efficiency of credit granting process as well as an opportunity to shorten the duration time of alternative solution with a negative decision. Decision time is the key indicator to determine costs of the human resources. Cost component provides opportunity to define the break – even point, where process becomes unprofitable and may cause loss to commercial banks.

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BANK LENDING AND CRISIS: CASE OF LATVIA

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Abstract

Purpose of the paper is to study the link between bank lending and financial crisis to identify the determinants of imbalances in lending to provide possible solutions for balanced development of bank lending in Latvia.

Design/methodology/approach: the analysis is based on the examination of aggregate statistical data of Latvia and selected European countries focusing on the link between bank lending and crisis. Qualitative information is collected using face-to-face communication with staff of financial institutions. The informational and methodological basis of the paper is special economic literature, scientific and research papers, collections of statistical information, and results of research made by the author.

Findings: several European countries have experienced financial crises caused by extreme lending expansion in the 1990s. The recent developments in Latvia have shown a similar "scenario". Based on the bank credit classification of R.A. Werner, analysis of the loans issued by Latvian commercial banks in 2004–2011 is carried out. To identify the main challenges and problems as well as to provide possible solutions for bank lending strategy that allows balanced development of banks and thus the national economy as a whole, analysis of bank lending operations is made. The analysis has shown the main determinants of imbalances in lending, including uneven structure of loan portfolio, overestimation of collateral, insufficient attention to risk adjusted loan pricing etc. Moreover, empirical study of the Latvian case has shown that growth of loans for consumption and speculation purposes resulting in inflation during the study period has exceeded the growth of banks capital more then twice, making banking system more vulnerable.

Research limitations/implications/future research: after completion of the necessary database, determination of the quantitative measures to ensure balanced development of bank lending will be carried out.

Practical implications: analyzing the course of financial crises in selected European countries (Norway, Finland, Sweden) in early 1990s and Latvia in the beginning of the 21st century, except of some country-specific features the general scenario is identified, showing common features of the course of financial crises following the link between bank lending and financial crisis in Latvia. Changing economic environment has revealed a number of imbalances in banking operations and pushed the banks to cardinally review their strategy in lending. Responsible lending as a compulsory component of bank lending strategy would allow balanced development of banks as well as would stimulate economic growth that in turn positively effects bank lending and profitability. To provide stability in bank lending taking into account the course of the previous crises, several proposals are worked out for Latvian commercial banks.

Keywords: bank lending, changing economic environment, financial crisis, lending expansion.

1. INTRODUCTION

Modern economic development is characterized by its' cyclical nature and changing economic environment with new opportunities and challenges. Financial and economic crises have become an integral part of economic development in almost all world countries. Each crisis has its own features that are country-specific, but often it is associated with excessive bank lending. Empirical studies have shown that lending expansion can lead to economic imbalances creating threats to the stability of the financial system as well as to the health of the national economy of the country (Gavin and Hausmann, 1996; Reinhart and Rogoff, 2009; Schinasi and Truman 2010). On one hand, lending to the real sector of economy is one of the most important factors that stimulate economic development of the country. Experience of many European countries has shown that successful economic development, availability of cheap financial resources and bank lending expansion stimulate economic growth (IMF, 2004).

On the other hand, if economic growth is geared predominantly by increased domestic demand, and increased domestic demand is a result of rapid lending expansion, it may lead to overheating of the economy as well as to financial and economic crisis. Under the conditions of economic downturn banks face rapidly rising credit risk and delays in loan repayment that can create huge losses and deteriorate bank performance

indicators as well as future existence and development. Thus, nowadays under conditions of changing economic environment, bank strategic management and lending policy become crucial not only for future development of the bank itself, but also for balanced future development of the country as a whole. Besides, due to globalization, economic problems or crisis in one country (e.g., the USA, several EU countries) can be rather quickly transmitted to another country influencing its further development.

Several European countries have experienced financial crisis caused by extreme lending expansion eventually accompanied by real estate bubble in the 1990s. The recent developments in Latvia have shown a similar "scenario". The case of Latvian bank lending expansion was not sufficiently studied. Purpose of the paper is to study the link between bank lending and financial crisis to identify the determinants of imbalances in lending to provide possible solutions for balanced development of bank lending in Latvia. Balanced bank lending development is important to ensure balanced growth and profitability of the banking business as well as to milder or avoid future financial distress.

2. RESEARCH METHODOLOGY

In order to identify the general "scenario", analysis of the economic development and the crises course in several European countries is carried out. For the purposes of analysis three European countries, that have recently experienced similar developments, had been selected: Norway, Finland and Sweden, representing the "Big 5" crises. The analysis is done based on the link between bank lending and crisis that is the research subject. Studying the role of bank lending and its ability to stimulate economic growth, the analysis of the Financial and Capital Market Commission (FCMC) statistical data on bank lending is carried out to analyze the link between bank lending and financial crisis. The case of Latvia is analyzed to determine the main imbalances in lending, to extract lessons for bank lending practice. Research period: 2004–2011. Qualitative information is collected using face-to-face communication with staff of financial institutions. The informational and methodological basis of the paper is special economic literature, scientific and research papers, collections of statistical information, and results of research made by the author.

The paper is organized as follows: the theoretical framework and review of literature on bank lending and its link to financial crisis; analysis of development peculiarities of Latvian commercial banks after joining the EU as well as the factors leading to credit boom; identification of general crisis "scenario" based on analysis of the course of financial crisis in selected European countries (Norway, Finland, Sweden, and Latvia). Relying on the analysis made, the penultimate section focuses on identification of the main determinants of imbalances in Latvian bank lending. Conclusions highlight the main lessons learned following the link between bank lending and crisis as well as provides several proposals for balanced development of bank lending. Lessons learned for bank lending can help to ensure balanced future development of banks and the national economy as a whole.

3. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Bank lending is often seen as a key driver of the financial system and the economy as a whole. Schumpeter in 1912 has argued that the capital transfer from old to new more innovative businesses is a key element of growth, in other words, banks can encourage technological innovation by lending to most innovative businesses. Thus, bank lending is crucial for economic growth of the country and is also important for understanding the nature of economic cycles (Minsky, 1992).

Werner studying the role of bank loans has classified loans according to its nature and has identified three types of loans: for production, for consumption and for speculation (Werner, 2009). According to this concept, only loans for production (e.g., corporate loans to the real sector of economy) stimulate economic growth as loans for production help to increase the value added. Loans for consumption (e.g., consumer loans) lead to an increase in GDP but not through the value added, but through inflation. Respectively, loans for speculation result in asset inflation and don't stimulate economic growth of the country. The classification of Werner is used in this paper to analyze lending operations of Latvian commercial banks following the link between bank lending and crisis.

Several scholars have explored the anatomy of the previous financial and economic crisis, and proved the critical role of bank lending (Gavin and Hausmann, 1996; Demirgüç-Kunt and Detragiache, 1998; Diamond and Raghuram, 2009; Werner, 2009 etc.). According to the studies of Reinhart and Rogoff, the crises are

generally preceded by an expansion of bank lending (Reinhart and Rogoff, 2008, 2009, 2010). Considering the experience of Nordic countries at the beginning of 1990, bank lending followed by a simultaneous crisis in the real estate market was seen as one of the main reasons for the crises (Jonung, Kiander and Vart, 2008). The experience of previous lending-driven crises is valuable for bank lending strategy determination for developing countries in order to avoid similar mistakes (Demirgüç-Kunt, 2006; Jonung, 2009). Thus, balanced lending is an engine of economic growth, while extreme lending expansion may lead to overheating of the economy as well as to instability (Kindleberger and Alibaer, 2005; Rousseau and Wachtel, 2009; Rosengren, 2011) or financial and economic crisis (Demirgüç-Kunt and Detragiache, 2005; Demirgüç-Kunt, 2006; Diamond and Raghuram, 2009). It proves the existence of the link between bank lending and financial crisis. This paper studies the link between bank lending and financial crisis based on the development of bank lending and the economy of Latvia in the period of 2004–2011.

4. DEVELOPMENT OF LATVIAN COMMERCIAL BANKS AFTER JOINING THE EU

Regaining of independence in 1991 had required systemic changes in Latvia. In order to build up a market economy, a package of reforms was introduced, e.g., liberalization of prices and trade, macroeconomic stabilization, privatization etc. (Åslund and Dombrovskis, 2011) as well as establishment of the financial system to ensure well-functioning market economy. Over the next years the financial system was built to support economic development of the country. According to Eurostat data, after accession to the European Union in 2004, Latvia had one of the highest GDP growth rates in Europe: the average annual GDP growth rate over the period of 2004–2007 has been 10.38% compared to 2.7% in EU–27 (see Figure 1). The economic growth has been achieved in sectors that were geared predominantly towards the domestic demand.

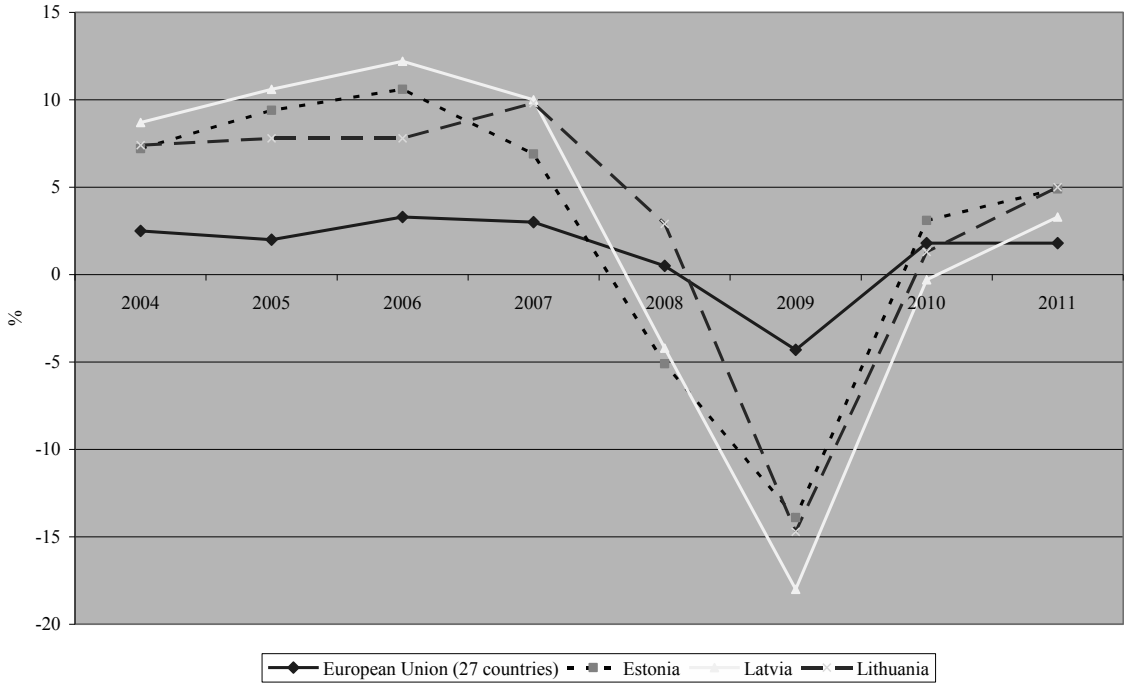

Figure 1. Real GDP growth rates in the Baltic States and EU–27, 2004–2011
Source: Eurostat

Growing consumption, rise in investments, EU funds, growing capital inflow etc. have contributed to quick development of economy. Favourable economic conditions until 2007 have promoted successful development of the banking sector (see Figure 2), on the other hand, banks have contributed substantially to the development of favourable economic environment, thus, stimulating economic growth.

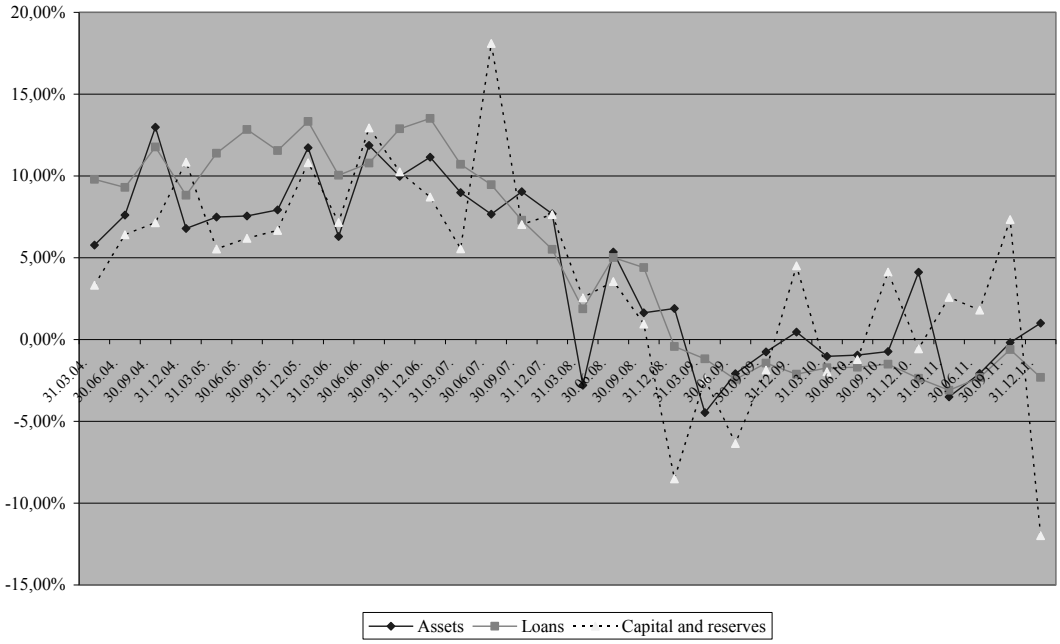

Figure 2. Growth of selected balance sheet items of Latvian commercial banks, 2004-2011, %
Source: FCMC

According to data of FCMC, by the end of 2008 Latvian commercial banks invested ca.68% of its resources in lending operations and the interest income on the loans issued to non-banks accounted for 61% of the aggregate income of commercial banks. Thus, lending has become an important core business of Latvian commercial banks with growing share of loans in total assets (on average 65.9% in the research period). Moreover, in the period of 2004–2007 the average annual growth of loans was 49.6%. This period can be characterized as a period of financial deepening, as loans issued by Latvian commercial banks grew more quickly than GDP of the country. Moreover, according to IMF methodology, lending can be defined as excessive lending (or lending boom) if it exceeds the standard deviation of that country's credit fluctuations around trend by a factor of 1.75 (IMF, 2004). Previous research has shown that the period of 1Q 2004 to 4Q 2006 can be characterized as excessive lending or credit boom (Ertuganova, 2010). It was possible due to several reasons. Positive economic outlook as well as improved scores from international rating agencies have added optimism to all Latvian economic entities, including non-financial companies and households. Rising asset prices (especially real estate prices) had improved private sector balance sheet and had positive wealth effects. It has stimulated an increase of creditworthiness of potential and current borrowers as well as their willingness to borrow. One the other hand, availability of credit resources through parent banks or in the international financial market have contributed to quick lending expansion.

Favourable lending conditions and strong competition between the commercial banks as well as simple loan provision procedures and loan availability have made banks extremely important for capital raising by Latvian companies. It has determined considerable changes in capital structure of companies. According to data of the Central Statistical Bureau of Latvia, in 2004 debt capital has constituted 40.9% of the total capital of Latvian companies, but five years later, in 2009, the share of debt capital has increased to 74.2%. Especially high use of debt capital and particularly bank loans could be noticed in manufacturing, wholesale and retail trade, real estate activities, moreover, debt capital constituted more than 90% of the total capital in two sectors: construction, and accommodation and food service activities. Moreover, company-level data show not only high level of leverage, but also liability dollarization. Under changing economic conditions such capital structure has made Latvian companies more vulnerable, highly sensitive to changes of interest rates and possible cash flow problems as well as highly dependent on banks as creditors.

Private individuals and non-profit institutions servicing households were also active in borrowing. During the research period loans to households and non-profit institutions servicing households were growing constantly, average annual growth till 2008 was 69.3%. Moreover, the largest part of loans granted to households were loans for housing purchases (see Figure 3). Household indebtedness in Latvia was defined as "moderate, significantly increasing" (Dubois and Anderson, 2010).

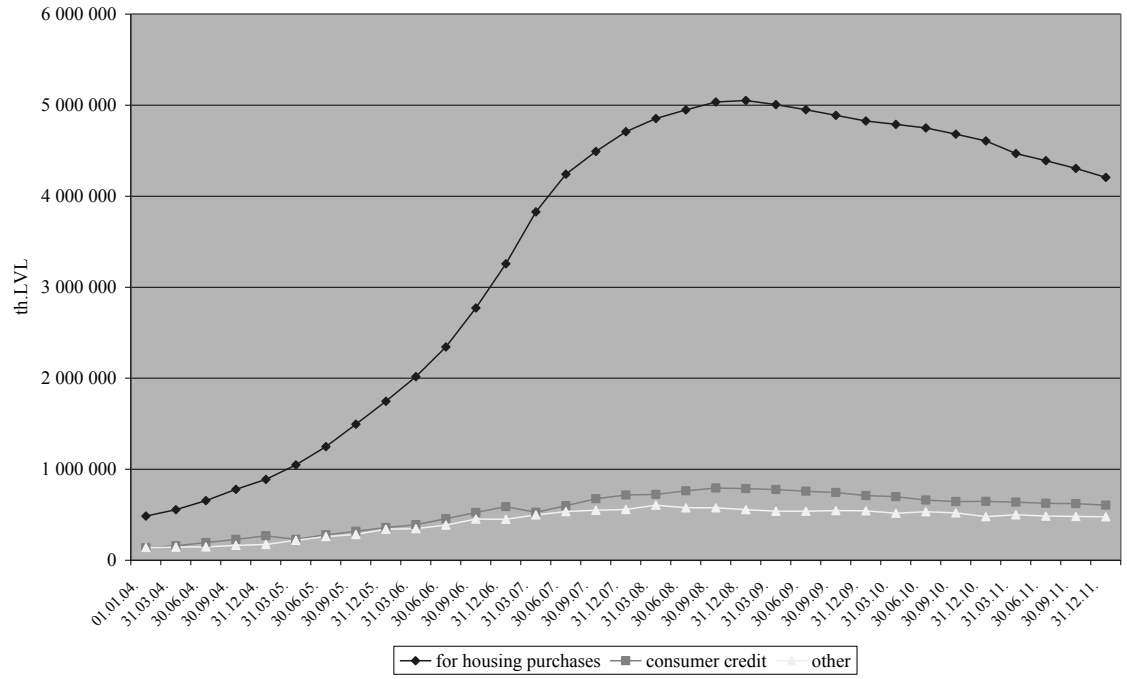

Figure 3. Loans to households and non-profit institutions servicing households, 2004-2011, thousand LVL
Source: FCMC

In the period of 2004-2008 growth of loans granted to the private sector (non-financial companies and households) considerably exceeded the GDP growth. Moreover, major contribution to growth of the loan portfolio of the commercial banks was made by the loans to private individuals for real estate purchase. As a result of the credit boom, in the period of 2007–2010 volume of bank loans granted to local households and private non-financial companies exceeded nominal GDP with it's peak in 2009 – 118.05%. Excessive lending geared a considerable increase in domestic demand that was considered as one of the main reason for overheating of the economy. The following economic downturn became serious examiners for all economic entities, including commercial banks.

5. BANK LENDING AND FINANCIAL CRISIS: IS THERE A "COMMON SCENARIO"?

Global recession as well as global financial meltdown had negative impact on economy – in 2009 Latvia has experienced double-digit GDP contraction. Scarcity of liquidity in the international financial markets had also limited availability of resources to Latvian banks and increased the funding costs. Changed current economic situation and reassessed economic outlook forced Latvian banks to change their lending policy and tighten lending conditions.

The economic downturn of 2008-2009 has pushed the banks to review their lending policies, limiting lending to companies and households. These changes were made in order to limit losses of the non-repayment of loans. Under conditions of economic downturn, in 2010 comparing to 2008 the volume of loans issued to enterprises has decreased by 14%, to households and non-profit institutions servicing households – by 11%. Economic downturn and collapse in real estate prices have caused considerable deterioration in bank assets quality and increase of non-performing loans. As a result of deterioration of loan quality (in 2010 26% of total loans were loans with delays in repayment), the volume of special loan loss provisions to cover anticipated losses on loans in the period of 2004 to 2010 has increased more then 27 times, constituting ca. 13% of nominal GDP. Under such conditions banks have experienced considerable decline of performance losing their profitability. Economic slowdown, increase of non-performing loans and special loan loss provisions have resulted in sharp decline of return on equity and return on assets – both were negative since 2009 with a slight recovery in the middle of 2011. Thus, development of Latvian

banking sector in 2008 can be characterized as Type 2 banking crisis or financial distress, according to banking crisis classification of Reinhart and Rogoff (2008).

Similar crisis "scenario" was experienced several times in economic history of European countries. In order to identify common features of the course of financial crises following the link between bank lending and crisis, analysis of the financial crises course of late 1980s and early 1990s in selected European countries of "Big 5"[41] is made, based on analysis of experience of Norway (1987), Finland (1991), Sweden (1991). Except of some country-specific features the general scenario is identified (see Figure 4). The analysis has shown that economic downturn was preceded by credit expansion accompanied by increase in domestic demand, rising assets prices and as a result high inflation. A similar crisis scenario has appeared in Latvia in 2008.

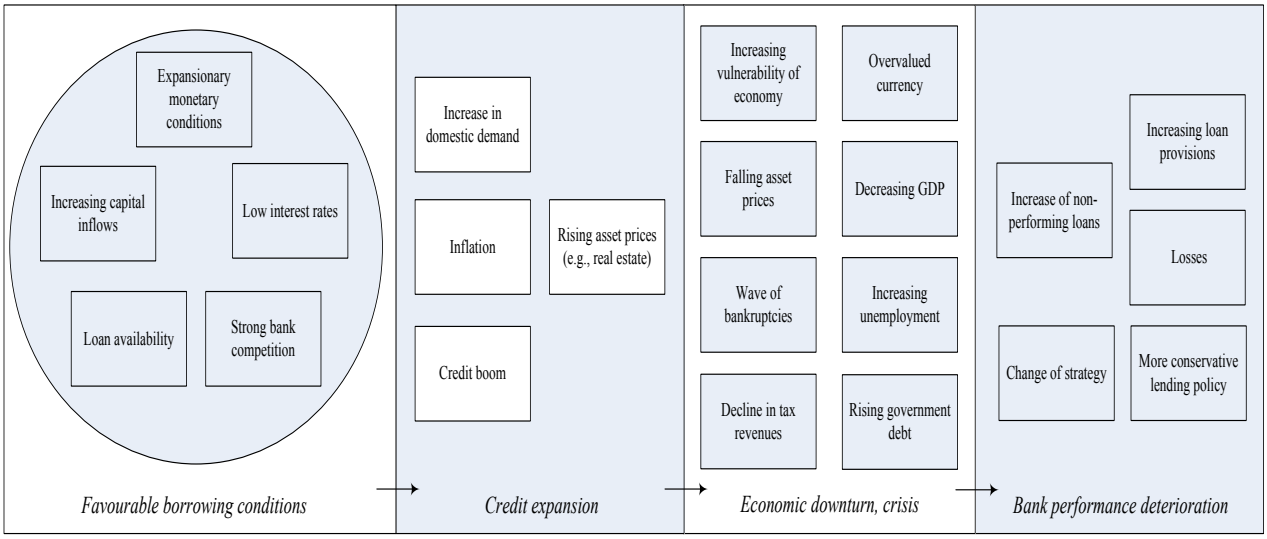

Figure 4. General crisis scenario

Several factors, including credit market deregulation leading to larger loan availability as well as the tax system favouring borrowing and relatively high inflation leading to very low or negative real interest rates have contributed to rapid credit expansion in the Nordic countries (Ingves, Lind, Shirakawa, Caruana, Martínez, 2009). In Sweden credit expansion in late 1980s led to considerable increase in debt – in five years the GDP ratio for private sector debt increased from 85% up to 135% (Bäckström, 1997). The following financial crisis has led to increasing vulnerability of the countries as well as to considerable loss of real income – 24.6 percentage points in Finland, 13 percentage points in Sweden and 12.4 percentage points in Norway (Jonung, L., Hagberg, T., 2002). The changed economic conditions have also deteriorated bank performance mainly due to considerably rising share of non-performing loans. In Sweden aggregated loans losses increased to 12% of the GDP of the country (Bäckström, 1997).

The general course of the crises in the Nordic countries resembles the developments in Latvia. Thus, taking into account experience of Norway, Finland and Sweden, it is necessary to analyze bank lending operations to timely reveal imbalances in bank operations. A retrospective analysis of banks strategy in lending can help to develop a strategy that allows banks to milder or avoid future financial crisis.

6. THE MAIN DETERMINANTS OF IMBALANCES IN LATVIAN BANK LENDING

Due to the historical developments, commercial banks and financial system as a whole are relatively young in Latvia. Various factors, including lack of experience, have determined several imbalances in Latvian bank lending.

[41] See Reinhart and Rogoff (2008) for "Big 5" crises data (Spain 1977, Norway 1987, Finland 1991, Sweden 1991 and Japan 1992).

6.1 The funding gap

Analysis of bank assets and liabilities shows the existence of a funding gap since the 3rd quarter of 2005 (see Figure 5). The majority of banks increasingly used resources of international financial markets to close this gap. The liabilities of Latvian banks to MFI's rose constantly till the end of 2008, when the liabilities had almost reached the level of deposits accumulated by the banks. Moreover, from the 3Q 2004 till the end of 2007 (except the 2Q 2007) liabilities to MFI's (except the Bank of Latvia) had grown faster then loans and bank assets.

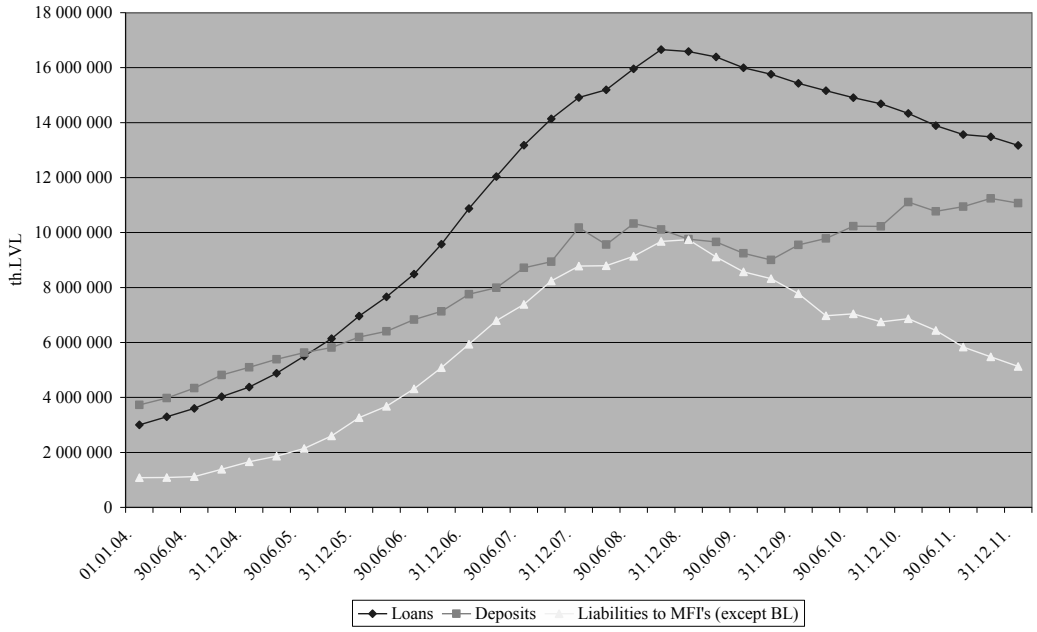

Figure 5. Selected balance sheet items of Latvian commercial banks, 2004–2011, thousand LVL
Source: FCMC

Latvian commercial banks actively used financial markets mainly through their foreign parent banks. Thus, foreign-owned banks had access to cheaper funding and could easily expand lending. On one hand, existence of a parent bank gave Latvian commercial banks the possibility to get cheap resources and have an advantage in tight bank competition. But, on the other hand, it increased their dependence on parent banks and made the banks more vulnerable to changes in parent bank strategy as well as in international financial markets. Thus, in order to ensure balanced bank lending development it is necessary to regulate the size of the funding gap.

6.2 Uneven loan portfolio structure

One of the main determinants of imbalances in lending was uneven structure of the loan portfolio. According to Werner, only loans for production (lending to the real sector of economy) stimulate economic growth (Werner 2009). Analysis of bank loan portfolio of Latvian commercial banks shows that in 2008 only 42% of the total loan volume were loans to private enterprises, but 38% of these loans were loans granted to the real estate sector stimulating further growth of real estate prices. Thus, less than 1/3 of the total volume of loans granted during for-crisis years could help to create the value added, stimulating economic development. Moreover, growth of loans for consumption and speculation purposes resulting in inflation has exceeded the growth of banks capital more then twice, making banking system more vulnerable. Thus, loan portfolio structure of Latvian banks was not adequate to stimulate economic growth that raises the need for optimization of bank loan portfolio.

6.3 Loan currency

Financial integration, currency peg to EUR as well as access to international financial markets though the parent banks made it possible to grant relatively cheap loans without considerable additional currency risk

for borrowers. Lower interest rates for EUR-loans have determined extreme dollarization of private sector liabilities. Analysis of bank loan portfolio structure in terms of currency has shown that extremely large share of loans are issued in EUR – since the end of 2007 more than 80% of total loans are loans in EUR (see Figure 6).

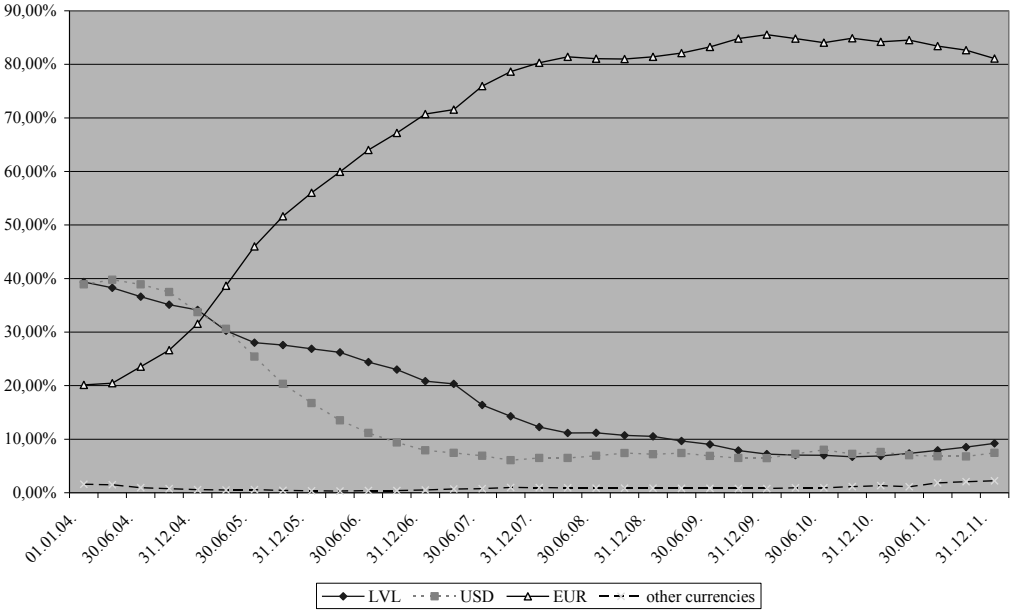

Figure 6. Loan portfolio structure of Latvian commercial banks by currency 2004–2011, %
Source: FCMC

This loan portfolio structure as well as high level of liabilities to foreign MFI complicated the use and reduced effectiveness of traditional monetary policy instruments, thus, reducing ability of the Central Bank to break growth of loans and prevent overheating of economy.

6.4 Underestimation of credit risk

Favourable economic conditions have led to private and public sector over-optimism about future earnings and rising asset prices as well as allowed optimistic risk assessment by both sides – banks and borrowers. Till 2008 credit risk was relatively low, loan losses were minimal, and growth of assets and loans was seen as the key indicator of bank success. Besides, large share of loans was granted to non-production activities, thus, leading to asset inflation (e.g., increase of real estate prices) without stimulation of economic development, but providing higher value of collateral. On the other hand, increase of the market share as a central target and strong competition among the banks have resulted in rather aggressive strategy in lending, e.g., in excessive lowering of interest rates to attract borrowers. Crucial is this case was economically unsound undervaluation of risk, e.g., in case of over-leveraging of Latvian companies.

Experience of several European countries has shown that a long period without losses can lead to economically unsound underassessment of risk. Too low credit risk margins reduce the value of the bank as a business. However, if the margins are too high and the expected losses are overestimated borrowers will be frightened by too high loan interest rates. Thus, under changing economic conditions it is crucial to implement a consistent quantitative assessment of the credit risk and standardize the price determination process, adjusting the loan price to the borrower risk profile. In this case, determination of credit risk adjusted loan pricing could provide basis for efficient use of resources that, in its turn, improves the indicators of the bank cost-effectiveness as well as helps to ensure consistency, strict lending culture and stability of current and future bank operations.

6.5 Overestimation of collateral

Another important issue was overestimation of the importance of collateral, particularly in the form of mortgage. The period before the crisis was notable with high reliance on mortgage. Besides, the existence of the loan collateral allowed borrowers to receive better lending terms. By the end of 2008 73% of the loans

were secured by mortgages. Economic downturn and sharp fall in real estate prices pushed the banks to make conceptual change in loan security assessment as well as to limit supply of credit. On the other hand, fall in asset prices has negatively influenced private sector balance sheets affecting also spending and borrowing decisions of households and companies. Thus, the creditworthiness of the borrower should be evaluated without taking into account the existence and value of the loan collateral. It allows consequent assessment of borrowers independent of asset (e.g., real estate) prices and helps to maintain stability in bank lending under conditions of changing economic environment.

6.6 Lowering of lending standards

The loan products offered by banks are very similar with the main difference in interest rates that makes it to be the crucial factor in competition. As a result of pre-crisis developments, a tendency of descending interest rates could be observed in the market. In the conditions of tough competition, banks offered their customers loans at very low interest rates, even granting loans with a minimal profit margin. Moreover, banks tended to ease lending conditions to increase the market share. Considering the experience of several European countries at the beginning of 1990s, the problem of lower lending standards and credit risk in the banking market becomes more acute in situation of intensive lending growth and tough competition, thus, leading to falling loan quality. Similar developments had been noticed also in Latvia. Analysis of bank performance indicators shows that considerable deterioration of loan portfolio quality has started in the last quarter of 2008 when the share of non-performing loans in total bank loan portfolio rose from 0.73% (30.09.2008) to 2.37% (31.12.2008). In its turn, in 2009 the share of general loan loss provisions has rocketed (see Figure 7) leading to deterioration of bank performance.

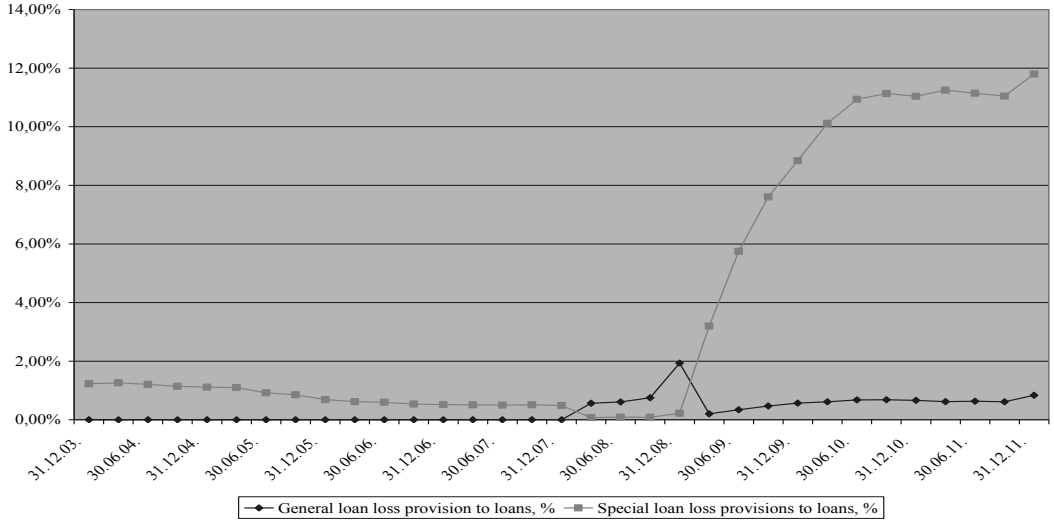

Figure 7. Loans loss provisions to gross loans, 2004-2011, %
Source: FCMC

Thus, it is extremely important to maintain consistency in lending standards to ensure stability of bank operations. Analysis of the main determinants of imbalances in Latvian bank lending can help to ensure balanced future development of bank lending and avoid financial distress.

Nowadays an issue of fair banking and bank social responsibility becomes topical. Positive signal to the financial market is the working paper of the European Commission "Responsible Mortgage Lending & Borrowing" (2010). In author's opinion, the term "responsible" should be extended to the whole lending business to stimulate lending for productive purposes and ensure balanced economic development of the country that in its turn ensures balanced growth and profitability of the banking business as well as can help to milder or avoid financial distress.

7. CONCLUSIONS

The paper analyzes the topical issue of bank lending under conditions of changing economic environment. Successful economic development, increase in domestic demand and foreign investments,

decrease of interest rates are considered to be the reasons for rapid lending growth in Latvia that was pro-cyclical. Empirical study has shown that growth of loans for consumption and speculation purposes resulting in inflation during the study period has exceeded the growth of banks capital more then twice, making banking system more vulnerable. Changing economic environment has revealed a number of imbalances in banking operations and raised the necessity to review bank strategy in lending. According to the analysis made, the main imbalances in lending are the funding gap, uneven loan portfolio structure, loan currency, underestimation of credit risk, overestimation of collateral, and lowering of lending standards. Changing economic situation has pushed the banks to cardinally review their strategy in lending that is not effective from the point of view of bank strategic management and business stability. To provide stability to bank lending taking into account the course of the previous crises, several proposals were worked out:

- to provide consistency in loan granting standards in order to ensure balanced growth of the bank;
- to ensure risk adjusted loan pricing in order to determine the loan price that covers the expected loss;
- to give priority to lending to projects that can create the value added, thus, stimulating economic growth;
- to set maximally acceptable private indebtedness ratio to GDP and optimize loan portfolio in order to limit lending to non-productive projects.

Moreover, government support is needed to develop bank lending strategy that allows banks to stimulate lending, contributing to the creation of value added and economic development of the country. Responsible lending as a compulsory component of bank lending strategy would allow balanced development of banks as well as would stimulate economic growth that in turn positively effects bank lending and profitability.

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PREREQUISITES FOR CREATING EFFICIENT VIRTUAL TEAMS IN BANKING INDUSTRY

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Abstract

In today's rapidly changing global economy organizations, including banks, should create virtual teams of competitive advantage using best specialists in field and to be closer to the customer, fulfil customer's wishes faster and at a higher quality.

The aim of this paper is to improve knowledge about the prerequisites for effective virtual team creation in banking industry.

Methodology used by the author is based on a literature review and interviews with experts and practitioners in the field. The paper has identified and discussed the prerequisites for taking decision on using or setting up a virtual team in the bank. The paper type is a case study.

The banks could use this paper to understand what the prerequisites to create virtual teams are. It will be easier for the banks to come to a decision to use virtual teams.

Originality and innovation aspect here is looking into banking industry possibility to get better quality of their work, be faster competitors and save financial resources.

***Keywords**:* virtual teams, team management, virtual management, banking industry, process re-engineering, prerequisites.

1. INTRODUCTION

We used to work together, live together and to socialise together. Now we work across different offices, floors, buildings, businesses and even continents. The big question today is no longer "Am I in a virtual team? "so much as "How virtual am I?"

Most of banks in Northern Europe are very conservative, they work with old methods; they accept the new organizational methods' and process re-engineering in banking industry very slowly. Knowledge-based networked economy and the flattening of organizational structures has accelerated the need for companies to coordinate activities that span geographical, cultural, temporal, as well as organizational boundaries (Kedia and Mukherjee,2009; Purvanova and Bono, 2009).

Virtual teams in organizational structure are the present and could be a future for many of Northern Europe banks. What are the prerequisites to implement or use the virtual teams in structure? - these are the questions what author finds out in a research to give a driver to bank's managers to start thinking this why.

Mostly virtual teams are used for new product development, strategic planning review, and customer support purpose (Rosen, Furst, Blackburn, 2006). The bank's using virtual teams could be more competitive and innovative in new product development, customer support and business process management.

The aim of this Paper is to improve knowledge about the prerequisites for creation of effective virtual team in the banking industry.

The main tasks are:

- to study the prerequisites for an implementation of virtual team in the organization available in literature;
- to collect the virtual team theory from previous researches and to give a new view;
- to research the prerequisites affecting virtual team managing and implementation in Northern Europe banking industry;
- to find out the main prerequisites for effective virtual team implementation in banks.

Research object is the banks in Northern Europe.

First of all author collects theory about virtual teams, analyses literature and previous researches about factors affecting effective virtual team implementation. There is a growing amount of researches on virtual team factors that facilitate effective virtual team work. Researches in financial and banking industry are insufficient. Originality, innovation aspect here is looking into the possibility for banking industry to get better quality of their work, be faster as competitors and to save the financial resources.

Multinational organizations often employ virtual teams to take advantage of globally dispersed knowledge and innovation resources, and successfully enabled coordinate, and facilitate strategic activities that, in turn, improve flexibility and market responsiveness (Lagerstrom and Andersson, 2003; Lunnan and Barth, 2003).

As the result the author raises hypothesis to approve the main prerequisites affecting virtual team implementation in banking industry and develops questions for virtual team managers in banking industry to understand why they use a virtual team concept, what are the main challenges and what are the benefits from usage of virtual teams.

Interviews are the best way to make empirical study about virtual team managing process. Interviews help to communicate and to receive the necessary information and to receive the best feedback about specialists' experience in unrestrained manner.

The research novelty is to provide practical appliances for banks' leaders and senior management giving insight in different factors to be considered before making decision on implementation of virtual team in bank's process management. Research finds out that prerequisites are different and future research is needed to understand cultural differences regarding communication technology usage skills and people readiness to work virtually.

Implementing virtual team working in organisation need to be considered as a business initiative and not a technology, IT initiative. Success in implementing virtual team working is more about processes and people than about technology.

Virtual teams provide cost saving on travelling, and at the same time the organization will join a carbon-neutral team, making its own contribution to fighting global warming and being environmentally friendly. It could even become a part of their marketing strategy.

Cost saving is only one of the virtual team advantages. What is the virtual team? There are quite many definitions in literature.

2. VIRTUAL TEAMS

Stough, Eom and Buckenmyer (2000) stress that the concept of teams and teamwork is increasingly becoming an important key to productivity and employee satisfaction in the contemporary workplace. One of the ways innovative ways of using teams is the virtual corporations.

As defined by Jarvenpaa and Leidner (1999), virtual team is a "temporary, culturally diverse, geographically dispersed, electronically communicating work-groups of members who think and act in concert within the diversity of the global environment".

As defined by Bredin (1996) virtual teams are typically equipped with some combination of technology that enables information workers to re-create the support services of the traditional offices.

According to Ratchevva and Vyakarnam (2001), a virtual team is seen as a pool of experts that temporarily band together to tackle some customer or organisational need.

While according to Horwith, Bravington and Silvis (2006), virtual teams are groups of people working on interdependent tasks, geographically distributed, conduct their core work mainly through an electronic medium and share responsibility for team outcome.

Meanwhile Lipnack and Stamp (2000) consider that virtual teams are groups of people working interdependently with a shared purpose: across space, time and organization boundaries using technology.

According to Malhotra et al. (2007), virtual teams are groups of geographically and/or organizationally dispersed co-workers hat are assembled using a combination of telecommunications and information technologies to accomplish an organizational task.

In the works by Byrne(1993) defined a virtual corporation as "a temporary network of independent companies – suppliers, customers, even erstwhile rivals- linked by information technology to share skills, costs, and access to one another's markets".

Taking into consideration the definitions given above, the following chapter summarizes the main advantages of a virtual team.

2.1 Main advantages of virtual team

Reduce travel cost and reduction in face-to-face meeting time also reduces the level of disruption to every day office life (Opper and Fresko-Weiss, 1992).

Virtual teams enable recruiting the most talented employees in the field. A virtual employee can easily serve on multiple teams, geographical location in no longer a criterion for team membership. Flexibility of this type allows an organization to maximize its human resources by allowing team members with particular skills to serve on several teams concurrently (Hertel, Konradt, and Orlikowski, 2004).

Diversity helps engender creativity and originality among virtual team members. Virtual teams are much more powerful and effective structures compared to traditional team structures influenced by time and place and it give increase of productivity.

New ways of enhance customer service, better access to global markets and environmental benefits (Cascio, 2000).

Virtual teams discourage age and race discrimination because the performance management of employees is primary based on their productivity as opposed to other attributes. It promotes equity among employees (Bergiel et al., 2008).

Peters (1992), Steward (1994); Mowshowitz (1997) and Snow (et al., 1996) claims that the benefits associated with virtual teams are such as flexibility, responsiveness, lower costs, and improved resource utilisation necessary to meet every changing task requirements in highly turbulent and dynamic global business environment.

Those factors are very important for the banking industry. Banks must be faster, be closer to the customer, be more resource-effective and ensure the best service to its customers.

Of course, there are also disadvantages – setup, maintenance, training costs, and potential cross-cultural difficulties in team interaction, feelings of isolation and lack of trust. (Cascio, 2000)

Banking industry is changing continuously today. Most of the banks do re-engineer processes with a different methodologies (Lean, Benchmarking, Total quality management, etc.), including virtual teams as a tool for improvement of business process outcome.

2.2 Business process re-engineering in banking industry

There are two ways how to build virtual teams in banking industry: building a brand-new team or integrating new members into an established team. Leaders function is to develop these individuals into a coherent and well- integrated work unit (Kozlowski, Gully, Salas, and Cannon-Bowers, 1996).

Retail banking currently being directed at customer retention in the quest for greater profitability (Roth and Van der Velde, 1991; Rust and Zahrik, 1993).

Most of the banks today make improvements in service quality, customer satisfaction, and corporate profitability and they reach it with business process re-engineering.

Majority of bank process re-engineering is limited to single processes rather than corporate transformation (Newman, Cowling, Leigh, 1998).

The evidence indicates that two different strategies are being pursued: one is emphasis on cost cutting, the other emphasis on service quality, relationship marketing and customer satisfaction (Brent and Finegold, 1996).

According to Bowen and Schneider (1985), the good quality of service which generates customer satisfaction and retention is relationship between customer satisfaction and staff attitudes.

Financial services main motivator for changes is enthusiasm of the CEO and senior management next is competitive pressure to reduce cost and customer demand for quality (Survey in 1994, McCabe et al., 1997).

Are those motivators also important today? It is the question for this survey.

If an organization or bank decides to change processes with corporate transformation (virtual teams), it requires a holistic and strategic approach to human resources, training and development, management structure and definition of core processes. Corporate transformation entails change in mindset, beliefs and values of organization (Newman, Cowling, Leigh, 1998).

Newman, Cowling, Leigh (1998) find the key weaknesses in terms of structure, operations, management and marketing. From these findings, poor distribution network and customer service and service quality are the areas that can be improved by introducing virtual branches or teams in financial sector. A high level analysis of banking processes identified the core business processes and each of the teams that was served

those processes was supported by an external consultant who acted as a personal coach and advisor to the team and to employees who have been given new skills in core business process execution (Newman, Cowling and Leigh, 1998).

Today's technological developments allow us to reach the aim of building the expertise and skills in order to serve customers' needs better than the competitors. It means using the staff that we could find not only in organization's place of establishment or country, but also abroad. Most of organizations are taking personal responsibility for career development: a bank would now actively encourage and support its staff to take responsibility for their own career planning, skill development, and employability.

Next step is teamwork strengthening- it is seen to be the key to ensure that all streams worked together to deliver for the customer rather than creating internal rivalry.

Everyone must work professionally, fast and error-free. These standards of behaviour projecting a caring, helpful and professional image together with improved communication with customers were expected to help to build customer relationships. Virtual branches are teams of experts and they work together for one target, aim, it is a way to reach standards of preferable behaviour, quality. Service quality is consistently meeting or exceeding customer expectations at a price which is acceptable to customers and at a return which is acceptable to the organization.

As a service quality and satisfied customer is a priority for most of the banks, banks should know and take into account the prerequisites for virtual team implementation before re-engineering of their internal processes.

2.3 Prerequisites for virtual team implementation

What do we need to implement a virtual team? What are the tasks to be done in the preparation phase? To start process implementation in organization you should:

- Obtain top management support- decision to implement virtual teams usually are determined by strategic factors such as mergers, increase of the market span, cost reductions, flexibility and reactivity to the market, etc.(Hertel, Geister and Konradt, 2005).
- Evaluate and redesign processes- examine existing process and implement new performance monitoring management scheme. The first of all it is careful planning. The initial task during the implementation of a team is to define and pinpoint the general purpose of the team together with the determination of the level of "virtuality" that might be appropriate to achieve various goals. (Hertel et al., 2005).
- Team establishment- specify objectives, common purpose for team, but also each team needs to create and validate its own rules, training programmes, identify responsibility for each.
- Process management- documentation for all processes and being prepared for loss in performance. If a bank chooses virtual team concept not for their talents, but for reducing costs, for effectiveness in flexible working hours, then development of recruiting and personal selection procedures is necessary. Procedures need to have a good balance of technical and interpersonal skills.
- Society - new delivery channels and new means of fostering long-term customer relationships may prove critical for success in the financial services industry. Today's society is internet user's society. Hagel and Armstrong (1997) in their book put forward the proposition that virtual communities are the first serious value- creation models for the Internet owing to the way in which they combine content and communication. People who use internet and share a common bond through internet are called "virtual communities". Consequently, there is a community that is ready to work on their own and communicate through communication tools over a distance. A virtual community may create value by "selling" customers to each other- or making their part of the product or service. Virtually people provide information about their jobs, about their feelings about their possibilities and it also could be a way how we provide information to our peers that we are working at home, at the beach, on a trip. We are then truly working in virtual teams.

It is important to assess the prerequisites before virtual team implementation, considering also that the virtual teams should work effectively and achieve the organizational goals. What are the factors for creation of effective virtual team?

2.4 Effective virtual teams

Virtual teams are communication challenged, culturally challenged and task challenged (Malhotra, 2003). It suggests that efficiencies are achievable when operating in this manner though not without difficulties.

For creating a new model for virtual team working, the Author determined common critical aspects identified from the literature review. These are:

- **Setting goals and objectives for the team**

According to Cascio (2000), business reasons for virtual teams are reduced workspace costs, increased productivity, new ways of enhancing customer service, better access to global markets and environmental benefits.

Some find this business practice negative if cost savings is the only reason for the implementation of the virtual team (Robertson, 2006).

Horwitz, Bravington and Silvis (2006) researched what virtual teams must do to be sure that a team ensures a successful start:

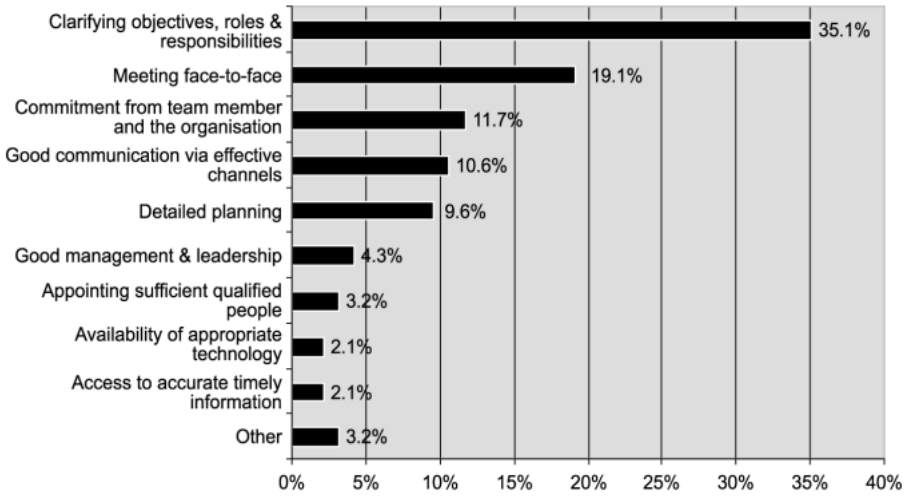


Figure 1. Requirements for a successful start
Source: Horwitz, Bravington, Silvis (2006), page 483

Managers should provide their employees clear objectives, roles and responsibilities. Then the possibility to meet colleagues face to face comes - it helps to build relationships that are essential in the success of any team, but especially in virtual teams (see Figure 1).

- **Finding the right people**

DeLisser (1999) found in his research that the ability to work in virtual teams has started to play a big role in the recruitment and retention of employees.

People should be extremely "people-oriented", going the extra mile to form a good relationship with their virtual colleagues and understand the possible impact that their actions may have on someone they rarely, if ever, see. Team members and leaders should have very effective communication skills.

For some individuals working at home is a terrific option. The people working virtually have no need for an office or a parking space, air pollution and traffic congestion are reduced. Others worry that they will miss interaction with their colleagues, and they worry about lack of individual recognition, celebration of team accomplishments, lack of project visibility, the constraints of technology and luck of trust. But despite some of the potential pitfalls for virtual teams, the research data reveal that the benefits of virtual team phenomenon ultimately outweigh the pitfalls (Robertson, 2006).

Hunsaker P. and J. (2008) claim that virtual teams allow organizations to access the most qualified individuals for a particular job regardless of their location, enable organizations to respond faster to increase competition, and provide greater flexibility to individuals working from home or on the road.

- **Leadership and team member roles in team building**

Leaders should select key personnel, designing tasks, setting up an appropriate reward system. Selection of pertinent technology is the other important leadership responsibilities at the beginning stage (Hertel et al., 2005).

Leaders must remember that team members are not "human doings" but "human beings", it often results in them actually delaying the work flow. People are not "owned" by a business, they are participants in the business. The successful virtual team leader balances people, tasks and technology and recognises that they are different but equal.

Members of virtual teams may be scattered across the globe (e.g. Montoya-Weiss, Massey, and Song, 2001; Schweitzer and Duxbury, 2010), located in different time zones and may belong to totally different cultures (Martins, Gilson, and Maynard, 2004). Such characteristics pose serious challenges to manage virtual teams effectively. Managers need to build trust, shared identity, build system how to effective provide flow of knowledge/ information among the virtual team members may become extremely difficult and complicated (Kerber and Buono, 2004; Konradt and Hoch, 2007).

According to Cascio (2000), the managers with results- oriented management style, which need structure and control are unlikely to be effective managers in virtual –work environments. Hence a new forms of organisational governance may become more pertinent (Morris,2004, p. 264) and as with every team, good management and leadership are essential. Davison, Hambrick, Snell and Snow (1996) identified different leadership styles that are needed at different stages in the virtual team lifecycle. These are: the advocate (prior to team formation), the catalyst (as the team evolves) and finally the integrator (as the team matures).

Appropriate selection of technology, and technical and cultural issues which can affect effective communication and relationship building of virtual team;

Choosing the right technology, factors affecting the choice of technology are synchronous and asynchronous activities, levels of virtuality, software compatibility, and others. One of main factors of effective virtual team operations are informational and communication technology and communication quality.

Technology can be liberating in enabling people to work at times and in places of their own choosing. Technology also has enormous potential to transcend geographical, cultural and temporal boundaries and so increase collaboration amongst organization and their members. Yet, at the same time, technology gives to organizations the capability to more closely monitor employee performance (Cartwright, 2003).

Technology infrastructure will facilitate information processing and dissemination, planning and allocating goals, decision-making, and conflict resolution processes (Bell and Kozlowski, 2002). The team members will also need to be able to efficiently utilize them (Mukherjee, Lahiri, Mukherjee,D., Billing, 2012).

- **Using the technology effectively**

Team members need to use the right technologies, not spending hours in order to understand how to use a certain technological tool and finding out what skills are they missing.

Leaders must establish and communicate project mission, priority and success criteria and determine technology requirements- determining what technologies will be used to communicate and what for training, if any, will be required for team members. All technological decisions should be made with cognizance of bank's policies and technologies regarding security (e.g. firewalls and the ability to communicate outside bank's networks).

- **Alignment of organisation and team processes**

Requirements for effective virtual teams highlighted in the literature review included delegation of responsibility, decision making and dealing with ambiguity (Kirkman, Rosen, Gibson, Tesluk and McPherson, 2002). Accountability and responsibility were raised as one of the main contributing factors in the form of the importance of commitment to the team success and employee relations.

Turel and Zhang (2010) have drawn attention to the configuration of teams- how the way teams are configured can affect performance outcomes. Team members need to be extroverts and have openness to experience, that means they are required for effective and efficient online asynchronous, text-based interactions that may be emphasised in such settings (Balthazard, Potter and Warren, 2002). At the same time, personality characteristics that are relevant in face-to-face situations may be negated by the virtual environment. For example, introvert people are more likely to participate in online discussions than in face –to- face ones (Townsend, DeMarie and Hendrickson, 1998).

- **Performance measures and rewards for virtual teams**

Joinson (2002) observes that managers have to give more support and positive messages when working virtually. Casio (2000) considered that a challenge in virtual team management is performance management, requiring manager do three things well: define, facilitate, and encourage performance. It is more difficult to coach and advise, assess training needs and give feedback to team members who are not in view. Virtual managers should set up a system where all employees know what is expected from them, how they will be

assessed, how their productivity will be measured, how they will be rewarded, and the rewarding needs to be equal and fair.

- **Virtual team facilitators**

The organization of the way the teams work appears to be a continuous and evolving process throughout the life of the partnerships without clear boundaries between different roles, decision –making responsibilities and communication rules. As there were no observed levels of authorities, an initial assumption was that specific communication and coordination patterns link different team members and diminish the need of authority exercise (Ratcheva and Vyakarnam, 2001).

Team leaders need to periodically examine how well the team is functioning. Early detection of problems, combined with early correction will not only save time but also money. Effective team leaders should demonstrate the capability to deal with paradoxical situations and contributions by performing multiple leadership roles simultaneously (Kayworth and Leidner, 2002). Facilitate all processes in virtual team's means that virtual team leaders should support and motivate individual team members actively to ensure their participation. Virtual team leaders must actively manage the combination of team member knowledge, background and work process familiarity to ensure project success.

- **Security issues**

Working in virtual teams increases chance of proprietary information falling into the wrong hands. People also tend to be more lax about security measures in the home office because they do not think about security (Bredin, 1996).

However, the security of a traditional office is sometimes overestimated. Virtual teams can have an infinite number of participants. Virtual teams enable the members to keep their participation anonymous, because it can be also designed to conceal the identities of those involved in the virtual team and even to conceal the existence of the team itself. A traditional team may be more vulnerable to security problems as it is based on face to face meetings.

If you are working virtually at home, your obligation as an employee is to follow the same security rules when you are telecommuting that you follow when you are in the office. Your software lock must be placed on the system whenever it is left unattended, change your password frequently, encrypt the data, embody in contract a clause on who is the responsible if there is a security breach, etc.

- **Having appropriate guidelines and structure for effective virtual meetings**

Virtual teams do not have the frequency of synchronous real-time communication characteristic of traditional team structure. Anderson, McEwan, Bal and Carletta, (2007) suggested that the "effective use of communication, especially during the early stages of the team's development, plays an equally important role in gaining and maintaining trust". Team members must be cognizant of the importance of providing timely accounts of work deliverables and offer feedback on the contributions of other members. Leaders of virtual teams must work cooperatively with their team members and establish strict guidelines concerning not only "what" and "when" to communicate but also "how" to communicate (Ojala, 2004). Daily communication between a team leader and individual team members is the glue that holds a virtual team together (Bergiel et al., 2008).

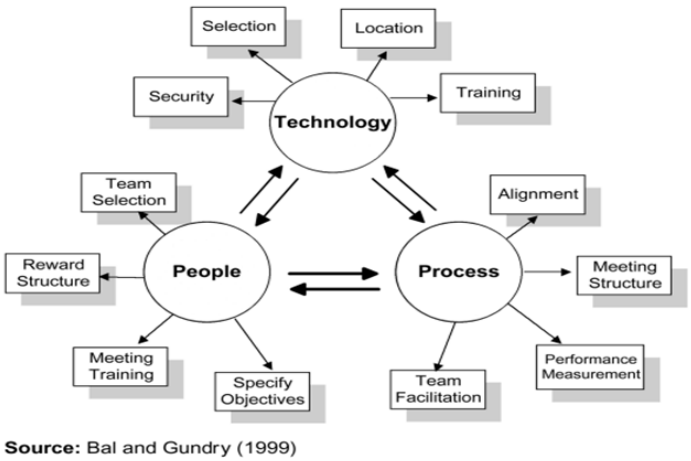
Since developing an effective meeting agenda involves mapping the technology to achieve what the meeting is to accomplish, therefore it is necessary to match the technology used to the purpose of the meeting. Technology used depends on the level of interaction required in a meeting, and the level of interaction depends on what is to be achieved (output) in a meeting – a business decision, a document, new product design and so on (Bal and Teo, 2001).

Bal and Gundry (1999) included the same factors for effective virtual team creation- organization/ bank should specify objectives; align processes; measure performance; reward and facilitate team members, measure security (see Model 1).

Effective virtual team introduction in existing bank structure is a complicated process. First of all, a bank should be ready to re-engineer processes and top managers should be ready to support this process. Main factors for effective virtual team work are the possibility to find the right people or employees, obtain and set up the right technology. The bank should have all IT technologies and procedures for safe and secure work from home, as well as performance measures and rewards system should be elaborated.

H1: Prerequisites such as technology, adequate employees, and security and performance measurement system are the main factors for effective introduction of virtual teams in the banking industry.

The hypothesis raises four factors as the prerequisites for the possibility to implement virtual teams in the banking industry, but there also theory according to which challenges are identified that a virtual team employees are faced with.



Model 1. New model for effective virtual teamworking
Source: Bal and Teo(2001), page 278

3. CHALLENGES

The financial institution using virtual teams should take into account challenges (Jarvenpaa, 1998; Kitchen and McDougall, 1999; Lipnack and Stamps, 2000; Robey et al., 2000; Warkentin, Sayeed and Hightower, 1999):

- Trust

Building trust is a major factor of team success. Trust is negatively influenced by time, distance, culturally diverse and globally spanning members and the reliance on computer mediated technology (Meyerson et al., 1990, as cited by Jarvenpaa, 1998).

Most of organizations choose to introduce virtual teams to take advantage of "just-in- time" talent. But it is a challenge for virtual team leaders to work with team members with vastly differing levels of trust, expectations, experiences, cultures and personalities can clash.

Leaders should ensure there is trust among virtual team members. Building trust requires regular face-to-face interaction, the very activity the virtual form eliminates. A lack of trust can undermine measures taken to ensure successful virtual work arrangements.

- Communication

Communication as a challenge in virtual teams is the lack of non-verbal cues, the inability to take advantage of incidental meetings and learning, difficulty engaging in spontaneous communication, and insufficient attention to socio-emotional issues (Hron, Hesse, Cress and Giovis, 2000; Jarveenpaa, 1998; Lipnack and Stamp, 2000; Warkentin et al., 1999). Virtual team members may fail in their attention to the emotional aspects of the environment. Chung (1999) and Lipnack and Stamp (2000) suggested to develop communication rules, prompts. Lipnack and Stamps (2000) and Robey et al.(2000) recommended that teams will meet face to face whenever possible.

What to do?- create face time- physical face time, set goals and expectations; provide ongoing feedback; define clear roles and share with all team members; foster cultural understanding.

- Deadlines

Virtual team leaders need to closely monitor any changes in environmental conditions. Because virtual team members are distributed, they are less aware of the broader situation and the dynamics of the overall team environment. So, as external conditions change, such as modified task specifications, a new deadline, or changes in the team's goals, leaders need to facilitate adaptive and appropriate changes within their team (Hunsaker and Hunsaker, 2008).

Deadline is very necessary for the team synergy. Synergy awareness is an understanding of how the activities of others, provide the context for your own activity (Dourish and Bellotti, 1992). Awareness deficits can create problems for team synergy and effectiveness (Jang et al., 2000). Without deadline,

common awareness deficits are lack of awareness regarding each other's availability, no knowledge of colleagues' key task requirements and lack of knowledge about how team members felt about an idea or suggestion. Sharing this information is continuous communication.

- Team cohesiveness

Team cohesiveness is performance management and team development (Bell and Kozlowski, 2002). The ability of leaders to monitor team member performance and to implement solutions to work problems is severely restricted by the lack of face-to-face contact within these teams. Also performing mentoring; coaching and developmental functions are difficult to manage. One of the suggestions is making teams more self-managing teams (Manz and Sims, 1987). Leaders will need to implement a system in which team members will be able to regulate their own performance as a team (Kozlowski et al., 1996). It is clear direction and goals that enhance individual self-regulation and enable team members to monitor their own performance, gather their own feedback, and evaluate their own performance (Kozlowski, 1998; Smith, Ford, and Kozlowski, 1997). Leaders set rules and guidelines that specify appropriate team member behaviour- communication rules.

According to the literature reviewed, there are different prerequisites and challenges in connection with a virtual team introduction in the banking industry. The main prerequisites are included in the hypothesis. What methodology is used to prove the hypothesis?

4. METHODOLOGY

The hypothesis must approve or rebut key factors which to take into account when implementing virtual team in a bank.

These factors are suitable technology, adequate employees, and data security and performance measurement system. Banks must be sure that they have or will have suitable technology, have or will find adequate employees, have or will have the best data security system, and have or will obtain or develop excellent performance measurement system.

Individual interviews are used to prove the hypothesis. Interviews are the way how to receive information and get additional information if it will be necessary by the time the interview is held.

Respondents were the following – Contact Centre managers in banking industry from Estonia (2 years experience), Lithuania (no experience), and Finland (no experience) and project manager from Latvia (4 years experience) and Denmark (2 years experience). Project manager from Denmark is managing a team in India. The project manager manages the team by distance or manages a virtual team responsible for different document updating, checking, error correction. Latvian project manager manages teams in the Baltics and Sweden responsible for payment back office duties.

Interview lasts 30 minutes for each interviewer. Interviews were conducted by telephone.

The survey included questions needed for the validation of the research hypothesis.

Questions to respondents are open-ended and qualitative and every answer is unique. To obtain explanatory data on problems encountered and better learn how respondents attempted to remedy them and share experience of important aspects of virtual team effectiveness.

Respondents were asked to evaluate- what is the main factor for virtual team implementation in a bank.

Factors raised were- availability of technology, employees' availability, possibility to ensure data security, good employee's performance measurement system bringing the highest quality, profit and innovation as a result of the job.

Interview questions were divided into 4 parts and their aim were to receive a broader view on most important factors in virtual team implementation in the banking industry (see Table 1).

What are the main prerequisites to decide to implement virtual teams in bank or in the department?

Table 1

Study case questions for respondents

Questions about technology	Questions about people	Questions about data security	Questions about performance measure process
Are you using latest communication technologies to	What was the reason to introduce virtual teams? What kind of teams those	How do you ensure data security in virtual teams? What level of management	How do you measure employee performance in virtual teams?

communicate with your employees? What kind of communication tools do you use? What tool do you use in which situation? To what extent are these communication tools sufficient to regularly communicate with employees over a distance? How often do you use these tools to communicate with employees? What would you suggest to improve in regard to communication tools available to your team or department? What kind of communication problems have you encountered the most?	are? What is the target or purpose of these teams? How fast did you find people ready to work from distance or virtually? What kind of employees are in virtual teams - internal or external, from other organizations? How did you prepare employees for this work? What kind of training did you offer for these employees? What were the main challenges in team implementation process? How often do you meet face-to –face with these team members? What would you suggest to change in virtual team implementation process?	is required to be involved in implementing virtual teams? What kind of additional costs was required for safety assurance?	How effective or lucrative is job performance in virtual teams? What kind of specialists are working in virtual teams? How much of those employees have with specialised knowledge in the relevant field? By what percent or amount have you reduced your expenses, since using virtual teams? What are the advantages and disadvantages in managing virtual teams? What kinds of questions are still open or misaligned?

5. FINDINGS

The author found that the main reason for virtual team implementation in the banking industry is process re-organization that has an impact on cost reduction.

For project managers it means that some of banks processes are taken outside of bank employee's daily responsibility and given to the project group to do. The project manager of Latvia said that the main reason is cost reduction not only in managing level, but also in executive level. Most of executives are employed in places where costs are lower. Estonian virtual teams are using virtual teams to be more flexible in planning the work of full-time employees. Estonian virtual teams assist full-time employees in help hotline for internal customer- to other employees.

Bank's branches in Finland and Lithuania are not using virtual teams for process managing. The reason for this is that no one actively encourages virtual team implementation in the branch.

The prerequisites raised in hypothesis are the following:

- **Available technologies** – in terms of this prerequisite the North European banks do quite well and work very well, actually daily using e-mail or telephone with sharing of the desktop, but for weekly or monthly meetings communication methods are used involving tele presence. The manager from Latvia for daily managing prefers to use communication or telephone. The manager of the virtual team in Estonia prefers to use telephone and e-mail for communication with employees.
  Meetings face to face for process manager of Latvia are very important for building trust and the manager tries meeting every employee at least once a month, and once in quarter all directly managed employees meet each other.
- **Employees suitable for work virtually** – this prerequisite is actually quite well achieved, in most of situations employee selections are delegated to outsourced companies and only last few candidates met with direct manager face to face or by tele-presence communication.
  The Estonian and Latvian managers argue that at the beginning employees are coming from internal resources through recruitment process. Today all employees are recruited taking into account the specifications to work virtually.
  Their main challenge is cultural diversity and possibility for the manager to find the right communication approach. The Danish team manager stresses this argument as the main one for managing a team in India, the same argument was expressed by the Latvian team manager. For example, Swedish people on average find it very difficult to adopt the latest communication facilities, while the Baltic countries are much more open to new communication facilities.

The Estonian team leader said that the main challenge is to get all employees together and arrange meetings for all virtual team members.

According to the managers, employees have been more satisfied with working from home or working at another place but servicing several companies at the same time or having more flexible working hours.

Fundamental obligation of enforcement trainings are provided to an employee in the workplace or through e-meetings or teaching by themselves using presentation in intranet. Special trainings are provided in companies head office or to another place where this training are provided, basically it is outsourced companies that arranged training for capacity-building. Managers recommended arranging meetings with virtual team members at least once a year face-to-face. It will build up trust and commitment with each other, of course, company should reserve budged for such meetings.

The Estonian manager met face to face very rarely- once or twice a year. The manager's answer is "We have no need to see them if the work is done and everything is working, because we can share info and get feedback using email, phone and e-meeting program." What about trust building?- trust was and will come, because employees working in those teams are employees who can't work full time for some moment (maternity leave, sickness, etc.). Employees are very satisfied – according to the manager, they said that "it is easier to get started with full-time work when maternity is over and it is a good financial support being on a maternity leave."

- **Data security** – most of managers view this prerequisite as a legal question. And so far claim that employees' fears from legal liability are high and it works. This is an indication that there are no additional costs or safety.

  Only the Estonian team members have to install a special security program on their work stations, and license generation process for this security programmes is complex.
- **And performance measurement system**- is the prerequisite that in most of teams is not working, maybe that is the reason why the Lithuanian and Finnish branches are not using virtual teams for bank's process managing.

  Virtual teams are measuring each member's job, their KPI (Key performance indicator)- how well each job is done, but there is no measure for all team performance compared to teams working at the same place (face-to-face).

The teams used in this research had no comparison data that could provide an insight into virtual team effectiveness. The main arguments from managers that virtual teams are effective are that virtual employee workstation costs might be cheaper that the office one, that this way of organizing work allows using cheaper employees from different countries, and virtual teams are an opportunity for employees to be more flexible, to work part-time, be more satisfied and bring the company better performance results and more new ideas.

Findings give an initial insight into the main prerequisites raised in the hypothesis. More sophisticated statistical methods and wider statistical information in general will give a more significant contribution in the field.

6. FUTURE RESEARCH

The author would suggest that in future more surveys are carried out to study if those virtual teams in the banking industry are working more effectively than face to face teams. Also a more in-depth research would be needed on cultural differences when working in virtual teams in different countries in the banking industry. What kind of communication is the most effective one? What tools of communication people prefer to use in different countries? What are the possibilities to change these habits? Is it necessary for better performance results? Is the lack of skills to use these communication tools a barrier or resistance to the introduction of a virtual team?

For future researches the author suggests to review the latest scientific publications in a larger extent, in order to find out more prerequisites for effective virtual team implementation and to find answers to the questions raised.

7. CONCLUSION

This research shows that literature provides information on different prerequisites about conditions important for effective virtual team creation, but there are no researches performed about banking industry.

Theory gives quite many definitions about the term - what is a virtual team?

The author provides a new definition for virtual teams taking into account the peculiarities of the banking industry - virtual teams are a group of experts that working geographically distributed, assembled using a combination of telecommunications and information technologies to accomplish an organizational interdependent task and enable organization to respond to be faster to increased competition and provide greater flexibility to individuals working from home or on the way.

The individual interviews help to find out how virtual teams affect the work and managing processes, providing also insight about the main challenges for such kind of organizations.

The aim of this Paper is to improve knowledge about the prerequisites for effective virtual team creation in banking industry and hypothesis is to prove that technologies, security, people and performance are the main prerequisites for banking industry to implement the virtual team.

The hypothesis was partly proven- prerequisites like the technologies and security do not impact the implementation process. But somehow measurement of effectiveness of virtual teams is very important for banks, and is one of the prerequisites in virtual team implementation process.

Bank's top level managers should make calculations regarding team effectiveness, and identify the person interested in virtual team implementation and use of a virtual team in bank's process management.

Readiness of people to work virtually, skills to use communication tools, manager's possibility to manage employees of different cultures are very important for effective virtual team work. The banking industry should take into account the factor regarding the readiness to work virtually on the part of the virtual team manager and also executives. Banks should take into account employee skills already in the recruitment stage and/or organize trainings to improve technology usage skills for existing employees.

Not all virtual team managers have all the necessary knowledge on how to manage these teams. They work by "know-how" and change communication plan with their subordinates when it is necessary and try to find the best way to provide information, to get feedback, to achieve the best performance results.

The aim of the paper was achieved and researchers could take in a view this case study in their future researches. Using the results of this research the banks' top level managers will expand their knowledge about virtual team managing.

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THE IMPORTANCE OF FUNCTIONS ASSIGNMENT FOR THE INTERGOVERNMENTAL FISCAL RELATIONS

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Abstract

The purpose of this paper is twofold. First, to review the basic principles of functions assignment among the different levels of government. Second, to show on the example of Lithuania, how inadequate assignment of functions leads to instability and disharmony in the practice of decentralizing country.

Nevertheless it is said that there is no absolute best way for designing of functions assignment among various levels of government, some basic principles, deriving from the theory of fiscal federalism, could be applied, especially for post-Soviet countries.

Therefore, first of all the paper starts with the reminder of Musgrave's Theory of Public Finance, pointing up three-state-function framework. After we will go through several decentralization criteria, justifying assignment of functions to levels of government. And finally we will provide an example of the functions assignment to Lithuania local government tier, emphasizing the main problems, coming from the inadequate assignment and conditioning further issues, concerning resources allocation and tax power division.

There are several reasons, why allocating fiscal resources and budget transfers among levels of government must come after a clear assignment of functions. Generally accepted intentions of fiscal decentralisation involve an efficient allocation of resources determined by an efficient assignment of functions. Therefore, transition countries, especially Post-Soviet, new EU member states, pursuing decentralisation development, should take into account the common principles of functions' assignment, trying to avoid unclearness and ambiguity in the field of fiscal intergovernmental relationships.

The assignment of functions and responsibilities across levels of government is changeable, developing with unstable social and political situations. In addition, political and economical systems are always adapting to new demands, changing laws. The main problem in this situation is how to satisfy the evolving residents' needs in the proper way within the current or prospective legal system.

Keywords: Intergovernmental fiscal relations, assignment of functions, fiscal decentralisation.

1. INTRODUCTION

A clear division of responsibilities between different levels of government should be the first fundamental step in creating a system of intergovernmental fiscal relations in order to ensure stable and meaningful decentralization. In practice, instability and misunderstandings appear when the law does not determine the responsibilities of different government levels precisely. When analysing the assignment of functions to the levels of government, we can see a clear relation between the three components – functions, expenditure and income. If the functions are assigned properly, the amount of expenditure for performance of functions, as well as the need for income to be collected to fund the expenditure becomes evident. Lithuania, in spite of two decades of independence, is still in the process of creation of the decentralized state. Therefore, it is important to understand and use the theoretical and practical experience of other countries. For this purpose, theoretical criteria of function assignment to the levels of government, then analysing how they are applied or may be applied practically in the country are provided in the article at first.

The *object* of study is intergovernmental assignment of functions. The *aim* of this paper is to assess the significance of assignment of functions to the intergovernmental fiscal relations in the decentralization process. In order to achieve the aim the following *objectives* are established: at first, the theoretical bases of criteria for the assignment of functions to the levels of government are discussed. Depending on the nature of state functions, they can be performed at the central, regional or local levels. It is, therefore, important to assign the functions logically to the level in accordance with the level that can implement them effectively. Later, it will be moved to the functions of the Lithuanian local government, their classification, suitability of

classification and reflection of decentralization components in the intergovernmental assignment of functions.

There are a number of researches on fiscal decentralization topic at the international academic level. However, there are not any consistent scientific researches done on local finances and intergovernmental fiscal relations. And often the practical processes are carried out without taking into account possibilities to use an existing platform and the experience of other countries. Therefore, this article in the scientific sense is new and important for two reasons: it presents the concentrated principles of intergovernmental assignment of functions to the Lithuanian scientists and politicians and introduces the processes taking place in Lithuania to international academic community.

2. THEORETICAL FRAMEWORK OF ASSIGNMENT OF GOVERNMENT FUNCTIONS BETWEEN TIERS OF GOVERNMENT

Recently it has been argued that country's history and its development stage define its current structure and ties between decentralization and privatization of state property. However, function assignment methods and responsibilities inside the country may vary by sectors that provide public services. This statement can be explained by the key roles of the state determined by Musgrave (1959) in his classic treatise. He determines the following key roles: macroeconomic stabilization, income distribution and resource allocation. This conceptual allocation of state duties helps us to determine, in principle, "the place" of need for functions, costs and income need, i.e. having determined which of conceptual functions listed by Musgrave are assigned to which levels of government, it will be easier to assign specific functions and, thus, the cost of those functions, as well as income to finance the latter (Oates, 1972).

For the sake of objectivity it should be noted that while many contemporary authors in principle agree that functions of stability and income distribution are assigned to the central government, while the function of resource allocation is shared by central and local governments, some have the opposite opinion which is going to be outlined below, next to the each function. This discussion will highlight the understanding even more that the specific situation of each country should be taken into account, the factors and circumstances should be assessed prior to the adoption of the specific model of assignment of intergovernmental functions.

1. **Ensuring a stable macroeconomic environment**. The maintenance of low levels of unemployment and price stability should be assigned to the central government, for two reasons. First of all, local government cannot deal with macroeconomic matters such as unemployment or price level effectively. For example, a successful program of reduction in unemployment will likely attract workforce from other regions, thereby reducing the impact of the program for local residents. Secondly, one of the basic tools of stabilization policy – control over the money supply through a monetary authority – rests with a central bank. However, not all authors agree implicitly with the above mentioned arguments. Here Fjeldstad (2001) argues that studies of some countries (including the U.S. and Western Europe) show that decentralization does not affect the macroeconomic stability (World Bank, 2000). Canadian data even indicate that growth of sub-national government budget had the economy stabilizing effect (Sewel, 1996). This can be explained by observations when the high expenditure functions (state health care, education) which are assigned to large jurisdictions has functioned as automatic stabilizers as these functions are periodic and not very flexible.

2. **Ensuring an equitable distribution of income**. Distribution of resources and income, in general, is also assigned to the government competence and management. Such a policy is implemented because, first of all, efforts of sub-national government to distribute income equitably can be unsuccessful and can distort the geographic distribution of economic resources. A progressive tax which aims to "take money from the rich" can induce the higher-income citizens to leave their place of residence in one zone of jurisdiction and migrate as well as transfer the capital and created business and workplaces to another. In this case, one jurisdiction loses the potential income while the other receives. If such a tax is "imposed" by the central government, the migration within the country is avoided. The opposite problem occurs next to expenditure of jurisdiction, e.g. poverty reduction fiscal policy of local government may attract citizens with fewer resources to the zone of jurisdiction in that way creating an increase in local government expenditure.

Undoubtedly, the above-listed factors depend on the mobility options of the country's citizens. Citizens' mobility varies in different countries. Public policy models assessing the mobility of citizens in the United States may be less adaptable to other countries where family ties and traditions are stronger. If the sub-national jurisdiction complies with the places of residence of racial groups, policy transfer is unlikely to increase migration. Also, in the former Soviet Union countries housing problems and undeveloped real estate

market limit the mobility of citizens. Under such circumstances and having geographic regions of limited mobility opportunities for sub-national government to apply income distribution policy are higher than in Musgrave‘s model.

But in practice, decentralized government jurisdictions are engaged in distribution policy, too (Fjeldstad, 2001). E.g. such functions as control of land use and rent assigned to local government have redistribute effect. Management functions of state health care, primary education, water supply, housing and public transport which are assigned to sub-national government in many countries, play an economic role in the income distribution. Such public services are sometimes the only tool for subsistence grants in poor countries (Sewell, 1996). Relatively large local jurisdictions in Scandinavia are partially explained by the fact that they are partially responsible for the income distribution. E.g. in Denmark, where expenditure of local government accounts for more than half of government expenditure and about one-third of gross domestic product, social insurance accounts for more than half of the budget of local government (McMillan, 1995). Probably there are not any other countries like Switzerland where income distribution function is so far from a centralized management system. There functions of health care, education and welfare development are carried out by the local government (cantons) and cantons have priority in collecting a personal income tax. The example of Switzerland clearly shows that there is an alternative in assigning income distribution function to the levels of government.

3. **Ensuring an efficient allocation of resources**. Fiscal federalism model provides resource allocation to sub-national government with an important role. The classical argument of fiscal decentralization theory (Oates, 1972:35) states that decentralization helps to align demand and supply of local public goods better in a democratic state. Thus, according to the meaning the efficiency argument (e.g. resource allocation policy) should be assigned to the sub-national government, since its purpose is to ensure meeting of different needs and preferences of citizens. And application of the latter at a lower level of government is more effective as the local government understands the needs and preferences better than the central government being way from the citizens, optimizing the form and quantity of public services in that way (Enemuo, 2000, Rondinelli, et. al., 1989, Oates, 1972, Fjeldstad, 2001, etc.). According to some representatives of public choice school, decentralization also promotes a healthy economic interjurisdictional competition (Brennan, Buchanan, 1980, 2000, Breton, 1989).

However, some authors (Prud‘homme, 1995, Rondinelli, et. al., 1989) contradict those arguments as they doubt the application of fiscal federalism in developing countries. Prud‘homme puts forward three arguments to justify own contradictions. *Firstly,* in many developing countries adjustment of the preferences and needs is not spoken about, as often meeting at least the minimal needs of the population is the most important. *Secondly*, fiscal federalism model says that the tax payers (the voters for political representatives) express their preferences by “voting by legs” (Tiebout, 1956). However, in many developing countries where wealth and labour market is not developed enough, and the democratic traditions are still at the early stage of development, it is difficult to expect that citizens can easily change their place of residence in order to find a suitable package of public services as well as their voices would lead to something in political processes. And *thirdly,* even if the politicians elected by the citizens want to fulfil their election promises, sometimes this is not possible due to significant mismatch between available resources and possibilities. Even if recourses are sufficient, it does not mean that they would succeed in overcoming the existing bureaucracy. The author builds his doubts on the fact that in many cases the central government has the financial possibilities to hire more skilled workers and, thus, to provide the public goods more efficiently.

3. IMPORTANCE AND CRITERIA OF INTERGOVERNMENTAL ASSIGNMENT OF FUNCTIONS

So, having limited the target of the analysis to one of three functions of the state i.e. the resource allocation, at first, in terms of decentralization of government powers, the basic principles according to which the functions are assigned to central and regional and local government must be reviewed. Resource allocation focuses on two key issues: (1) to determine how the public sector interferes it while using limited economic recourses (i.e. through collective purchasing as the public sector is the buyer not only of final production, but also production factors such as workforce, capital and land); (2) to determine which level of government performs the procurement and is responsible for it. It is obvious that even the most decentralized countries some functions remain assigned to the central government.

According to K Martinez – Vazquez (1999), one of the ways to analyse distribution of state expenditures is to compare how the existing function distribution system comply with fundamental principles of decentralized management system. However, according to the author, there is no the absolute best way which would indicate which level of government must be assigned specific functions. Suitability of any assignment must be decided upon by the government in its decentralization strategy. In order to carry out this government's role in the economy certain criteria based on the principles and objectives are required. It is important to ensure that roles and functions of different levels of government are clearly defined because ambiguity of roles and responsibilities can become an obstacle for effective performance of local government.

Why is the assignment of functions so important?

According to Dafflon and Madies (2009), there are at least three reasons to claim that allocation of financial resources and fiscal transfers must be carried out **only after a distinct allocation of roles and responsibilities to different levels of government**:

1) If the responsibilities of the different levels of government bodies are not determined well enough, then it is likely that recourses for performance of functions will also be assigned disproportionately (both in terms of funding resources and in terms of performance of functions);

2) If the responsibilities are not clearly and precisely defined, the concerns raise about improper perception of government and unfair distribution of power. Different government bodies can interpret the decisions on use of budget.

3) Finally, the principle of accountability being one of the advantages of decentralization can be applied only when the powers and responsibilities are distributed with high precision. In the case where responsibilities of different government levels "overlap", when some government bodies usually located away from the taxpayers – voters may behave selfishly without liability.

Oates (1972), Dafflon, Madies, (2009), Dafflon (2006), p. 281, Ebel, Vaillancourt (2007), Davey (2003) present a number of criteria (Table 1) for intergovernmental allocation of functions. Oates, like the later models of other authors, offers a comparative matrix for interpretation of criteria confirming centralization or decentralization.

Table 1

(De)centralization criteria

	Criteria	Decentralization	Centralization	Author
1	Preferences	Heterogeneous	Homogeneous	Oates, 1972; Ebel, Vaillancourt, 2007
2	Economics of scale	No	Yes	
3	Spillover effects	No	Yes	
4	*Congestion costs*	Yes	No	
5	Decision-making cost	If it increases with increasing of group	If it decreases with increasing of group	
6	Fiscal competition			Dafflon, 2006
	Positive	Yes	No	
	Negative	No	Yes	
7	Additional (may be non-economic criteria too)	Yes or no	Yes or no	
8	*Subsidiarity principle*	Public goods are provided with a matter of priority by the government closest to the citizens		Ebel, Vaillancourt, 2007
9	Geographic area of benefits	Yes, if the function matches the geographical are of benefits	Yes, if the function matches the geographical are of benefits	
10	Traditions			Davey, 2003

Source: Oates, 1972, Dafflon, 2006:281, Ebel, Vaillancourt, 2007, Davey, 2003 (interactive).

According to Oates (1972), cited in Dafflon, Madies (2009), the **first criterion** is related to the level of heterogeneity. If individuals with similar preferences (e.g. if their living conditions are very specific) live in a small area, then decentralization may be the best way to meet specific needs. Ebel and Vaillancourt (2007) argue, that this principle is closely related to the principle of geographic area of benefits provided by the function, i.e. local governments can be the appropriate provider of public services only if the area matches that of the social preference.

The second criterion defines technical extent of economies of scale when provision and manufacturing issues of public goods are solved. According to Ebel and Vaillancourt (2007), public goods and services should be provided by that level of government which can realise economies of scale optimally. Dafflon and Madies (2009:32) note that the factors of economies of scale may vary depending on the function. It means that they have different functional ties. The functional area may be defined as follows:

a) in terms of **provision** of public goods (manufacturing), if economies of scale occur across the borders of the municipal area, then the need for cooperation between local jurisdictions when providing such services raises;

b) in terms of **use** of public goods, if public goods are provided by the local government, they have spillover effects.

The third criterion analyses spillover effects. There are two types of spillover effects as in case of economies of scale: provision of public goods (manufacturing) and use of public goods.

a) Spillover of **provision** (manufacturing) of public goods occur when a public good provided by local government body A affect adjacent areas and the latter do not participate in deciding upon and financing the provision of the public good.

b) Spillover of **use** of public goods occurs when the public good provided by the jurisdiction A can be used by people from neighbouring jurisdictions as they come to the area A and use the public good without paying for it but their isolation from the use is not possible.

The fourth criterion, opposite to the former, evaluates the negative external effects in territories, to be precise – congestion costs. Citizens' mobility enables them to use the public goods provided by farther located municipalities without paying for them.

The fifth criterion. If the cost of decision-making for a small group of residents is lower than for a big one, such an argument would suggest choosing the decision-making at the local level. And vice versa – if the decision –making cost is higher for a small group of residents, and having larger population economies of scale is reached – the function of providing the public goods should be assigned to the central government (Dafflon, Madies, 2009:31-35).

The sixth criterion. It is fiscal competition. The local government may set different taxes, and combinations of public services and goods paid by them that meet needs of local residents. Tiebout (1956) cited in Dafflon (2006:282) argues that it would be helpful to see a public goods provision system of many jurisdictions as if it were analogous to the free market of private goods. Competition between jurisdictions would provide diversity of "sets" of taxes and public goods. In this case, the citizens could choose the jurisdiction with a proper "set" i.e. the ratio of the provision of public goods and taxes calculated for them, the best suit their needs, thus, ensuring the provision of public goods.

The seventh criterion. Even though economists have (or at least should have) a key role in identifying and evaluating each of the above criteria, other experts of politics, sociology, history also participate in the process with own arguments and criteria that are important for (de)centralization decisions.

The eight criterion. According to Ebel and Vaillancourt (2007), many countries assign functions and responsibilities for the cost in accordance with the subsidiary principle stating that the functions should be performed by the lowest level of government that can do so efficiently. This principle is promoted by the European Charter of Local Self-Government: Public responsibilities shall generally be exercised, in preference, by those authorities which are closest to the citizen. Allocation of responsibility to another authority should weigh up the extent and nature of the task and requirements of efficiency and economy. (European Charter of Local Self-Government, Art. 4.3).

The ninth criterion. Functions should be assigned to the level of government whose jurisdiction most closely approximates the geographical area of benefits provided by the function. E.g. fire protection services provide benefit only the residents who are located near the relevant facilities. Meanwhile, the geographical area of benefits of air and water pollution prevention benefits larger regions or even the whole country.

The tenth criterion. Traditions and historical legacy of political economy. The variety of allocation of competencies between different levels of government limits the determination of common principles for allocation. According to Davey, history of the European Union has determined differences between Southern European / Mediterranean countries, where the central government retains the prefect of administration and the technical part of the public services, directly provide or control and assist local government bodies in providing such services and Northern European countries where the central government does not have much power (except for the capital city) entrust the provision of many services to the local government.

4. CLASSIFICATION PROBLEMS OF LOCAL SELF-GOVERNMENT FUNCTIONS

Having examined the main criteria for the assignment of functions, let's have a look at what functions of the state are assigned to the level of local government in Lithuania. Remember, that there is a system of two government levels i.e. central and local government. Even though, the assignment of many functions meets the above criteria formally, a deeper examination of the legislation has revealed that some functions are assigned not entirely clear and that creates problems of cost and income distribution and accountability. The problem is also observed in the classification of functions according to COFOG[42] classification. At first, the classification nuances are going to be reviewed: whether the classification is adequate, and whether the functions formally assigned to local government reflect their actual independence indeed.

After the restoration of independence functions of municipalities were not specified by law immediately. Kleponis (2005) provides a brief history of functions of municipalities "including" into the Law on Local Self-Government: during the period since 1990 when the Framework Law on Local Self-Government was adopted, an issue of assignment of functions to municipalities was and still is relevant to everybody. Amending the Law on Local Self-Government, the articles regulating other functions (activities) of municipalities were changing all the time, too. It may be noted that there were certain questions arising then, as now, criticism due to functions and volume setting and grouping was expressed. This indicates that the functions in municipal activities have a deeper meaning and greater significance than might appear at first glance. Layout and grouping of functions in the law determine the relations between local government and institutions and citizens. The Framework Law on Local Self-Government (1990) established the functions of local self-government bodies i.e. competences, rights and powers of state government and government bodies elected by residents of the administrative territorial unit when implementing functions of self-government. Particular articles of this law were assigned to formation of institutions and settlement of their rights. The functions (as activities) of municipalities were separately regulated by some articles setting municipal property, local economy, management of local financial resources, and Art. 24 of this law determining the main socio-economic rights of local self-government. In this article there were twenty-four paragraphs identified which set out the activities assigned to municipalities. Extent of activities listed in these paragraphs of the article was quite extensive. In the law these activities were not distributed among municipal institutions, so municipalities where the boards did not assign those functions between the board, administration and other institutions had a number of problems in their activities.

Having assessed the situation of local self-government in Lithuania in 1990-1995, in the new version of the Law on Local Self-Government (1994) it was refused to divide the functions into single or separate articles or highlight then in any other way. This Law established competencies of municipal authorities, board, Mayer, administration and elder. Municipal authorities and officials acting in accordance to statutory competencies, implemented own powers as the institutions and municipal functions. In this case competences were seen as rights, powers of the institution and activities of this institution.

While preparing a new version of the Law on Local Self-Government (2000) municipalities' offers to refuse naming the competences of municipal institutions and through splitting them to determine powers of institution and functions of municipalities separately were assessed. Such decisions were also influenced by some other things established by the Law on Public Administration in 1999 (1999). Concepts, very important to municipalities (their institutions), were provided in this law. There were such concepts: entities of public administration, public service, administration of public service provision, arrangements for the provision of the public service, etc. So, the new version of the Law on Local Self-Government has articles on the functions of municipalities and municipal authorities and authority of officials.

As can be seen, the process of assignment of intergovernmental functions has not been easy. However, this transition process has not been escaped from by any post-communist country changing from a centralized to a democratic system of governance. After long decades when all the functions of the country were assigned to the central government, their reassignment between the different levels of government for several year (or decades) became a serious challenge to the democratic process. This process is not completed, rather half way through, as it is clear from the comments at the end of the chapter. But let us begin the analysis of functions of municipalities from the existing legislation and assessment of functions of

[42] COFOG – Classification of the functions of government, abbreviated as COFOG, was developed in its current version in 1999 by the Organisation for Economic Co-operation and Development and published by the United Nations Statistical Division as a standard classifying the purposes of government activities (Eurostat glossary).

municipalities set there. The main questions raised in the previous section – is the establishment of functions of local government clear? Is the classification of the functions adequate? Because, as mentioned above, the correct and unambiguous allocation of intergovernmental functions influence expenditure of municipalities, their distribution and a clear vision of what the functions are and how much money is spent on them and the further problem of fundraising (distribution of municipality income). So, at first we will look at what functions are attributed to the self-government in accordance with legislation, then COFOG classification will be used to classify them. COFOG classification is chosen because according to it the local governments must submit the expenditure data.

According to the freedom of decision-making on the functions of Lithuanian municipalities in accordance with the Law on Local Self-Government they are divided into:

- Assigned (which according to decentralization components has to correspond to devolution). These functions are performed by municipalities under the Constitution and the competence provided by the law, obligations to the community and its interests. When implementing these functions, the municipalities have the freedom of initiative of decision-making, their adoption and implementation set by the Constitution and laws and they are responsible for implementation of the assigned functions. When implementing these functions activities of municipalities are bound by statutory requirements and procedures which, when established by law, are set in other legislation too;
- State (transferred by state to the municipalities, which according to the decentralization components has to correspond to delegation). These are the state functions transferred to municipalities under the law taking into account the interests of residents. Municipalities in the implementation of these functions have a statutory decision-making freedom. While implementing these functions, the municipality activities are limited by decisions of state institutions and (or) officers. In some cases, state functions can be delegated to the municipalities to perform on a contractual basis. The municipality may enter into such an agreement only if the board of the municipality agrees. These functions are usually short-term or bear seasonal nature.

The first comment grabbing attention when reading the functions listed in the law is the lack of logical assignment of functions. It is not clear what principles are applied to assign these functions. Therefore, in order to classify them a particular classification or criteria should be chosen. As Lithuanian municipalities are required to provide budget expenditure data classified according to COFOG classification (this classification of state functions has been in force since 2004), the table below is drawn to try to assign each function of the municipality to a certain class of COFOG classification.

Table 2 is compiled using such a method: the criteria listed on the left are according to COFOG classification. Next, there are 2 columns dividing the functions into assigned, i.e. devolution and belonging to state i.e. delegation. As there is no sharp detachment between obligations and functions in the table excluding assigned functions and those assigned by the state to the municipalities, these columns are divided into two parts in order to distinguish between the functions and obligations of municipalities.

Due to lack of place, for example, not all classification is included but only first COFOG positions – CG010 General public services. Having stated to classify according to this principle it was noticed that not everything what in the Law on Local Self-Government is considered to be the functions of municipalities are functions in fact. The authors of the law attributed both real local self-government functions like provision of public utilities, education or health care services and local self-government obligations like planning and affirmation of the municipality budget, establishing and maintenance of municipal budgetary institutions, establishment of municipal public institutions, municipal institution and other municipal legal entities and so on. Therefore, assigned functions of municipalities and functions of state are divided into different categories i.e. *obligations* and *real functions* in the Table 2.

Table 2

Classification of municipal functions according to the Law on Local Self-government and COFOG classification

	Devoliution		Delegation	
COFOG Classification	**Independent functions of municipalities**		**State (delegated by the State to municipalities) functions**	
	Article 6/part of article		**Article 7/part of article**	
	Obligations (responsibility)	**Real functions**	**Obligations (responsibility)**	**Real functions**
CG010 General public services				
CG0101	1) drawing-up and		33) gathering, storing and	

Executive and legislative organs, financial and fiscal affairs, external affairs	approval of a municipal budget; 2) setting of local fees and charges 3) management, use and disposal of the land and other property which belong to a municipality by the right of ownership 4) incorporation and maintenance of municipal budgetary establishments, incorporation of municipal public establishments, municipal undertakings and other legal persons 22) planning of the infrastructure, social and economic development, preparation of strategic development and actions plans; programmes related to the development of tourism, housing, small and medium undertakings; 24) implementation of information society development;		provision to the European Commission in the manner prescribed by the Government of the information about financial relations of municipal institutions and undertakings controlled by a municipality, which meet the criteria set by the Government, as well as about undertakings which must maintain separate accounts;	
CG0103 General services		27) management and use by the right of trust of land reclamation and hydrotechnical construction works which belong to the State by the right of ownership; 41) ensuring of rendering of burial services and organisation of maintenance of cemeteries;	2) management of registers assigned by the law and furnishing of data to State registers; (01.03.03.02) 14) management of archival documents assigned to municipalities in accordance with legal acts;(01.03.03.02) 17) provision of statistical data; (01.03.02.02) 31) processing of data related to declaration of a place of residence and accountancy data of persons who do not have a place of residence;	
CG0106 General public services n.e.c	20) setting of special architectural requirements and issuing of documents permitting construction in accordance with the procedure laid down by the law; 21) supervision of exploitation of construction works in accordance with the procedure laid down by the law.	19) territory planning, implementation of solutions of a general plan and detailed plans of the territory of a municipality.	10) management, use and hold in trust of the State land and other State property assigned to a municipality; 12) execution of State guarantees for tenants moving out from dwelling houses or their parts and flats, which are returned to owners; 13) control of use and accuracy of the State language.	1) registration of acts of civil status; 11) consideration of citizens' requests to restore ownership rights to the existing real property, as well as adoption of decisions on the restoration of ownership rights in the cases and according to the procedure laid down by the law.

Unfortunately, the majority of assigned functions of municipalities do not satisfy the classification as it is difficult to assign the function to the particular group even having in front of the description provided by the law. So, it is vague how the municipalities make statements to assign expenditures to one or another group, and Table 2 presents classification based on the discretion of the author. There is no wish by the author to deny that the functions are assigned so as they are assigned in every municipality but to reveal the principle itself due to assignment process, sequence and adequacy.

The text highlighted in grey shows the functions which precisely match COFOG classification. As we can see, some functions attributed to one or another category of functions by the author match the classification not fully, while some match it absolutely. Some of the function text matches only partially.

So, in the author's view, obligations must be clearly distinguished from the functions in the law. What are the consequences if it has not been done?

Firstly, as the functions show not only what the local government has to do but also indicate the amount of cost for each function individually; if the functions are not distinguished properly, the further analysis of cost loses its meaning.

Secondly, majority of functions provided by the municipality to the citizens are paid from so called user charges. Thus, if the particular functions are not pictured in the accounting, it stays not clear which collected taxes are appointed to pay one or another function.

Thirdly, the concepts of democracy and decentralization emphasise participation of citizens and accountability of local self-government for own voters. On purpose to acknowledge the citizens that they would know where and how the taxes paid by them are distributed, at first, they have to know how the functions are assigned. In other words, if when reading the Law on Local Self-Government is not clear which class of the classification a particular function should be assign to, as well as it is not clear what amount of finances is allocated for the implementation of the function. It can be concluded that it is too early to speak about decentralization and resource allocation for implementation of functions while institutional affairs are not settled. Thus, at first the analysis is headed to institutional economics, and only after to fiscal decentralization.

So, to sum up it can be stated that:

- In the Law on Local Self-Government functions of municipalities are listed incoherently, changing from one course of activities to another. Whereas, the municipal costs are classified according to functional classification, in order to maintain a logical sequence, it would be meaningful to list municipal functions according to consistency of functional classification.
- The real functions of municipalities are mixed with obligations of municipalities. Having detached the real functions of municipalities from their obligations and having listed the functions according to COFOG classification as it is done with costs it would be clear how much money the municipality spends on a particular function, then it would be evident what is the need for funds i.e. how and in what ways the municipality has to raise funds for the performance of the specific function.

5. REFLECTION OF DEVOLUTION AND DELEGATION PRINCIPLES IN DETERMINING FUNCTIONS OF LOCAL GOVERNMENT

With regard to the decentralization from the point of view of function assignment place in self-government institutions, it is necessary again to get back to the key components of decentralization. This time two components are important for us – the delegation and devolution. Deconcentration will be left aside for now as it is mentioned above it only means deconcentration of central government functions in order to make their performance easier. Thus, in this section it will be tried to assess what is the extent of decentralization of local municipalities with regard to the criteria which reflect state function delegation or devolution, what specific concepts and definitions indicating the decentralization of functions of the local government are found in the Lithuanian legislation and how they can be interpreted.

Delegation of public functions is used when providing public services national priorities have to be met. Unified national legal regulation specifies how to provide public services. Some services such as social services or unemployment benefit payments provided by the local government are provided on behalf of central government and must comply with the basic principles only a very limited freedom of actions is left for local government (Hermann, Horvát, Péteri, Ungvári, 1999, p. 117).

Unlike deconcentration, **devolution** of government functions promotes regional and local self-government. Devolution is carried out by assigning the functions and financial resources to regional and local government to draw up own budgets and to provide local public services. Two key factors of decentralized government system are the ones that the local government decision-makers are elected by local residents at the same time being subordinated to higher authorities directly. Decentralized local government has its own legal status and rights as well as ownership of the local infrastructure needed to fulfil its responsibilities and provide the public services. At the same time decentralized local finances allows to use financial resources more efficiently as local officials can respond to needs and preferences of local residents better (Martinez – Vazquez, 1999, p. 162). However, devolution does not mean abdication of responsibility. Assignment of essential functions to municipalities must be accompanied by the appropriate audit, control or other effective systems. But at the same time cooperation of different levels of government should be developed rather than control or maintenance.

The assigned functions of municipality (Article 6) in accordance with the Lithuanian Low on Local Self-Government. According to the characteristics listed above this type of local government functions is attributable to devolution what by implication should mean (if it is so, it will be analysed later) that local institutions are free to make decisions on execution of assigned functions, combine them according to the needs and priorities of residents.

The functions of state (transferred by the state to municipalities) (Article 7). According to the characteristics listed above this type of local government functions is attributable to delegation when the central government forward the decision-making freedom and public administration functions to the local government or semi-autonomous organizations which are not fully controlled by the central government but are accountable for it.

The most important condition for assignment of public services, apparently, is their funding and fiscal decentralization following it. If the functions are assigned to the category of assigned ones (i.e. the municipalities may decide on their performance) and the cost of execution of the functions is financed by the central government, this phenomenon is quite ambiguous. On the one hand, it seems that the municipality has all the freedom to decide for provision of certain public services to own citizens, on the other hand, if the institution is usually financially dependable on, it cannot feel completely independent.

Moreover, in terms of public finances it is complicated as the following key problems must be solved: how much money to give to finance a particular function, what the source of those funds is and how much freedom of choice the local government has when choosing the object, size and structure of the funding source. For these reasons the assignment of functions and distribution of local self-government costs are closely inter-related problems. Generally accepted goals of decentralization are compound of efficient allocation of resources through the responsible and accountable government, adequate provision of public services to different jurisdictions, maintaining of economic stability and promoting of economic growth.

Let‘s have a look at the reflection of devolution or delegation observed in the Lithuanian legislation. Having getting two major laws – the Constitution and the Law on Local Self-Government of the Republic of Lithuania, it was tried to find the concepts and definitions illustrating the functional decentralization of local government.

Art. 119.3 of the Constitution of the Republic of Lithuania indicates: *The procedure for the organisation and activities of self-government institutions shall be established by law.* It is called a top-down system.

In the Law on Local Self-Government:

Art. 3.2. *Local Self-Government is self-regulation and self-action of the communities of the administrative units of state territory, in accordance with the competence defined by the Constitution and laws, which are provided for by law and which are composed of permanent residents of these units.*

Art. 3.8. *Functions of municipalities are functions of local government, public administration and provision of public services assigned to the municipalities in accordance with the Constitution and laws.*

Art. 3.9. *The exclusive competence of a municipal council is the competence defined by the Constitution and laws and which cannot be transferred, interfered in, implemented by any other local institution. The municipal council cannot renounce their exclusive jurisdiction or transfer it to other local authorities.* This article does not provide explanation what the competence is itself, only that it is set and that no one can take it over.

Let‘s look into the Constitution again:

Chapter X, Art. 120, Part 2 states: *Municipalities shall act freely and independently within their competence defined by the Constitution and laws.* But any other statements or explanations of what the competence of municipalities is and how it is determined cannot be found in the Constitution.

Later, exceptional and ordinary competences are listed in Article 16 of the Law on Local Self-Government but the definition which would help to distinguish the duties, functions, activities and competences are not provided. However, these concepts are found both in the Constitution and the Law on Local Self-Government.

The Law on Local Self-Government:

Art. 4.1. *The principle of representative democracy*. It can be understood as the provision of the certain function to the residents. This, apparently, is the subsidiarity principle expressed in other words. This principle states that the residents have to be provided the services by the institutions located closest to the residents in order to meet their needs the best. At the same time, there is the responsibility in front of the voters, the citizens who receive the services. Therefore, every citizen must be aware of which functions are performed by the municipality, how much money i.e. taxpayers' money is spent on them.

No more decentralization criteria related to the provision of functions to the residents cannot be found in two main pieces of legislation.

The reader may wonder why certain definitions and explanations are searched for so precisely. Of course, the meaning of concepts can be understood or the explanations can be found in a dictionary or other pieces of legislation. But then, there is a danger that the readers will understand them differently. Therefore, in author's opinion, all used conceptions should be defined clearly and unambiguously in the basic legislation. One of the objectives of this article is to assess the fiscal decentralization of local government in Lithuania.

The certain criteria are important for the assessment of decentralization. Among them what are the functions transferred to local government to perform individually and which are delegated to. If the legislation does not explicitly differentiate between the competencies, obligations and functions, and especially between assigned or transferred functions, it is not possible to assess how far they are assigned or transferred. Certain criteria of function assignment were identified in the previous chapter. Here it well be tried to assess the subsidiarity principle including many criteria of function assignment and stating that implementation of public obligations has to be assigned to the public government bodies which are close to the citizens, and the functions which cannot be performed by the public government bodies at the lower level are transferred to the bodies at the higher level.

The subsidiarity principle in not defined neither in the Constitution nor in the Law on Local Self-Government, but Article 3, Paragraph 7 of the *Law* on the Amendment of the Law on *Public Administration* of the *Republic of Lithuania defines the subsidiarity principle*, according to which the emphasis goes on that "the decisions of entities of public administration must be adopted and implemented at the most efficient level of public administration system". According to Baltušnikienė and Astrauskas, the application of subsidiarity principle is especially important in areas where the competence of general public government bodies occurs (i.e. where the functions are shared between the various levels of government). Baltušnikienė, Astrauskas, 2009, p. 8).

As decentralization criteria are not clear in terms of functions, a few particular examples can be analysed. The functions specified in the Law on Local Self-Government which are allocated to the execution of the local government are chosen and the potential efficiency after the allocation is analysed according to the allocation criteria of intergovernmental functions in the first section.

1. 7.35 function – radiation protection. It is doubtful whether the municipalities in Lithuania have enough technical capacity, professionals for solution of this problem. Technical volume of this external effect is greater than the territory of local government. In other words, radiation bears the spillover effect between the municipalities.
2. 6. 28 function – *protecting* and *improving* the environment. It is a very broad concept which does not define what these objects to be protected are – air, land or water? If we take the example of water, let's say a river. The river flowing in several municipalities, it is an example of spillover effect.
3. 6.8 function. Part of the function - pre-school *education* organization (devolution) and part of 7. 7 function – pre-primary education organization (delegation).

Due to the lack of space in the article, only one example, illustrating the ambiguously situation of function assignment and co-sharing is presented below. As it can be seen in Table 3, only two functions are analysed – assigned municipality function – pre-school education organization and the function transferred to the municipalities by the state - pre-primary education organization. Analysis of only these two functions causes considerable confusion.

At first, other functions, even if they are related to the education, with very different requirements and performance conditions are added to a fairly specific function provided to preschool-aged children –

organisation of informal education of adults, the organization of youth employment, general education, vocational training and organization of vocational guidance, maintenance of schools (classes) engaged in general education programs and designed for the country's students with exceptional abilities or special needs. Each of the listed activities are regulated by other laws, their implementation requires a different infrastructure and human resources. In economic and responsibility terms such assignment of functions leads to assessment of problems. If the municipality has to classify the costs according to OECD function classification, for both an economist and a voter who according to the principles of democracy local politicians are accountable for is not clear what the exact cost is incurred in organizing pre-primary or pre-school and what the cost is of other activities.

Table 3

Assignment of pre-school education and pre-primary education to local government

	Devolution	**Delegation**
Law on self-government	**6.8** (*partial function) - organization of* ***pre-school education****, non-formal education of children and adults, organisation of occupation of children and youth;*	**7.7** *(partial function) - organisation of* ***pre-primary education,*** *general education, vocational training and vocational counselling, ensuring of studying of children under 16 years of age, residing* ***within the territory of a municipality, in accordance with compulsory education programmes, maintenance of schools (classes) which implement general education programmes and are designated for pupils having exceptional talents or special needs;***
Law on education	**7.2 Pre-school education** shall be carried out at home and at the request of the parents (guardians) – in accordance with a pre-primary education curriculum. Pre-school education of children may be compulsory in accordance with the procedure and in the cases laid down by the Minister of Education and Science and the Minister of Social Security and Labour. **7. 3.** Pre-school education **shall be provided to a child from his birth until the commencement of provision of pre-primary or primary education.** **7.4** The pre-school curriculum, prepared in compliance with the criteria of pre-school curricula approved by the Minister of Education and Science, shall be implemented by pre-school education schools, general education schools, freelance teachers or other education providers.	**8.2 Pre-primary** education shall be carried out according to a one-year general pre-primary education curriculum approved by the Minister of Education and Science. Pre-primary education shall be carried out by pre-primary education schools, general education schools, freelance teachers or other education providers in compliance with the procedure laid down by the Minister of Education and Science. **8.3** The provision of pre-primary education to a child shall start on the calendar year when a child reaches six years of age…

Secondly, assigned municipality function – pre-school education organization which should reflect devolution i.e. full decentralization, it seems that it is not so. As we can see, the curricula are established by the Ministry of Education as the Law on Education of the Republic of Lithuania. Moreover, the sentence "According to the order and cases set by the Minister of Education and Science and the Minister of Labour and Social Security, pre-primary education may be compulsory for certain children" indicates that the function assigned to the municipality cannot be treated as being assigned.

And thirdly, the provision of the Law on Education of the Republic of Lithuania on that: "Pre-school education is provided to children from the birth till they receive pre-school or primary education" brings even more confusion because the word "or" may refer to the function which has to be performed or may not. In this case pre-school education function remains uncertain and children from 6 to 7 years may be provided both pre-school and pre-primary? It remains unclear who is responsible for the education of children at this age, in fact.

So we can see inaccurate assignment of functions causes problems of both interjurisdictional misapprehension and responsibility and resource allocation and accountability for it. In order to distinguish and define interjurisdictional allocation of functions clearly, it is necessary to have decentralization matrix and define devolution distinctly.

6. CONCLUSIONS

Since 1959 when Musgrave identified three main functions of state: stabilization, income distribution and resource allocation and in 1972 Oates' idea that state functions should be assigned to different levels of government, there are regular discussions going on how to find a better model for the assignment of functions in democratic and decentralized countries.

And while many politicians and scholars agree with the idea that there is no a model which is perfect and suitable for all systems, the main criteria of intergovernmental assignment of functions based on both theoretical studies and empirical research are presented in the scientific literature.

Lithuania, like many post-communist countries, declaring the idea of decentralization and having ratified the European Chatter on Local Self-Government, is in the process of decentralization. Legacy of the Soviet system and the frequent change of political parties hinder the effective implementation of the process. Also the lack of economic knowledge is often observed in the actions of politicians, so, the first part of the article is devoted to the theoretical justification.

When analysing the classification of functions of Lithuanian municipalities it appeared that autonomous (devolution) and assigned by the state to municipalities (delegation) functions are presented without any logic system and do not match any classification, despite the fact, that expenditure reports of municipalities must be handed with compliance with COFOG classification. Therefore, when having tried to group the functions of municipalities it turned out that it is not an easy task since only few descriptions of functions match the classification. It creates a problem of accountability as a citizen in a democratic society cannot see what expenditure is incurred by the municipality performing a particular function. It brings problems both of accountability and economic and political analysis.

Another aspect of functional decentralization study is that assessment of reflections of devolution and delegation in functional distribution has showed that not all functions of municipalities are so in reality. The example of pre-school and pre-primary education shows that there is no clear line between responsibilities of different tiers of government. The specific function provided to the preschool-aged children is accompanied by other ones with different requirements and performance conditions, even if they are related to the functions of education. All activities listed in one function are governed by other legislation and their implementation requires a different infrastructure and human resources. In addition, since these functions are a matter for central government legislation, it is hardly possible to assign it to autonomous functions of municipalities.

Thus, we can see that incorrect assignment of functions leads to problems of both inter-jurisdictional miscommunication and responsibilities and allocation of recourses and accountability for them in the system of functions of government – expenditure for the performance of those functions – income to fund the expenditure.

The proposed solutions after analysis of the theoretical points of functions assignment and particular country's situation would be as follows:

(1) Nevertheless no single best assignment of functions can be found neither in theory nor in practice, at least clear functions assignment between levels of government should be defined in the law with transparency; and appropriate legal framework enabling precise accountability of both (in case of Lithuania) government levels can be established. It would help to avoid the source of conflict between central and local governments and leads to more efficient provision of public goods as well as the stability of the system.

(2) The classification of functions should be united with the classification of expenditures (i.e. if Lithuanian municipalities has to present their expenditures according to COFOG classification, functions shall be divided according the same system). Thus responsibility and accountability of government units will be clear and encourages democracy.

(3) Co-sharing of public functions between tiers of government should be also defined clearly and in no uncertain terms. The above presented case of pre-school and pre-primary education shows that key decisions in education regulation in order to establish common requirements and standards for the whole country is taken by the central government, simultaneously the provision and organisation of pre-school and pre-primary education is carried out by the local government. In this (and other similar cases) clear distinguishing between delegated and devolved functions should be made.

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CORPORATE GOVERNANCE, COMPLIANCE AND BANKING BOARDS IN LATVIA: THE RESULTS OF A SURVEY

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Abstract

Purpose – After the recent financial crisis, Basel Committee on Banking Supervision (BCBS) and European Banking Authority (EBA) have called attention to the need to improve corporate governance of financial entities and issued new guidelines endorsed by local regulators. The purpose of the paper is to analyze how banking boards in Latvia fulfill compliance oversight function.

Design/methodology/approach – The empirical study consisted of survey and interviews with experts in compliance risk management who are the members of the Compliance Committee of the Latvian Commercial Bankers Association. To carry out the empirical research, a web-based survey was conducted from December 2011 through January 2012 to collect information about relation between compliance function and banking boards in Latvia.

Findings – The benchmarking approach has been used to compare results from banks in Latvia with similar survey in US. In general, banking boards in Latvia use the similar tools and methods to oversee compliance function as the banks in the US. The level of support to compliance function from boards differs in both countries.

Research limitations – For this paper, only banks are reviewed, which may result in an incomplete picture of compliance function in Latvia's financial sector.

Practical implications – The results of the researh are used by the Compliance Committee of the Latvian Comercial Banking Association.

Originality/value – Latvia implemented a compliance regulatory framework in 2007. The value lies in the fact that compliance risk management has never been subject of research in Latvia before.

Keywords: banks, Latvia, coorporate governance, compliance, risk management.

1. INTRODUCTION

The European banking industry recognizes (EBF, 2010) its vital role to play in any economy, mainly as a facilitator of activity in other sectors. Health and efficiency of banking industry provide a foundation for economic growth and social welfare. The interconnectedness between the financial sector and the rest of the economy is subtle yet significant: changes in the economic climate of the real sector directly impact on the health of banking, and *vice versa.* The banking business is crucially dependent on public trust. The ongoing financial and economic crisis has exposed frailties in the financial sector and of the regulatory and supervisory frameworks, which are now being addressed both at the EU and international level and aim to restore a public trust. An understandable response to the crisis on the part of the European and international authorities is to create new rules and regulations. Their main effort has been to correct institutions' weak or superficial internal governance practices as identified in the financial crisis. These faulty practices, while not a direct trigger for the financial crisis, were closely associated with it and so were a key contributory factor. International regulatory bodies recognized that the risk management and internal control frameworks are effective internal governance arrangements, but were often not sufficiently integrated within institutions or groups. A uniform methodology and terminology was missing, so that a holistic view on all risks did not exist. An institution should have an appropriate Internal Control framework to develop and maintain systems that ensure effective and efficient operations; adequate control of risks; prudent conduct of business; reliability of financial and non-financial information reported or disclosed (both internally and externally); and compliance with laws, regulations, supervisory requirements and the institution's internal policies and procedures.

Latvia implemented Internal Control framework (FCMC, 2007c) that includes compliance in 2007, while in other countries a specific regulatory requirement for Compliance Function (or analogous) had been already introduced. For example, in Belgium the *Commission Bancaire et Financière* has established the need for a Compliance Function in 2001; in Germany this function has been required in 1994; in the UK the appointment for a compliance officer within financial services firms has been prescribed since 1980s; in the USA the vast majority of legislation on such issues is dated even from the 1930s and 1940s (PwC, 2003). In Italy like in Latvia changes regarding status of the compliance function have been introduced in 2007. In 2008 research regarding Italian bank compliance practices was done. It confirmed several hypotheses among them: since foreign regulators have generally begun to pay attention to the compliance issue earlier, there is concern that local banks are behind the global compliance development (Birindelli, 2008). The similar hypotheses can be relevant to the Latvian banking sector. This stimulates to organize an academic study on compliance risk management practices in Latvia's banking sector that wasn't done before. The objectives of study are to identify possible gaps and to contribute to the debate on the compliance risk management in Latvia's banking sector.

The purpose of this paper is to make a systemic investigation of available sources of literature on interrelation between corporate governance in banking and compliance function, and compare with the situation in Latvia.

The Basel Committee on Banking Supervision (BCBS, 2010) has issued a new set of principles for enhancing sound corporate governance practices at banking organizations and the principle No.3 covers: "The importance of a risk management function, a compliance function and an internal audit function, each with sufficient authority, stature, independence, resources and access to the board." The presented analysis of the survey review the compliance function's access to the board and interrelation, and is one of the steps for compliance academic study (Lagzdins, 2011a, 2011b, 2012c, 2012d; Lagzdins and Sloka 2011a, 2012b; 2012d; Lagzdins et al. 2011).The study aims updating the recent academic findings, and evaluating the current situation in the field of preparing reasonable fundament to develop a theoretical concept of the compliance risk management in Latvia.

Against the above-mentioned background it is important to review if and how the banking boards in Latvia perform compliance function's oversight.

Research object is the banking boards and compliance function in Latvia. **The aim** of the article is to evaluate the interrelation between banking boards and compliance function. **The research tasks** are the following:

- Systemize knowledge around corporate governance in banking;
- Evaluate Latvia's compliance legal framework and status;
- Trough the specially organized survey to find a practical application of interrelation between compliance function and banking boards in commercial banks;

The research methods involve analysis of the documents of the International regulatory bodies; Latvian laws and regulations related to the Internal control; compliance and corporate governance literature review; the empirical study consisted of survey;

The research novelty is investigation of Latvia's legislative documents and practice related to the organization of the compliance function in commercial banks.

2. THEORETICAL FRAMEWORK

2.1 Discussion and literature review

2.1.1 Compliance function

The compliance literature (Bryant, 2004; Haynes, 2005; Apreda, 2006; Bauer, 2007; Mills, 2008; Birindelli, 2008) and surveys (Basel Committee, 2008; European Commission,2009) maintains compliance function as the function that should facilitate the implementation and maintenance of the compliance culture, arrange for or provide compliance framing, advise on regulatory matters, conduct monitoring, maintain lines of communication with the regulator, handle regulatory issues, conduct reviews, provide reports and guidance to management, assist in identifying, assessing and managing regulatory risk, manage internal, external and inter-relationships, and turn regulatory burden into competitive advantage (e.g. such as

recommending IT solutions, regulation and guidance). In general terms, the inter-relationships for the Compliance function are: the Board of Directors has the responsibility for overseeing the management of the compliance function; Senior Management is responsible for establishing a compliance policy and a permanent and effective Compliance function. Some regulators (Basel Committee, 2008) promote two levels of compliance function: 1) operational and 2) oversight that is independent from business.

In Latvia, the bank regulator is the Financial and Capital Market Commission (FCMC). Similar to other bank regulators, it must decide on compliance regulatory framework. The analysis of the FCMC requirements confirmed that such framework is defined in two laws, three regulations and non-binding guidance-handbook (FCMC 2008a, 2003b, 2007c, 2009d, 2006e, 2007f). Author finds that FCMC requirements regarding the compliance function are similar to Basel Committee recommendations and reflect to the wording and spirit in compliance literature. A risk management framework in Latvia consists of at a minimum the following three internal control functions: Internal Audit, Risk Management, and Compliance. The roles of each of the respective functions along with the Board of Directors, Senior Management, Compliance Staff and Business Unit personnel, all have a part to play in contributing to the overall success of the three internal control functions as they form an effective risk management framework. Latvian regulator FCMC doesn't distinguish levels of compliance function.

2.1.2 Corporate governance and compliance responsibilities of the banking boards

The compliance function starts at the top. How banking boards can fulfill compliance oversight function and what kind of framework they can use for that? The general understanding of corporate governance is needed before to look for answers to this question. Corporate governance is a very general phrase and refers to the process and structure used to direct and manage the business. Cadbury Report (1992) says:" the system by which companies are directed and controlled". Hardoiun (2009) emphasizes that the governance of the financial sector goes through two channels. One is the general organization and regulation of the sector. Governance depends first from the framework defined by the regulator (Basel Committee, 2005). The other channel is corporate responsibility.

After the recent financial crisis, Basel Committee on Banking Supervision and European Banking Authority have called attention to the need to improve corporate governance of financial entities and issued new guidelines (BCBS 2010; EBA 2011) endorsed by local regulators. Now regulators more than ever believe an efficient compliance function is a prerequisite for good corporate governance that should restore trust, integrity, and responsibility in the banks. They believe that compliance is key facet of governance because it shows how actually bank meets corporate responsibilities. Regulators especially advocate a governance structure composed of Board of directors and senior management that are responsible for overseeing the management of the bank's compliance risk and effective compliance function. The BCBS is aware that there are significant differences in legislative and regulatory frameworks across countries as regards the functions of the board of directors and senior management. The notions of the board of directors (some countries including Latvia supervisory board) are used not to identify legal constructs but rather to label two decision-making function within bank.

Several scholars (Handley-Schachler et.al 2007; de Andres and Vallelado, 2008) in their extensive banking corporate governance literature reviews found that there are many studies on corporate governance, but only few papers focus on bank's corporate governance (Ciancanelli and Reyes, Macey and O'Hara, Levine, Adams and Mehran, Caprio et al.).The literature emphasizes that regulation distinguishes the banking industry from other industries and presents several challenges in the field of corporate governance. Regulation can be considered an additional mechanism of corporate governance, but in most situations it reduces the effectiveness of other mechanisms in coping with corporate governance problems. The main aim of the regulator, which is to reduce systemic risk, might come into conflict the main goal of shareholders, which is profit. Corporate governance in banks plays a special role due to the uniqueness of the organizations. Studies above acknowledge the existence of difficulties, such as complexity and intense regulation, in the corporate governance of the banks. The reasons stated consider that bank board becomes a key mechanism to monitor managers' behaviour and to advise them. McIntyre (2009) suggests that regulators can expect more from banking boards.

Recent corporate governance empirical literature beyond traditional topics such as: board size and composition, performance and compensation, has focused on effectiveness of the banking boards. Belkhir (2009) using panel data set of nearly 170 banks found that there is no evidence in banking organizations that smaller boards are more effective, and induce an increase in performance. De Andres (2008) indicated that

board members' specific knowledge of the complexity of the banking business enables them to monitor and advise managers efficiently. Careta and Farina (2010) offers a model to assess the effectiveness and compliance of bank boards. He concluded that regulatory recommendations alone are not sufficient to guarantee board and director effectiveness and focused on two major drivers of board effectiveness. Board level drivers refer to size, composition, duality, committees, meetings, incentive schemes and management information reporting systems. Individual drivers refer to competencies and commitment of directors, who should develop and maintain appropriate level of expertise as the bank grows in size and complexity. Regarding compliance Corporate governance regulatory arrangements require from the boards two major things: 1) establishment of the compliance function and 2) oversight of the management of the bank's compliance risk. According risk regulations there should be a compliance framework and a common language to discuss risk issues.

The most significant law in Latvia regarding compliance and board relations - the Law On the Prevention of Laundering of Proceeds Derived from Criminal Activity was enacted in December 1997 and became effective in June 1998. The Law has been amended a number of times in order to comply with all the international requirements. In some instances the law went beyond what international standards required. Articles 7 and 8 of the above mentioned law obliges financial institutions to establish Internal Control System and Improving the Internal Control System on ongoing bases. Article 10 requires credit and financial institution appoint a board member who shall be responsible for the prevention of money laundering and of terrorist financing in the respective credit or financial institution.The analysis of the legal and regulatory requirements confirmed that Latvian regulator FCMC obliges the banking boards to perform compliance risk oversight by approving compliance risk management policy and at least once a year to assess the effectiveness of the compliance risk management. Regulator doesn't offer particular oversight framework or mechanism. Compliance officer should help Board to offer oversight mechanism and therefore author aims to design board compliance empirical corporate governance oversight model based on theory and best practises.

2.1.3 Latvia's financial market

Bank based system still dominates in most of continental Europe (Girardone et al. 2009). Latvia is among those countries that have developed financial sector as a bank based model (Clarkson, 2009) where banks have 92.4% of total financial sector assets (FCMC 2011g). Banking sector in Latvia is presented only by commercial banks and two other types namely savings and co-operatives don't exist (LCBA 2012).At the end of 3rd quarter of 2011, 22 banks operated and 9 branches of foreign banks were registered in Latvia. All banks are accepting deposits, grants commercial and industrial loans and provides other banking services for the public. They are called commercial or full-service banks. The bank assets form the greatest share of the total assets in the financial and capital market of Latvia (Ministry of Economics, 2011). At the end of the 3st quarter of 2011, the total amount of the bank assets reached LVL 20.7 or EUR 29.5 billion and account for over 92% of all financial assets. Three banks are owned by large Nordic banking groups (SEB, Swedbank, DnB), representing 45% of the total banking system assets. Two banks owned by top-tier banks from the Russian Federation (MDM bank, the Bank of Moscow) and two by large Ukrainian private banks (Privatbank, Pivdenny), and altogether they account for 3% of the total banking system assets. There is one bank owned by Austrian banking group (UniCredit Bank) accounting for 3.5% of the total banking system assets. One bank is a 100% state-owned (LHZB), accounting for 4.5% of the total banking system assets. The number of clients who have opened accounts at Banks in Latvia were 2.9 million as of December 2009 (FCMC 2010). On June 1st 2010, the market capitalization was LVL 600.4 million and the total amount of gross premiums signed in the insurance market reached LVL 223.3 million of 2009.The research confirms that capital markets in all CEE countries including Latvia are more underdeveloped than banking sectors (Dinger and Hagen, 2009). Various international institutions (US Department of State, 2010, International Monetary Fund, 2007) are noting the importance of banking sector by recognizing Latvia as a growing regional financial centre with sizeable non-resident deposit base.

Figure 1 provides with a comparison of neighbouring countries. Latvia is a regional financial centre of some significance and acts as an important trade and financial gateway between CIS countries (mainly Russia) and Western countries. The high volume of throughput of transactions in accounts in Latvian banks shows, in part, the financing of trade, but also contains a substantial component related to capital flows and transactions designed to minimize the impact of tax and currency control requirements in the originating countries, mainly in the CIS.

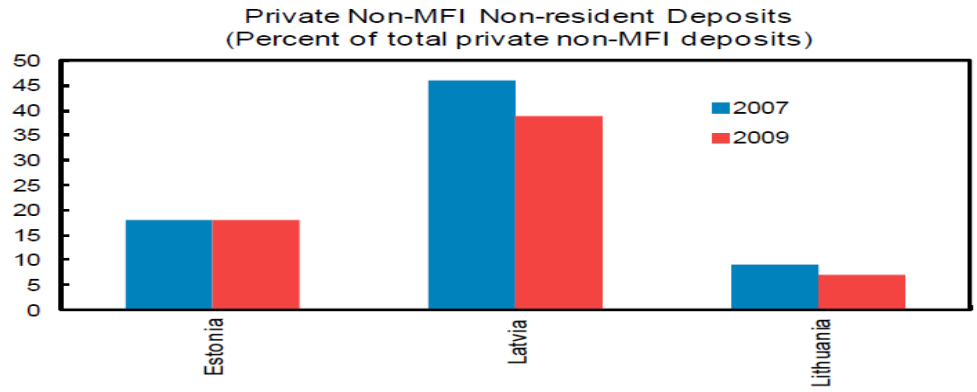

Figure 1. Non-resident deposits

Source: Purfield, C., Rosenberg, C. B. (2010): *Haver; IFS; BIS, Locational Banking Statistics; and EBRD*

When the size of the banking sector is measured relatively to financial wealth, the gap between the developed EU banking systems and those of the CEE countries is not as severe as argued in studies based on the traditional approach of measuring the size of the banking system with respect to GDP (Dinger, Hagen, 2009). It is important to confirm that not only the size, but also other areas (including corporate governance and compliance) of Latvian commercial banking are in line with developing trends.

3. RESEARCH METHODOLOGY

The empirical study consisted of survey that was accepted by Latvian Commercial Banking Association's (LKBA) Compliance Committee . To carry out the empirical research, a web-based survey was conducted from December 2011 through January 2012 to collect information about compliance officers and the compliance function practices at their banks in Latvia. The goal of the survey was to identify how compliance function is organized and managed in Latvia's banking sector. The survey questionnaire was prepared by author and included also some similar questions from 2009 Bank Compliance Officers Survey organized by American Banking Association (http://www.aba.com/ Members+Only/Regulatory/ 2009BCOSurvey.htm) allowing to benchmark views against those of compliance peers in USA. The measures and the wording of each question were based on earlier qualitative and documentary research on compliance risk management as well as the theoretical considerations and the scholarly literature. A great variety of regulatory documents including Basel Committee and surveys of audit companies (PwC, KPMG) were also read. The survey questionnaire contains 65 questions. The major topics include the following:

- Information about bank's most senior compliance manager
- Information about bank's compliance structure
- Education and training
- **Compliance and the bank's Board**

The Bank's most senior persons responsible for compliance function were invited to participate in the survey trough an email. Follow-up emails and announcements were used to encourage participation. By the response cutoff date, 19 commercial banks (members of LKBA) participated in the survey.The Association had 22 members. Therefore response rate 86% compares well with the 40% response rate for similar survey in Italy.

The questionnaire was confidential: all survey results will be used only in updated version and will assist for the basis for real and practical recommendations regarding the necessary improvements in compliance risk management in the commercial banks. It took around 20 minutes to fill in the form.

Due to the limitation of the paper, only the main results related to the compliance and bank's board `are described in this paper.

The majority of the banks established independent compliance department or similar unit. The figures in Table 1 confirm that only 15.8% or 3 banks don't have separate compliance unit. Vast majority of compliance units has been established after 2007.

4. ANALYSIS OF RESEARCH RESULTS

European Commission (2011) published impact assessment accompanying the initiative for the reform of corporate governance in credit institutions. The EU paper provides the framework for assessment of the effectiveness of risk oversight by Boards. Such framework is contributing efforts to find an answer to the question - how the banking boards in Latvia perform compliance function's oversight? The other comperision is done by using survey results from american banking association. Latvia have two-tier board structure and therefore author in analyzes refer to the management board, which have a similar function compare with US unitary board structure.

Table 1 shows that the boards in most of banks in Latvia have appropriate time commitment and Board members spend sufficient time to exercise their duties. The 81.3 percent of responders indicated, that the board meets weekly, while in the USA the most often boards of banks use to meet monthly (84.6%). This might indicate the benefits of Latvian banks governance structure that could be more reactive to the changes in business and regulatory environment, and furthermore this means that decisions in Latvian banks' boards can be made faster.

Table 1

The comparison of distribution of answers to question "How often does your organization's board meet?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Weekly	81,3%	2,3%	79,0%
Quarterly	12,5%	8,7%	3,8%
Monthly	-	84,6%	-
Six times a year	-	4,5%	-
Other:	6,3%	-	-
Two times in month	6,3%	-	-
Missing	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19, and American banking association's compliance survey in 2009

The boards in banks have a lot of various duties and areas of decision making, and the compliance is one of the areas. Compliance starts at the top and the Basel Committee suggested mechanisms of internal coordination between Compliance Officer and top management. To verify if the banks understood these indications, this research investigated the interrelation between the compliance reporting and Board.

The boards' attitude to the importance of compliance functions is characterized in table 2. As the survey results show, the compliance officer in USA banks is a frequent participator of board meetings: 33.7% of responders in USA attend meetings of board of directors every meeting and 24.5% attend quarterly, while in Latvia the most often there are no persistent participation of compliance officer: 26.3% respondents specified that they only report the examination results, and 26.3% - at the board request only. This means that in Latvia compliance is not yet treated as the function that must be performed continuously, and the boards of banks in most cases ignore periodical assessment of compliance management results.

In this case the USA practice can be treated as the example that should be followed, because it allows more comprehensive performance of compliance in banking, having in mind that compliance must cover nearly all banking procedures and is supposed to be controlled directly by board of the bank (the strategic and independent performance is a key factor for efficient compliance management).

The banking Boards in Latvia should improve priority given by Boards to compliance risk issues and invite more frequently compliance officer at the Board meetings. The establishment of the Compliance Committee at Board level could be used as a structure to discuss compliance risk issues.

As seen in table 3 in Latvia banks' boards directly review the compliance budget more often than in USA (respectively 50.0% and 23.7%) and in the context of previously discussed boards' attention to continuous compliance management, this can be treated in two ways.

Firstly, the stronger regard to compliance budget shows a serious involvement to the organization and control of compliance and this is not always can be treated as a positive factor. The strong attitude to the

financial aspect of compliance function together with the week control of the results create the background for formal compliance realization, which in most cases is far away from real compliance management.

Table 2

The comparison of distribution of answers to question "How often do you (or another compliance representative) attend meetings of your board of directors?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Every meeting	10,5%	33,7%	-23,2%
At the board's request only	26,3%	10,0%	16,3%
Only when the organization is facing a major new compliance duty	10,5%	1,7%	8,8%
Quarterly	10,5%	24,5%	-14,0%
Only when new compliance duties face the board directly	5,3%	5,8%	-0,5%
Only to report examination results	26,3%	2,6%	23,7%
Never	10,5%	7,3%	3,2%
Other:	15,8%	14,3%	1,5%
Half a year	5,3%	-	-
Monthly and when compliance related issues are discussed	5,3%	-	-
On average 1 per month (quarterly + ad hoc issues)	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Secondly, the focus of board on compliance budget instead of compliance results in Latvia raises a question whether boards of Latvian banks properly conceive the role of compliance management in banking. The formation of budget automatically creates the boundaries for compliance function realization, and in this case it is very important than those boundaries should be loose enough to guarantee the efficient compliance management in all banking areas and sectors. The direct review of compliance budget creates the possibility to control compliance management actions, but have a limited impact on the final results of compliance efficiency.

Table 3

The comparison of distribution of answers to question "Does your organization's board directly review the compliance budget?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	50,0%	23,7%	26,3%
No	50,0%	76,3%	-26,3%
Missing	-	-	-
If NO - please, evaluate			
1	60,0%	-	-
3	20,0%	-	-
4	20,0%	-	-
Missing	-	-	-
If YES, is the head of compliance function ever permitted to defend or explain items in that budget?			
Yes	66,7%	58,3%	8,4%
No	33,3%	41,7%	-8,4%
Other:	10,5%	-	-
In LV compliance, oprisk, security budget is common	5,3%	-	-
There is no separate budget for compliance	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Despite the quite low involvement of boards of Latvian banks in compliance management, there can be seen a strong support for the compliance function realization in practice – table 4 shows that 88.9%

respondents in Latvia receive the support the compliance function requires from the board, and this match the situation in USA, where 92.9% respondents confirmed the provision of consistent support from the board.

The support from the board in compliance management area can be treated as crucial factor for efficient realization of compliance function (it is difficult to perform most of compliance functions in different units of the bank without the direct support of governing body), so the consistent support of the board a necessity in compliance management. On the other hand, the support from the board is stimulated by banking supervision institutions, which in overall treat the coordination of compliance management as one of primary functions of the board in the context of banking risk management.

The same situation in the support can be stated in the context of CEO role in compliance management (table 5): 94.7% responders in Latvia and 88.6% in USA confirm the consistent provision of the support the compliance function requires. The bigger number in Latvia may be related with the size of banks in Latvia and USA. In Latvia banks in general are much smaller than in USA and this means the closer relations between CEO and other officers, including compliance officer.

Table 4

The comparison of distribution of answers to question "Does your board consistently provide the support the compliance function requires?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	88,9%	92,9%	-4,0%
No	5,6%	7,1%	-1,5%
Other	5,6%	-	-
No need so far for additional support	5,6%	-	-
Missing	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

While CEO is supposed to be less supportive in case of compliance politics and performance boundaries, the role of CEO in supporting the compliance function can also be crucial. CEO in this case can be treated as the direct provider of resources needed for efficient compliance functions realization, so the support from CEO means the access to the resources that are necessary to form the continuous and reliable compliance management system, including various software, human resources and financial resources on time.

Table 5

The comparison of distribution of answers to question "Does your CEO consistently provide the support the compliance function requires?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	94,7%	88,6%	6,1%
No	5,3%	11,4%	-6,1%

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

The differences in the size of the banks in Latvia and USA may be reason for the different practice of reporting to the board. As seen in table 6, the dominant reporting form in Latvia is a direct reporting (89.5%), which means the close compliance officer's contact with the board, while in USA the most common forms are reporting through the audit committee (40.8%) and direct reporting (32.5%).

The presented results are a little bit confronting the previous results, where the compliance officers' attending board's meetings were discussed. As in Latvia the attending of boards meetings is not regular and mostly happens only if the need appears, it can be presumed that the direct reporting to the board is not very often. In this case the further presumption appears that the reporting to the board in Latvia is quite rare, and mostly is realized directly to the board only if board expresses the need for it.

Meanwhile in the USA the reporting is probably the more frequent and is performed using periodical reports for several governing bodies, such as audit committee, board, etc. In such case where is guaranteed

more detailed information from the compliance officer, and this information is distributed for different governing bodies in respect to their interest.

Table 6

The comparison of distribution of answers to question "Through what avenue does your compliance function report to the board?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Direct	89,5%	32,5%	57,0%
Audit committee	-	40,8%	-
In-House	-	0,4%	-
Compliance committee	15,8%	11,1%	4,7%
Risk management committee	15,8%	2,6%	13,2%
CEO	21,1%	7,4%	13,7%
Other:	10,5%	5,3%	5,2%
Directly to LV board to Group management through Group org.	5,3%	-	-
Several committies in different areas	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

The role of board and other governing bodies in compliance management strongly depends on their competence level in this area. For this reason one of compliance officer's duties is the education of governing bodies' members. While these education possibilities depend on the conditions the compliance officer receives from the governing bodies, the results of education and the level of competence is strongly dependent on the methods and forms used for that.

Table 7 shows that in Latvian banks the main forms of board education about compliance issues are formal presentation (78.9%), one-on-one meetings (52.6%) and background memos (47.4%). In the USA banks the dominant forms of education are also a formal presentation (82.1%) and background memos (36.0%), but the one-on-one meetings are much less popular (9.8%) than in Latvia. Instead of that, compliance officers in USA use a bigger diverse of education tools, such as videos, specialized newsletters and booklets. These differences may be related with the differences in banks size: in Latvia board members have a more close non-formal contact with bank's officers, so the one-on-one meetings are a popular form of education. Meanwhile in the USA the banks are much bigger, with much more complicated organizational structure, so the compliance officers must use more creative tools for indirect education of board members.

Table 7

The comparison of distribution of answers to question "What steps have you taken to educate the board about compliance issues?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Formal presentations	78,9%	82,1%	-3,2%
One-on-One meeting	52,6%	9,8%	42,8%
Informal presentations at board retreats	10,5%	6,9%	3,6%
Background memos	47,4%	36,0%	11,4%
News clippings	5,3%	10,8%	-5,5%
Videos	-	12,1%	-
Specialized newsletters	-	10,0%	-
Booklets	-	15,8%	-
Special class	5,3%	9,8%	-4,5%
Other:	5,3%	10,6%	-5,3%
E-Learning mandatory training	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

The education of board members in compliance area is a popular activity in both Latvia and USA: the results of the survey presented in table 8 show that 78.9% in Latvia and 93.6% in USA compliance officers have taken steps to educate the board about compliance issues. It is important to notice that in Latvia the percentage of compliance officers that educate board members is high, but not high enough in comparison with USA. Knowing that compliance management in Latvia is not as much developed as it is supposed to be in the context of USA experience, it is important to reach the high intensity of education of banks' governing bodies in compliance area.

The debatable results are shown in figure 1. It is already clear that in USA banks the compliance management is a widely developed function in banking sector, with strong attitude from both commercial banks and supervision institutions. In Latvia the compliance management is still considered as the new function in banking. The earlier studies of compliance management in Latvia, based on the results of the same survey which is discussed in this article, confirmed that the practical experience in compliance management is much bigger in USA than in Latvia, mostly because the compliance management function in USA is treated as one of core functions in banking risk management from quite a long time ago, while in Latvia (as in most of EU countries) compliance management function is only starting to become an important part of bank's risk management.

Table 8

The comparison of distribution of answers to question "Have you taken any steps to educate the board about compliance issues?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	78,9%	93,6%	-14,7%
No	10,5%	6,4%	4,1%
Other	10,5%	-	-
Please see answer No. 52	5,3%	-	-
Special Compliance training programs	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Despite the above mention facts, the comparison of distribution of answers to question "How would you rate your board of directors' understanding of the compliance risk facing your institution?" in Latvia and USA (figure 1) shows that compliance officers in Latvia considers that their banks' boards members have an enough deep understanding (72.2% of respondents rated it from 8 to 10 in 10-points scale). But in the USA the compliance officers ratings differ significantly: 31.9% rated the understating of boards members as 5 (in 10-points scale), 21.7% as 6 and 20.0% as 4.

These differences may be related with two main factors. Firstly, the cultural peculiarities in Latvia and USA may form an inadequate assessment of boards' members' competence in Latvia, where in exist closer non-formal relations between compliance officers and board members. Secondly, the high assessment of boards' members' competence in Latvia may be related with the lower competence level of compliance officers themselves. In USA compliance officers have much more practical experience and deeper knowledge in compliance management: previous studies showed that:

- Education of compliance managers in USA is mostly based on specialized education and this can be treated as a weak side in Latvia, where no specialized education possibilities exist;
- In Latvia, most of compliance managers perform in compliance management 1 to 5 years (66.7%) and only 22.2% have experience in this field for more than 5 years. In USA there are 24.1% compliance managers with the experience in compliance management 6 to 10 years and 45.1% have more than 10 years of experience.

The lower competence of compliance officers in Latvia may mean the inadequate understating about the competence requirements for the board members, and this conditions the high ratings, which are given for lower competence level.

Despite the fact, that compliance officers in Latvia consider that board members have enough understanding of the compliance risk, 31.1% of them have faced the fact that examiners have been encouraging more involvement from the board in compliance issues (table 9). Even higher percentage of compliance officers faces this fact in USA (48.2%). This shows that examiners, who are considered to be the

professionals in compliance management field, use to notice the lack of competence and attitude of boards members in compliance management area. This means the need to intensify the participation of board members in compliance management including the performing in this area and the deepening of their knowledge in theoretical and practical level.

Although examiners see the need to stimulate the involvement of board's members in compliance management field, only few of them have ever specifically criticized the perceived level of any banks' boards' understanding of compliance issues. As seen in table 10, in Latvia where were 5.6% respondents who faced this, and in USA where were 12.8% respondents. Such the results may be treated in two ways.

On the one hand, examiners often are dependent financially (or in some other form) on board's decision, and this means they tend not to criticize the board member. On the other hand it may mean that examiners have no clear view whether the board members have some specific misunderstanding about compliance.

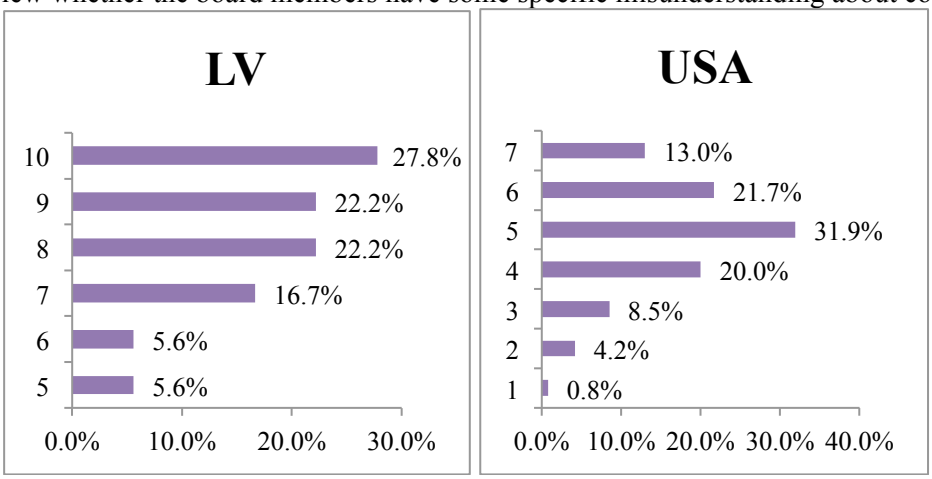

Figure 1. The comparison of distribution of answers to question "How would you rate your board of directors' understanding of the compliance risk facing your institution?" in Latvia and USA

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012 and American banking association's compliance survey in 2009

In other words, the presumption may be made that examiners notice the not high enough level of board members' competence in compliance management, but they cannot accentuate any specific area where board members' competence is critically low.

Table 9

The comparison of distribution of answers to question "Have examiners been encouraging more involvement from your board in compliance issues?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	31,3%	48,2%	-17,0%
No	62,5%	51,8%	10,7%
Other:	6,3%	-	-
No examiners so far	6,3%	-	-
Missing	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

The results presented in table 11 allow identifying the main topics of compliance officers, which are presented to boards. In the USA the dominant topic (mentioned by 84.1% of respondents) is anti-money laundering (AML), because it is one of the main areas in compliance risk management from the perspective of banking supervision institutions, which form the compliance management practice in banks. Other popular topic in USA presented to the board is fair lending (50.2%), which is more relevant for the banks themselves, as this is one of the tools for income generation and competitiveness control.

In Latvia there are two main topics for boards from compliance officers: AML and MiFID. These two topics are mostly initiated by Latvian banking supervision institution, which follows the guidelines from banking supervision authorities in European Union level. In addition to those two above mentioned topics,

the compliance officers in Latvia use to present additional topics for board, such as personal data protection, consumer's rights, progress reports on audit recommendation implementation, general compliance issues, risk management or upcoming compliance issues.

Table 10

The comparison of distribution of answers to question "Have examiners ever specifically criticized the perceived level of your board's understanding of compliance issues?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	5,6%	12,8%	-7,2%
No	83,3%	87,2%	-3,9%
Other:	11,1%	-	-
Compliance reports/risk assessments	5,6%	-	-
No examiners so far	5,6%	-	-
Missing	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Table 11

The comparison of distribution of answers to question "What topics do you regularly present to your board?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
AML	52,6%	84,1%	-31,5%
MiFID	52,6%	-	-
Fair lending	-	50,2%	-
Other:	52,6%	49,6%	3,0%
All compliance responsibilityareas	5,3%	-	-
Ongoing important activities	5,3%	-	-
None	5,3%	-	-
Personal data protection, consumer's rights	5,3%	-	-
Progress report on audit recommendation implementation	5,3%	-	-
Regularly are presented reports on general compliance issues	5,3%	-	-
Regulatory compliance, privacy, complaints, etc.	5,3%	-	-
Risk management	5,3%	-	-
Summary (no specific reports for separate topics)	5,3%	-	-
Upcoming compliance issues	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Significant differences in compliance management realization in Latvia and USA is noticed in case of compliance functions allocation. In USA 80.0% respondents indicated that their bank hold non-management employees outside of the compliance function responsible for their performance of compliance duties in connection with their own jobs, while in Latvia there were only 26.3% respondents (table 12). This means that in USA exists much higher level of compliance management functions allocation between bank's employees, and the separate compliance functions are matched to the other functions in banking, which may be performed by other employees who are not directly related to compliance management.

In Latvia such the function allocation is rather unusual practice and this may be related with the fact that compliance management in Latvia is not widely developed; it has less interests' area than in USA banks, so there are smaller need to incorporate compliance functions into the functions of other employees.

Bearing in mind that compliance management in USA is supposed to be treated for Latvian banks as a guideline in compliance management improvement, it can be presumed that function allocation will be more

and more common thing in Latvian banks, and more employees will be involved in compliance management area. This process might be strongly fastened by banking supervision institutions through the changes in supervisions standards and requirements for banking.

Though compliance officers in Latvia indicate than their bank rarely hold non-management employees outside of the compliance function responsible for their performance of compliance duties in connection with their own jobs, but most of them (77.8%) accent that compliance duties are explicitly included in employee job descriptions. In this case the Latvian banks are even stricter than USA banks where only 63.4% of respondents see the explicit inclusion of compliance duties in employee job descriptions.

Table 12

The comparison of distribution of answers to question "Overall, does your bank hold non-management employees outside of the compliance function responsible for their performance of compliance duties in connection with their own jobs?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	26,3%	80,0%	-53,7%
No	73,7%	20,0%	53,7%
Other	-	-	-
Managers of units	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Such the differences in research results presume the fact that compliance officers in Latvia differently understand employees functions worth to be treated as compliance duties. Other important notice in this case is that there may be the practice for employees in Latvia to pay less attention to their formal duties in job descriptions, and for this reason their actual performance not always matches the formal duties.

In USA the formal duties are expected to be more significant in case of employee's results assessment, so the compliance duties are included in job descriptions only then they are really needed and agreed between the employee and manager.

Table 13

The comparison of distribution of answers to question "Are compliance duties explicitly included in employee job descriptions?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes, in most employees' job descriptions	77,8%	63,4%	14,4%
No, we have job descriptions, but compliance isn't included	22,2%	22,4%	-0,2%
No, because our organization doesn't use written job descriptions	-	14,2%	-
Missing	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

The survey results in table 14 show that in Latvia an employee's compliance record individually tracked and recorded in any way more often than in USA (respectively 73.7% and 44.2%). This allows stating that compliance management in Latvian banks is more related to employees' performance control rather than financial flow and performance efficiency control. This might be one of the most important differences in compliance management between Latvia and USA. In USA the more attention is paid to compliance risk management and the individual employee's performance record is treated as less important. Such the difference, once again, may be related to the different size of banks in Latvia and USA: in USA banks the average number of employees is much bigger than in Latvia and this means than individual employee has less importance in compliance risk than in Latvia.

The same difference, which may be related with the difference in size of banks, is noticed in case of employee's compliance record usage (table 15). In Latvia the dominant usage of employee's compliance record is the course of formal annual employee review (this reason was mentioned by 63.2% respondents in Latvia and 48.1% in USA).

Such the situation may allow stating that in Latvia the bigger part of bank's employees face the compliance management area and have some practical and/or theoretical competence in this field. But this presumption is contrary to the above mentioned fact that in Latvia only about ¼ respondents mentioned that their bank hold non-management employees outside of the compliance function responsible for their performance of compliance duties in connection with their own jobs.

Table 14

The comparison of distribution of answers to question "Is an employee's compliance record individually tracked and recorded in any way?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	73,7%	44,2%	29,5%
No	26,3%	55,8%	-29,5%
Other:	-	-	-
About serious breaches	-	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

The comparison of different results creates the need to pay more attention at this area of compliance management practice in Latvia, because it may be a significant vulnerability for compliance management development in Latvian banks. The big attention to compliance management issues in formal employees' annual reviews and minimal performance of employees in day-to-day compliance management realization create the functional incompatibility and this may condition the misunderstanding of general compliance risk management matter and compliance management's position in bank's organizational structure.

Table 15

The comparison of distribution of answers to question "Is an employee's compliance record weighed in the course of formal annual employee reviews?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
Yes	63,2%	48,1%	15,1%
No, we have formal reviews, but compliance is not included	10,5%	44,4%	-33,9%
No, because our organization does not conduct formal reviews	10,5%	7,8%	2,7%
Other:	10,5%	-	-
Currently it has limited/formal impact	5,3%	-	-
With few exemptions, compliance is not included in the annual rev.	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

Table 16

The comparison of distribution of answers to question "When an employee has routinely mishandled compliance tasks, what response has your organization taken?" in Latvia and USA

	LV	USA	LV vs USA difference, in percent points
A supervisor has informally retrained the employee	31,6%	67,2%	-35,6%
The employee has been reassigned to an area with fewer compliance burdens	-	9,8%	-
The employee has been given a verbal warning	78,9%	54,4%	24,5%
The employee has been terminated	36,8%	23,8%	13,0%
The employee has received formal compliance training	68,4%	69,9%	-1,5%
The employee has been penalized financially	21,1%	7,6%	13,5%
Other:	5,3%	-	-
Several options depending on case	5,3%	-	-

Source: Survey results of Latvia's commercial banks in December, 2011 and January 2012, n=19 and American banking association's compliance survey in 2009

As seen in table 16, the consequences of inappropriate performance in compliance management are the same in Latvia and USA, and are common to other banking areas: the main forms of response are a verbal warning (78.9% in Latvia and 54.4% in USA), formal compliance training (68.4% in Latvia and 69.9% in USA) and informal retraining of employee (31.6% in Latvia and 67.2% in USA). This means that in compliance management area the reaction to inappropriate performance is similar to the forms used in other fields and has no specific peculiarities.

5. CONCLUSIONS

Recent corporate governance empirical literature beyond traditional topics such as: board size and composition, performance and compensation, has focused on effectiveness of the banking boards. Regulatory recommendations alone are not sufficient to guarantee board and director effectiveness and banks should focus on two major drivers of board effectiveness. Board level drivers refer to size, composition, duality, committees, meetings, incentive schemes and management information reporting systems. Individual drivers refer to competencies and commitment of directors, who should develop and maintain appropriate level of expertise as the bank grows in size and complexity. Regarding compliance Corporate governance regulatory arrangements require from the boards two major things: 1) establishment of the compliance function and 2) oversight of the management of the bank's compliance risk. According risk regulations there should be a compliance framework and a common language to discuss risk issues. There is no evidence in literature that smaller boards in banks are more effective, and induce an increase in performance.

The analysis of the legal and regulatory requirements confirmed that Latvian regulator obliges the banking boards to perform compliance risk oversight by approving compliance risk management policy and at least once a year to assess the effectiveness of the compliance risk management. Regulator doesn't offer particular oversight framework or mechanism that would support implementation of the Board's operational objectives: improve challenge by Board decisions, improve ownership by Board of risk strategy, improve priority given by board to risk issues and improve the information flows to Board on risks

The empirical study confirmed that in general, banking boards in Latvia spend sufficient time to exercise their duties. 81.3 percent of responders indicated that the board meets weekly. Concerning the compliance risk oversight results are mixed. In Latvia the dominant compliance reporting form to the Board is a direct reporting (89.5%), which well respond to the Basel Committee recommendations. In USA the most common forms are reporting through the audit committee (40.8%) and direct reporting (32.5%). The reporting methods, frequency, format and content are not clearly defined and Boards in Latvia should consider how to improve the information flows to the Board on compliance risk. To improve ownership by Board of compliance risk strategy there should be on an annual basis compliance risk statement.

The compliance officer in USA banks is a more frequent participator of board meetings: 33.7% of responders in USA attend meetings of board of directors every meeting and 24.5% attend quarterly, while in Latvia the most often there are no persistent participation of compliance officer: 26.3% respondents specified that they only report the examination results, and 26.3% - at the board request only. The compliance officer in Latvia has a lower opportunity to interact with Board members. The establishment of Compliance Committee or sub-Committee at the Board level could serve as an additional alternative for the discussion of new or potential changes in the regulatory environment, and existing or potential compliance issues within Bank. The further research is needed regarding the role of the compliance committees in Latvian banking sector.

Banks' boards in Latvia directly review the compliance budget more often than in USA (respectively 50.0% and 23.7%). This can be treated in two ways: 1) positively-more serious involvement from board; 2) negatively-the focus on budget instead of results and organization.

Latvian banking Boards positively respond to the need of improvement of the Board members expertise in area of compliance risk management. The main forms of board education about compliance issues are formal presentation (78.9%), one-on-one meetings (52.6%) and background memos (47.4%). In the USA banks the dominant forms of education are also a formal presentation (82.1%) and background memos (36.0%), but the one-on-one meetings are much less popular (9.8%) than in Latvia. Instead of that, compliance officers in USA use a bigger diverse of education tools, such as videos, specialized newsletters and booklets.

Good understanding of the compliance risk by the Chairman of the Board (CEO) is promoting support to the compliance function in Latvia. 94.7 percent of responders confirm the consistent support from CEO. This is higher compare with US (88.6%).

Significant differences in compliance management in Latvia and USA is found in compliance function's allocation. In USA 80.0% respondents indicated that their bank hold non-management employees outside of the compliance function responsible for their performance of compliance duties in connection with their own jobs, while in Latvia there were only 26.3% respondents. This means that in USA exists much higher level of compliance management functions allocation between bank's employees, and the separate compliance functions are matched to the other functions in banking, which may be performed by other employees who are not directly related to compliance management.

Considering that compliance management in USA is supposed to be treated for Latvian banks as a benchmark, it can be presumed that further discussion regarding the differences found is needed among compliance officers and board members in Latvian banking sector. There is a room for the improvement in compliance risk oversight in banking boards in Latvia. Author offers systemic approach to compliance risk management and oversight that has been tested for more then ten years in different banks. Compliance management system and compliance program as compliance risk oversight tools are analyzed and described in the author's research papers (2012).

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CORPORATE INCOME TAX AGGRESSIVENESS IN CHINA: REGULATORY ENVIRONMENT AND OWNERSHIP IMPACT

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Abstract

Purpose – Corporate income tax aggressiveness, via aggressive tax planning behaviour, involves utilising the tax regime to reduce income tax paid. In 2008 China implemented its new Enterprise Income Tax Law with several major effects. First, the tax rate was reduced from 33 to 25 per cent. Second, this rate was applied to all enterprises, including foreign enterprises and enterprises with foreign investments. Finally, the reforms included enforcement of tax scrutiny to match the application of the 2007 Accounting Standards for Business Enterprises No.18 - Corporate Income Tax Accounting. This study addresses two questions regarding potential corporate responses to the statutory changes in tax rates and greater scrutiny by the tax office in China. Have the changes to the tax regulatory environment had an impact on the corporate tax aggressiveness of listed companies in China? Does the structure of ownership of these companies – i.e., state-controlled, private or foreign-invested – impact on the response to the changes?

Design/methodology/approach – China's 2007 implementation of its Accounting Standards for Business Enterprises No.18 - Corporate Income Tax Accounting and its 2008 implementation of its Enterprise Income Tax Law offer a 'natural experiment' opportunity involving both accounting standard and tax regime reforms in a transition economy. This study uses quantitative methods to examine the book-tax gap in light of the above research questions. It is based on effective tax planning, agency, tax avoidance and legitimacy theories. Data is comprised of a sample of 1900 companies listed on the Shanghai and Shenzhen Stock Exchanges with state-controlled, private or foreign-invested ownership characteristics. This provides 6287 firm-years of observations for the 2007 to 2010 period.

Findings – The results suggest that tax aggressiveness of listed companies as measured by the book-tax gap measure has reduced as a result of the 2008 Enterprise Income Tax reform. However, we find limited evidence to support claims that different ownership structures (state-controlled, private or foreign-invested ownership) have a significant relationship with tax aggressiveness in China.

Originality/value – Originality results from use of the 'natural experiment platform' and examination of changes in tax aggressiveness in China resulting from the introduction of its new accounting and tax regimes. The paper's contributions are: to demonstrate the effectiveness of China's 2008 tax reforms in limiting tax aggressiveness; and to add to the literature on the impact of ownership structure on tax aggressiveness. In the specific case of China this has received little attention to date. This information will be of use to tax regulators, investors and corporations.

Keywords: China, corporate income tax aggressiveness, regulatory environment change, ownership impact, transition economy.

1. INTRODUCTION

The ability of China's central government to raise revenues via taxation has traditionally been seen as poor, reflecting the devolvement of responsibility for collection to lower levels of government, widespread tax avoidance/evasion, and the provision of widespread tax relief (Deng & Smyth 2000). Not surprisingly, corporate taxes provide a significant share of China's tax revenues, representing 17.5 per cent of total

government tax revenues and 19.2 per cent of central government tax collections as of 2010 (National Bureau of Statistics of China 2011). This compares to a pre-GFC peak in the average share of corporate tax in total tax of just 10.6 per cent for OECD countries in 2007, a share which had declined to just 8.4 per cent as of 2009 (OECD 2011).

Taxes are (increasingly) seen as a significant motivating factor in corporate decisions (Lanis & Richardson 2010), a point that is particularly important given China's transition from a planned to a market-oriented economy. Thus, corporate income tax aggressiveness—aggressive tax planning behaviour that utilises the tax regime to reduce income tax paid—is a factor that China's central government must consider given its relatively heavy reliance on corporate tax revenues. In 2008 China implemented its new Enterprise Income Tax Law with several major effects. First, the tax rate was reduced from 33 to 25 per cent. Second, this rate was applied to all enterprises, including foreign enterprises and enterprises with foreign investments. Finally, the reforms included enforcement of tax scrutiny to match the application of the 2007 Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting.

China's 2007 implementation of its Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting and its 2008 implementation of its Enterprise Income Tax Law offer a 'natural experiment' opportunity involving both accounting standard and tax regime reforms in a transition economy. We use this opportunity to address two questions regarding corporate responses to China's statutory changes in tax rates and greater scrutiny of tax compliance by its tax office. Have the changes to the tax regulatory environment affected the level of corporate tax aggressiveness of listed companies in China? Does the structure of ownership of these companies—i.e., state-controlled, private or foreign-invested—impact on the corporate response to China's changes to its taxation regime?

To address the two research questions this study, which draws on effective tax planning, agency, tax avoidance and legitimacy theories, examines changes in China's listed companies' book-tax gap—the difference between the financial pre-tax income from financial reports and the taxable income reported to the tax authorities—associated with reform of its corporate taxation regime. Our use of the book-tax gap is consistent with other current research in this area that links tax aggressiveness to the book-tax gap (e.g., Desai & Dharmapala (2003; 2006; 2007; 2009), Jimenez-Angueira (2008), Hanlon & Slemrod (2009), Mills (1998), Moore (2007), Wilson (2007), Richardson & Lanis (2007), Rohaya, Nor'Azam & Barjoyai (2008), and Rego & Wilson (2010)). Data is comprised of a sample of 1,900 companies listed on the Shanghai and Shenzhen Stock Exchanges with state-controlled, private or foreign-invested ownership characteristics. This provides 6,287 firm-years of observations for the 2007 to 2010 period.

This paper derives its originality from use of a 'natural experiment platform' through its examination of the impact of China's new accounting and tax regimes on corporate tax aggressiveness in China. The paper therefore contributes to the existing literature in several ways. Primarily, it addresses the matter of the effectiveness of China's 2008 tax reforms in limiting tax aggressiveness. Additionally, it adds the literature on the impact of ownership structure on tax aggressiveness.

Most of the previous research in this area has been conducted in the U.S., and so the way tax aggressiveness operates in other countries has rarely been documented. Similarly, few studies have been conducted on whether tax aggressiveness displays different characteristics in transition economies to those shown in developed market-oriented economies. In the specific case of China this has received little attention to date. Finally, there is limited evidence of the extent to which variations in tax aggressiveness are caused by changes in the tax regulatory environment. Thus, the results in this paper will be of use to tax regulators, investors and corporations.

The rest of this paper is organised as follows. Section 2 provides the literature reviews and develops our hypotheses. Section 3 describes the research design. Section 4 reports the empirical results, and Section 5 presents conclusions.

2. LITERATURE AND HYPOTHESES

Business tax planning includes both tax saving and tax avoidance (Jin & Lei 2011), and thus spans a spectrum of activities that reduce the rate of corporate tax paid on earnings. To ensure clarity in our discussion, the related literature (e.g., that cited in Hanlon & Heitzman 2010) defines corporate income tax aggressiveness (often referred to as tax avoidance) as being at the more aggressive end of the spectrum of this set of tax planning behaviours. This business strategy has recently received increasing attention by researchers (Zheng & Han 2008; Desai & Dharmapala 2009). Perspectives on tax aggressiveness vary by

stakeholder group. Tax aggressiveness may be favoured by investors where it transfers value from the government to the firm, advancing shareholder's interests (Desai & Dharmapala 2009). However, tax aggressiveness and managerial efforts to divert value from shareholders may be intertwined, given inherent agency problems in publicly listed companies (Desai & Dharmapala 2009). Additionally, the tax authorities may attempt to enforce the tax regulatory environment by introducing initiatives and developing regulations to encourage corporate tax compliance, which will result in clearer interpretations of tax law, fewer tax audit interventions, lower opportunity and marginal costs, and improved certainty about tax risk (OECD 2009). Thus, corporate shareholders must find an effective way to communicate their tax planning preferences to corporate managers, especially under the circumstances of regulatory environment changes (Jimenez-Angueira 2008).

Existing literature laying the theoretical foundation for understanding tax aggressiveness within an agency framework argues that aggressive tax activities may result from an incentive for managers to exploit the tax function to extract private rents and increase their personal utility at the expense of shareholders' interests. Therefore, it is necessary to strengthen supervisory systems to limit these rents and so to decrease agency costs. Supervision systems normally embody inside and outside aspects. Inside supervision constrains agency problems through more effective corporate governance. Outside supervision relies mainly on stakeholders such as external auditors, government regulatory bodies and the media to improve corporate governance so as to reduce agency costs (Jin & Lei 2011). In transition and emerging market economies business behaviour is often influenced by factors related to internal governance and outside regulatory environment. Tax planning, as a designated business activity to maximise after-tax benefits, is affected by transition factors including ownership patterns and regulatory scrutiny from the government.

Although there is little intersection between tax aggressiveness, regulatory environment, and corporate governance studies, the results in the extant literature provide a theoretical link between the areas and an appropriate foundation to our empirical study of the interaction of regulatory environment, corporate governance and tax aggressiveness.

2.1 Related theories

Theories related to tax aggressiveness can mainly be located in the so-called theory of effective tax planning and in the theory of tax avoidance.

2.1.1 Theory of effective tax planning

As an important tax-related behaviour and financial activity, tax planning has received significant attention as a factor in corporate strategic management. It is associated with the processes of setting up and operating the enterprise, investing, and so on. Early tax planning theories focused on minimizing taxpayers corporate tax obligations—their explicit tax—through operational activities (Zheng & Han 2008). Although simple in idea and implementation, this traditional approach does not consider the costs, legality and variety of real constraints faced in meeting this objective, potentially resulting in risk and loss. To overcome such shortcomings, Scholes and Wolfson (1990) introduced the so-called 'theory of effective tax planning'. In the presence of perfect markets, the objectives of the traditional and effective tax planning frameworks are almost identical. However, given the existence of uncertainty and information asymmetry in the real world, their objectives began to differ. The core objective of effective tax planning theory is the maximisation of after-tax benefits. This requires consideration of the various types of costs and constraints related to achieving this goal. In doing so it emphasises that the proper goal of tax planning is not just tax minimisation, but is instead the optimisation of total tax burdens—including those that are able to be passed on to/saved from other parties. Thus, effective tax planning must consider the transactions of all parties, explicit taxes and implicit taxes, tax costs and non-tax costs. This theory therefore encourages corporations to trade off tax savings against non-tax costs in their choices of investment, financing, and compensation. This theory, which is based on the basic concepts and methods of modern contract theory, provides an analytical framework for corporations on how to achieve strategic objectives through tax strategy, and provides a classic paradigm within which to research and interpret corporate tax planning activities.

As proposed by Scholes & Wolfson (1992), effective tax planning has three key ideas that determine the optimal scale for tax planning under conditions of uncertainty and information asymmetry in incomplete markets. Firstly, effective tax planning requires that planners consider the tax implications for all parties associated with the transaction. From a contract perspective, these parties include employers, employees,

customers and the tax authorities. All contracting parties and their reactions should be taken into account during the tax planning process. Effective tax planning trades off benefits to all transactional parties to achieve long-term goals. Secondly, effective tax planning requires planners to not only consider explicit taxes—the tax burden for the enterprise as regulated by tax law and paid directly to the tax authorities—but also implicit taxes when making investment and financing transactions. Implicit taxes are an actual burden, but are not required to be paid to tax authorities under tax law. Instead implicit taxes take the form of reduced rates of return associated with the firm's inability to capture explicit tax savings (Callihan & White 1999). Thirdly, effective tax planning requires that planners consider all costs including non-tax costs. Tax savings are not necessarily the best or the most feasible solution, because tax is just one of many operating costs. Tax planning may lead to an increase in other transactional costs, called non-tax costs, thus tax planners should first trade-off tax savings and non-tax costs. For example, financial reporting costs are typical non-tax costs faced by listed companies, caused by the decrease of profits in the financial statements during tax planning. Earnings per share will decrease with the decline of profits in the financial statements, which may cause a fall in share prices and thus in the firm's value, increasing costs associated with capital market financing and increasing merger and acquisition risk. A decline in profits reported in the financial statements will also affect managers' interests, potentially causing inconsistencies to arise between the interests of managers and shareholders and thus increasing agency costs. Under conditions of information asymmetry, various stakeholders may make decisions based on the company's external financial reports. Management may give up substantial tax savings because of the impact on accounting profits, because they believe that while tax planning may increase cash flow, stock prices are affected by the disclosure of the accounting profit rather than cash flows. Therefore, the cost of financial reporting is an important factor to consider in tax planning. Non-tax costs caused by asymmetric uncertainty are also an important constraint to be considered in effective tax planning.

2.1.2 Theory of corporate tax avoidance

There are two major alternative perspectives derived from theories of corporate tax avoidance that underpin related empirical research. First, is a commonly-held view that corporate tax shelters are simply devices for achieving tax-savings but do not present other aspects of agency problems (Desai & Dharmapala 2009). Thus, managers conduct tax aggressive activities for the sole purpose of decreasing tax burdens, and investors believe that tax avoidance is a value-enhancing activity. For this reason managers should be both motivated to achieve and compensated for tax avoidance activities (Kim, Li & Zhang 2011). This view mainly considers the direct costs of tax avoidance such as managers' time and possible risk of detection. The representative paper of this view is that of Graham and Tucker (2006), who construct 44 corporate tax shelter cases, identifying that characteristics such as size and profitability are positively associated with the use of tax shelters and arguing that tax shelters may substitute for interest deductions in determining capital structure (Desai & Dharmapala 2009). Phillips and John (2003) argue that compensation for managers could motivate tax aggressive behaviours.

An alternative perspective is that due to the separation between ownership and control, corporate tax avoidance may reflect agency problems. Shareholders and board of directors try to find control mechanisms and incentives to reduce agency costs (Jensen & Meckling 1976). Therefore, with agency theory incorporated into explanations of tax avoidance behaviour, another view emerges. Under this alternative theoretical approach the focus is on the interaction of tax avoidance and the agency tension between managers and investors inherent in publicly listed companies. This view of tax avoidance is underpinned by theoretical foundations set by Slemrod (2004), Chen, KP & Chu (2005), Crocker & Slemrod (2005) and Desai, Dyck & Zingales (2007). For example, Chen, KP & Chu (2005) use a 'standard principal-agent model' to examine tax avoidance, finding that incentives to avoid tax are reduced by the costs associated with losses in internal controls that arise when management is compensated for engaging in risky tax behaviour. Crocker & Slemrod (2005) examine the compensation of tax directors and the effectiveness of tax penalties from the point of agency issues. They find that penalties applied to tax managers, rather than to shareholders, are more effective in reducing tax evasion. Desai and Dharmapala (2006), Desai et al. (2007), and other studies focus on the links between firms' governance arrangements and their responses to taxes. To summarise, corporate tax avoidance not only entails distinct costs, but these costs may outweigh potential benefits to shareholders of tax aggressiveness (avoidance).

2.1.3 PMLTA: the trade-offs of costs and benefits of tax aggressive behaviours

Based on the agency, effective tax planning and tax avoidance theories, Jimenez-Angueira (2008) develops a theoretical framework called 'profit-maximising level of tax-aggressiveness' (PMLTA) to determine the optimal level of tax aggressiveness for the firm. The traditional view of corporate tax avoidance argues that an increase in tax aggressiveness represents a wealth transfer, this being from the government to firms' shareholders. Thus any increase in the firms' value comes at the taxpayers' expense (Jimenez-Angueira 2008). Because of agency problems, shareholders must find an effective way to communicate their tax planning preferences to management. Therefore, Jimenez-Angueira (2008) proposes that through the corporate governance system shareholders must put in place incentives and controls that induce managers to take tax positions that result in a profit-maximizing level of tax-aggressiveness (PMLTA) given the specific tax regime. At such a level the marginal benefits of tax aggressive transactions are balanced against the marginal costs of those activities. In this case, the costs of tax-aggressiveness not only include transaction, non-compliance, and political costs, but also the related compensation and monitoring costs associated with the agency relationship. In particular, tax regime changes that reduce the potential for mangers to extract rents through tax-related activities will reduce the level of tax aggressiveness undertaken by firms.

2.2 Related empirical studies

This paper follows in the path of previous research such as Desai and Dhammika's (2009) study of the impact of tax avoidance on firm value, and Jimenez-Angueira'(2008) study of the effects of the interaction between tax environment changes and corporate governance on tax aggressiveness and market valuation. Previous research has also identified a set of characteristics that may provide a source of variation in measures of tax avoidance across firms. For example, Stickney and McGee (1982), Zimmerman (1983), Porcano (1986), Shevlin and Porter (1992), and Rego (2003) provide evidence on the association between tax avoidance and firm size. Gupta and Newberry (1997) identify that tax aggressiveness is associated with lower profitability, but higher leverage and capital intensity. Recent research shows that firms accused of using tax shelters are more profitable, and have larger book-tax differences, are more focused on foreign operations, subsidiaries in tax havens, more research and development expenditures, and less leverage (e.g., Graham and Tucker 2006; Wilson 2009; Lisowsky 2010).

With respect to the impact of ownership characteristics, several empirical studies explore how ownership structure affects corporate tax avoidance (Rego, S & Wilson, R 2010). Chen et al. (2010) provide evidence that family-owned firms avoid income tax by less than non-family-owned firms because the dominant owner managers of family-owned firms want to forgo tax benefits to avoid concerns by minority shareholders that tax avoidance masks rent extraction by the family owner-managers. Badertscher et al. (2010) suggest that public firms engage in more book-tax nonconforming tax avoidance than private firms, while private firms engage in more book-tax conforming tax avoidance. Rego (2003) demonstrates that multinational corporations with more extensive foreign operations are more tax aggressive.

In relation to the above research, limited empirical research on tax aggressiveness has been conducted in China. Wang (2002) analyses the determinants of the effective tax rate of listed companies in China. Wang and Wu (2007) study the impact of the statutory tax rate on the effective tax rate of listed companies after changes in regional tax policies in 2002. Zheng and Han (2008) use a sample of private and state-controlled listed companies in China over the period 2002-2005 to empirically test the impact of ownership structure on tax planning strategies. Their empirical results suggest that levels of tax avoidance differ significantly, and that state-controlled listed companies tend to put in place conservative tax avoidance behaviours as compared to those of private listed companies. However, this research predates China's recent changes to both accounting standards and its corporate tax regime.

2.3 Hypothesis development

Since 2006, China has undertaken many major reforms of legislation and regulation, of which the two of interest in this paper are its revision of accounting standards through its 2007 implementation of its Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting and tax legislation through its 2008 implementation of the Enterprise Income Tax Law. The revised Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting imply significant changes to

the technical standards required in accounting recognition and measurement for revenue, expenses and losses, and thus to the recorded differences between financial income before tax (in accordance with GAAP) and taxable income. Under the changes introduced in the 2008 Enterprise Income Tax Law, the tax regulatory environment has become more stringent. Additionally, due to a lowering of the income tax rate to 25 per cent, incentives for tax avoidance may also have been reduced. Therefore, the following hypothesis is made:

Hypothesis 1: As a result of the 'Enterprise Income Tax' reform of 2008, the tax aggressiveness of China's listed companies as measured by the book-tax gap measure has reduced.

This hypothesis is designed to examine whether corporations decreased their tax aggressiveness following the statutory change in tax burden and the greater scrutiny of the tax office in 2008, by considering changes in the average book-tax gap between the pre-regulatory change period and post-regulatory change periods.

Regulatory environment and agency theories underpin this hypothesis. Consistent with Desai et al.'s (2007) theoretical predictions, the level of tax aggressiveness would be affected: (1) directly, by the increased costs imposed by the greater scrutiny applied under the new tax regime; and (2) indirectly, by the resolution of tax-related agency issues that would act to bring tax aggressiveness closer to its optimal level. These effects are expected to be larger for firms with greater pre-existing conflicts of interest related to the tax function that, by assumption, were firms with weak-governance structures (Jimenez-Angueira 2008).

Two aspects of ownership structure are considered in this study. The first is who hold the company's shares, which references the quality of the ownership structure. The second is the proportion of shares held by each kind of shareholder, which captures control of the ownership structure (Zheng & Han 2008). With the reform of shareholder structure and corporatization of what were previously state sole proprietorships China's state-controlled and non-state-controlled listed companies can both be publicly listed on stock exchanges. Forms of enterprise have become more diversified, following styles established for western corporations, including family-owned firms and non-family-owned firms, and foreign-invested companies. Thus, the following two non-directional (Chen et al. 2010) hypotheses are made to test the impacts of different ownership characteristics on tax aggressive behaviours. This reflects that differences in ownership structure may imply different non-tax costs, and lead to different trade-offs in the benefits and costs of tax aggressive activities. This also addresses the potential differences in impact of the regulatory reforms on domestic and foreign-invested listed companies and their tax aggressiveness. In particular, the 2008 reforms unified at 25 per cent two systems of corporate taxation: the previous tax rate of 33 per cent for domestic companies; and the two years' of tax exemption and three years' of a preferential tax rate for foreign-invested companies.

Hypothesis 2a: State-controlled listed companies exhibit a systematically different level of tax aggressiveness compared to non-state-controlled listed companies.

Hypothesis 2b: Foreign-invested companies exhibit a systematically different level of tax aggressiveness compared to domestic companies.

These hypotheses relate to how different forms of ownership and control may affect tax aggressiveness. Legitimacy and political cost theories may support this hypothesis. In China, state-controlled listed companies tend to receive more attention from their stakeholders, and so have larger political costs than non-state-controlled listed companies. Consistent with Chen, Lobo and Wang (2010) and Zheng and Han (2008), China's state-controlled and non-state-controlled companies differ in their tax incentives. In particular, state-controlled companies may be less tax sensitive because their taxes are paid back to the ultimate shareholder—the government. A tax on state-controlled companies' profits simply reduces the amount of profits otherwise distributable to the government, and therefore appears simply to move money from one arm of government's pocket to another. Sometimes, the CEO of a state-controlled company may be given 'credit' for taxes paid, if the government chooses to use that as a measure of how much the state-controlled company contributes to society. Non-state-controlled companies, however, are likely to be more tax aggressive because their focus is more on maximising (private) shareholders' value. Thus, as per Zheng and Han (2008), state-controlled listed companies may be expected to undertake more conservative tax avoidance strategies than private-controlled listed companies.

The new 2008 enterprise income tax reform in China may have impacts on foreign-invested listed companies considering their previous preferential tax policy will be progressively removed. The benefits of tax aggressiveness are expected to be higher for foreign-invested companies' owners than for owners in domestic firms (although political costs may be higher too). However, given differences in corporate culture, business philosophy and other issues, it is not clear whether foreign-invested firms will be more or less tax aggressive than domestic firms.

3. SAMPLE AND RESEARCH DESIGN

3.1 Sample selection

The choice of 2007 to 2010 as the sample period reflects requirements for China's listed companies to adopt the Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting in 2007, and then from 2008 to operate under the new Enterprise Income Tax Law. This study selects and defines 2007 as the pre-change tax regulatory environment period, and 2008 to 2010 as the post-change tax regulatory environment period. This makes it possible to conduct comparable analysis, choose proxies and refer to previous international research findings.

Table 1

Composition and characteristics of Sample Companies

	Number	Per cent
Sample selected from Shanghai and Shenzhen Stock Exchanges	2,128	100.00
By type of stock		
A	1,956	91.91
B	22	1.03
AB	84	3.95
AH	66	3.10
By ownership characteristics		
State-controlled	758	35.59
Non state-controlled	1,370	64.41
Less:		
Financial corporations	38	
Companies marked with ST, SST, S*ST	167	
Companies whose ultimate controllers cannot be decided	23	
Total companies left in sample	1,900	

For this study the minimum number for the sample was determined by Green's (1991) rule-of-thumb. 2,128 listed companies were sampled from the current Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) for the 2007 to 2010 period. The panel data set involves matched company observations for years within the sample period and is unbalanced because some companies were listed after 2008. The ultimate controllers refer to the ultimate shareholders who have the largest proportion of equity (Jin & Lei 2011). Companies include foreign-invested listed companies and domestic listed companies, with the latter being divided between state-controlled and non-state-controlled companies. Of the listed companies sampled there are 758 state-controlled companies and 1,370 non-state-controlled companies. From the 2,128 in the original sample, financial service companies are excluded because of differences in their financial reporting data. Companies whose ultimate controllers cannot be decided or are unknown are also excluded from the sample. Firm-years with missing or insufficient data and abnormal values are also deleted. Because Special Treatment (ST) and Particular Transfer (PT) listed companies usually have poor profitability or even have no profits, the income tax expense behaviour of these companies will not be consistent with that of profitable companies' tax and so these companies have been deleted from the sample. Companies whose name has changed are also excluded. The final sample size is 1,900 companies.

3.2 Data collection

Annual financial reporting data and company financial reports for the years 2007 to 2010 provide the major data sources for the sample. Data has been collected to develop and calculate the proxies from the following three main sources:

Financial databases in Australia and China:

- OSIRIS, developed by BvD (Bureau van Dijk), a comprehensive database of listed companies, banks and insurance companies around the world
- CSMAR, developed by Shenzhen Guotaian Information Technology Company Limited (GTA) in China
- OneSource.

An audit of the data was undertaken. Where inconsistencies between the data presented in OSIRIS and original Chinese source material (e.g., annual reports) was determined a manual collection of additional data was undertaken and the data set corrected. Inconsistencies mainly reflected the use of Hong Kong accounting standard versions of annual reports for companies listed both in Hong Kong and on one of the mainland exchanges. In this situation data from the mainland version of the annual report was used to ensure consistency with the remaining company data.

Additional information was derived from the following financial and economic websites:

- China Stock Markets Web: http://www.hkex.com.hk/eng/index.htm
- Shanghai Stock Exchange (SHSE) website: http://www.sse.com.cn
- Shenzhen Stock Exchange (SZSE) website: http://www.szse.cn
- Chinese Listed Companies Information website: http://www.cnlist.com
- Juchao Information website: http://cninfo.com.cn
- China Infobank, a web-based online service providing Chinese news, business and legal information (Shan 2009).

3.3 Dependent variables: measurement of tax aggressiveness

As noted above, several measures of tax aggressiveness have been utilised in previous research. Considering the Chinese environment, and based on previous research studies on China, this study uses three alternative measures.

Permanent Book-tax difference (gap): Prior research (Shevlin 2001; Weisbach 2001; Rego, S & Wilson 2009) has shown that temporary book-tax differences reflect earnings management via pre-tax accruals (e.g., Phillips, J, Pincus & Rego 2003; Hanlon 2005) and permanent book-tax differences are more reliable in measuring tax reporting aggressiveness than total or overall book-tax differences (Khurana & Moser 2009). Therefore, consistent with Frank, M, Lynch and Rego (2008), Rego and Wilson (2009), and Khurana Moser (2009), this study measures and calculates the permanent book-tax difference (*P_BTD*) as follows:

$$P_BTD_{it} = \frac{\left(BI_{it} - \frac{CTE_{it}}{STR} - \frac{DTE_{it}}{STR} \right)}{Assets_{it-1}}.$$

The permanent book-tax difference is calculated as the firm's pre-tax book income (*BI*) less an estimate of taxable income gro0ssed-up by the statutory corporate tax rate and deferred tax expense grossed-up by the statutory corporate tax rate. Taxable income is estimated by current federal tax expense (*CFTE*) divided by the corporate statutory income tax rate (*STR*). Deferred income tax expenses (*DTE*) grossed-up by the corporate statutory tax rate (*STR*) are subtracted. The measure of permanent book-tax differences is scaled by beginning period total assets (*Assets*).

D-D Book-tax difference (gap): The Desai-Dharmapala measure is the residual from a regression of the Manzon-Plesko book-tax difference on total accruals. As the book-tax difference can be a result of both earnings management and tax planning, the Desai-Dharmapala measure removes, at least partially, the book-tax difference caused by earnings management activities (Chen, S et al. 2010). To quantify the degree to which earnings management is responsible for the gap, this study adopts Desai and Dharmapala (2006)'s

approach to isolate the component of total book-tax difference (BT_{it}) that is attributable to earnings management by using data on accruals. The ordinary least squares (OLS) regression is run:

$$BT_{it} = \beta_1 TA_{it} + \mu_{it} + \varepsilon_{it}.$$

Where, BT_{it} is book−tax gap for firm i in year t, scaled by the lagged value of assets; TA_{it} is total accruals for firm *i* in year *t*, scaled by the lagged value of assets. The residual from this regression (the component of BT_{it} that cannot be explained by variations in total accruals, and hence by earnings management) can be interpreted as a measure of tax aggressive activity. This study denotes this residual book-tax gap by DD_BTD_{it}, where:

$$DD_BTD_{it} = \mu_{it} + \varepsilon_{it}.$$

GAAP ETR: The firm's effective tax rate is as defined under Generally Accepted Accounting Principles (GAAP) (hereafter, *GAAP_ETR*), which is total tax expense (current plus deferred tax expense) divided by pre-tax accounting income (adjusted for special items):

$$GAAP_ETR_{it} = \frac{\left(\text{Current income tax expense}_{it} + \text{Deferred income tax expense}_{it}\right)}{\text{Pre-tax accounting income}_{\text{it-1}}}.$$

Originally proposed by Surrey (1973), the *GAAP_ETR* is a widely-used measure of tax planning effectiveness. This measure reflects aggressive tax planning through permanent book-tax differences. Examples of such tax planning are investments in tax havens with lower foreign tax rates (provided that foreign source earnings are classified as permanently reinvested), investments in tax-exempt or tax-favoured assets, and participation in tax shelters that give rise to losses for tax purposes but not for book purposes (see Wilson, 2009 for a discussion of such shelters).

3.4 Independent variables: identifying tax regulatory environment changes and measuring different ownership structure characteristics

Post∆reg. To address the difficulty in identifying the tax regulatory environment changes, the sample was restricted to the periods from 2007 to 2010 and was divided into two parts: the pre-tax-environment-change period (year 2007), and the post-tax-environment-change period (years 2008–2010). The new income tax law and new accounting standard in the post-tax-environment-change period led to the increase in tax enforcement. It is assumed that the pre-tax-environment-changes (or low-tax regulation) period included the years when corporate tax aggressiveness was presumably high, and the post-tax-environment-changes (or high-tax regulation) period when the tax office focused its efforts towards enforcement of the new tax law. So, firms' incentives or intentions to tax aggressive behaviours under the new tax regime will be reduced. By identifying the two periods to implement the pre- and post-tax-environment-changes design, it is helpful to test the main effect of the tax environment changes. In the empirical model, this study uses '*PostDreg*' in the form of a dummy variable—equal to 1 for the post-tax-environment-change period (years 2008–2010) and 0 otherwise.

***State*.** It is arguably difficult to form a generally accepted definition of a state-controlled listed company in China. According to the *Corporation Law* in China, state-controlled listed companies are defined as those companies directly or indirectly owned or controlled by state asset management bureaus or other state-owned companies controlled by the central government or local governments holding more than a 50 per cent of shares, or those holding less than 50 per cent of the shares, but having real controlling rights or a significant impact on the board of directors. Listed non-state-owned companies are defined as those companies controlled by private investors, excluding township-village enterprises whose ultimate controlling shareholder cannot be identified (Zheng & Han 2008). According to La Porta et al. (1999), an ultimate controlling shareholder can be identified via the pyramid structure. However, identifying ultimate controlling shareholders through pyramid shareholding schemes is not easy, especially in the Chinese context (Liu &

Sun 2003). Following previous studies, the empirical model of this study uses the variable of 'State' which represents the proportion of shares held by the state to indicate the ownership type.

***Foreign*.** As with the definition of a state-controlled corporation the classification for foreign-invested listed companies is also complicated. Since China's reform and opening up policies which attracted foreign investments in the early 1980s, foreign-invested companies have gradually developed. According to the current classification by the SAIC (State Administration of Industry and Commerce), foreign direct investment in china is divided into four categories, namely Sino-foreign equity joint venture (set up by Chinese enterprises and foreign enterprises through joint investments), Sino-foreign co-operative joint venture (set up by Chinese enterprises and foreign enterprises in accordance with the contractual relationship and the profits are distributed according to agreements rather than proportion of shares), wholly foreign-owned enterprises (completely invested in by foreign enterprises), and foreign-funded companies limited by shares (a company with joint investment shares or wholly-owned foreign investment shares).

Generally speaking, listed companies in China refer to the corporations whose shares can be publicly circulated on stock exchanges after approval by the China Securities Regulatory Commission. Non-listed companies include two forms: limited liability companies and companies limited by shares (corporations). Listed companies must be corporations, but not all corporations are listed. In practice, joint ventures whose controlling shareholders are not foreign investors can be listed on China's two stock exchanges as foreign-invested listed companies. However, wholly foreign-controlled enterprises are not permitted to be listed on China's stock exchanges.

Currently, China's foreign-invested listed companies are of two types: B-share corporations which are listed on China's stock exchanges and issues shares for foreign investors; and those listed on overseas stock exchanges in the form of H-share (Hong Kong) and N-share (New York) corporations. Unlike direct investments such as Sino-foreign equity joint ventures, Sino-foreign co-operative joint ventures, wholly foreign owned enterprises, and foreign-funded companies limited by shares, these two types of listed companies are indirect foreign investments. Because foreign investors who buy shares are only general subscribers, not the promoters of the company, not involved in the preparation of the company, and do not appoint representatives to participate in company operation and management, they become the shareholders only through the subscription to these issued tradable shares. And, due to the free transferring of shares and high liquidity of the stock, the foreign shareholders change frequently even though the proportion of foreign shares in the registered capital of enterprises remains stable. Therefore, B-share, H-share, and N-share listed companies are foreign-invested corporations, but are not regarded as joint ventures according to China's Corporation Law. That is also the reason why these B-share, H-share, and N-share listed companies are not subject to the 'Law of the People's Republic of China on Income Tax of Enterprises with Foreign Investment and Foreign Enterprises', instead being subject to the 'Provisional Regulations on Enterprise Income Tax' with the implementation rate of 33% before the implementation of the new corporation income tax law of 2008. In practice, they are still eligible for some preferential tax policies because they are foreign investments in accordance with China's policies that seek to attract foreign investments. For example, for most of these kinds of listed companies, their nominal tax rate is 33 per cent, but their real tax rate is only around 15 per cent through implementing tax exemption or so called preferential policy of financial returns from the income tax revenue for the local governments. The empirical model of this study uses the variable of 'Foreign' which represents the proportion of shares held by foreign investors to indicate the ownership type. This proportion includes non-tradable shares held by foreign investors and tradable B, AB and AH shares.

3.5 Model development

The following model has been constructed to test the hypotheses:

$$P_BTD_{it} = \alpha + \beta_1 Post\Delta reg_t + \beta_2 State + \beta_3 Foreign + \beta_4 PP\&E_{it} + \beta_5 INTA_{it} + \beta_6 Salesgr_{it} + \beta_7 OCF_{it} + \beta_8 R\&D_{it} + \beta_9 Leverage_{it} + \beta_{10} \ln(TA_{it}) + \mu_{it} + \varepsilon_{it}$$

The coefficient on *Post*Δ*reg* indicates the average effect of the recent tax environment changes on tax aggressiveness. A negative coefficient would suggest that, on average, regulatory changes have been effective in curbing tax-aggressiveness in the high-regulation (post-tax reform) period. On the other hand, a positive coefficient would indicate that, on average, the changes in the tax environment did not control the

increasing trend in the book-tax difference, and hence tax-aggressiveness, in the short period after the tax environment changes took place (Jimenez-Angueira 2008). The coefficient of *State* will test for a significant relationship between the level of tax aggressiveness and the percentage of state-controlled shares. The coefficient of *Foreign* will test for a significant relationship between the level of tax aggressiveness and the percentage of foreign-invested shares.

Consistent with Jimenez-Angueira (2008), to isolate the effect of the tax environment changes from other confounding factors many control variables were included in the regression model. To control for differences because of mechanical differences between GAAP and tax statutes, the equation includes the following variables: *PP&E, INTA,* and *Salesgr.* We also include the variables *OCF*, *R&D*, *Leverage* and *ln(TA)*, based on the inclusion of these variables in a number of the studies cited above.

The *PP&E* variable controls for differences in depreciation schedules between tax regulations (set by statute) and GAAP (based on managers' judgment) (Jimenez-Angueira 2008). These variables should be positively associated with *P_BTD*. The variable *INTA* controls for differences in the treatment of intangibles, including goodwill, arising from different rules for financial and tax reporting purposes, and is expected to be positively associated with *P_BTD*. *Salesgr* should exhibit a positive relationship with *P_BTD* due to differences in revenue-recognition rules between GAAP and the tax statute that generate timing differences. The variable *OCF* (operating cash flow) controls for the firms' profitability. A positive association with *P_BTD* is predicted because more profitable firms potentially have a greater incentive to engage in tax planning activities and reduce their tax burdens. The variable *R&D* controls for the double impact that qualified R&D activities have on the firm's taxable income due their deductibility and the availability of the R&D credit (Gupta and Newberry 1997; Hanlon, Mills, and Slemrod 2007). The variable *Leverage* controls for the effect of firms' financing decisions on tax-aggressiveness (or tax planning in general). A positive coefficient on leverage would be consistent with highly leveraged firms benefiting from interest expense deductions relative to their counterparts. Alternatively, a negative association between leverage and *P_BTD* would be consistent with firms using long-term debt as a substitute for other tax planning alternatives (Graham and Tucker 2006). Firm size, *ln(TA)*, was included to control for the effect of size on tax aggressiveness. A positive coefficient on *ln(TA)* would indicate a positive association between tax aggressiveness and size, which would be consistent with the findings of Mills, Newberry, and Trautman (2002) that larger firms exhibit larger book-tax differences and with the argument that larger firms have greater economies of scales in terms of tax planning (Rego 2003). Alternatively, a negative coefficient on *ln(TA)* would be consistent with the political cost hypothesis, which suggests that larger and more successful firms are more visible and subject to greater public scrutiny (Watts and Zimmerman 1986, 235).

Panel A of Table 2 presents two measures of the correlation between both alternative dependent and independent variables. Because no correlation coefficient between the independent variables is greater than 0.8, and Variance Inflation Factors (VIFs) are relatively low and smaller than 10 (Panel B), we conclude that serious multicollinearity problems are unlikely to be present in the regression model.

Panel A of Table 2 suggest that the three major indicators for tax aggressiveness are significantly related to three independent variables: *Post*Δ*reg*, *State*, and *Foreign*. For instance, *P_BTD* has a negative significant relation with *Post*Δ*reg*, which indicates that after the '2008 new tax reform' the level of tax aggressiveness became reducing. Both *P_BTD* and *DD_BTD* have a significant and negative relationship with *State*, which suggests that state-controlled ownership has a negative impact on tax aggressiveness. Both *P_BTD* and *DD_BTD* also have a significant and negative relationship with *Foreign*, which suggests a negative influence for foreign-invested ownership on tax aggressiveness. *Leverage* has a significant correlation with *P_BTD*, *DD_BTD* and *GAAP_ETR*, suggesting that financial leverage impacts the level of tax aggressiveness. *INTA* is also statistically significantly related to *P_BTD* and *DD_BTD* suggesting that intangible assets may affect tax aggressiveness.

This study uses three regression techniques: panel OLS (Model 1), panel fixed-effects (Model 2) and backward stepwise regression (Model 3). The results of the Hausman test provide a p-value that is less than 0.05, indicating that a fixed-effects model (Model 2) is preferred. A backward stepwise regression analysis (Model 3) is conducted to delete any candidate variables that are not statistically significant.

Table 2

Multicollinearity tests

Panel A: Spearman (upper triangular) and Pearson (lower triangular) correlation matrices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	1.000	0.992**	-0.343**	-0.031*	-0.069**	0.038**	0.073**
(2)	0.508**	1.000	-0.338**	-0.034**	-0.057**	0.038**	0.109**

(3)	-0.008	-0.007	1.000	-0.061**	0.021	-0.042**	-0.048**
(4)	-0.019	0.004	0.001	1.000	-0.238**	-0.036**	-0.053**
(5)	-0.010	0.003	-0.012	-0.221**	1.000	0.053**	0.135**
(6)	0.020	0.022	-0.009	-0.025	0.019	1.000	0.018
(7)	0.235**	0.206**	-0.004	-0.023	0.091**	0.064**	1.000
(8)	0.113**	0.102**	-0.003	0.038**	0.042**	0.028*	0.362**
(9)	-0.001	0.000	0.002	0.000	0.024	-0.006	-0.009
(10)	0.517**	0.437**	-0.003	0.001	0.057**	0.057**	0.494**
(11)	0.050**	0.043**	-0.005	0.048**	-0.022	-0.032*	-0.016
(12)	0.195**	-0.724**	0.002	-0.028*	0.001	-0.005	-0.002
(13)	-0.017	0.012	0.005	0.017	0.261**	0.153**	-0.013

(1)	(8)	(9)	(10)	(11)	(12)	(13)
(2)	0.099**	-0.005	0.193**	0.096**	-0.341**	-0.127**
(3)	0.113**	-0.010	0.222**	0.093**	-0.319**	-0.113**
(4)	-0.019	0.068**	0.066**	-0.067**	0.099**	0.105**
(5)	0.053**	-0.038**	0.019	0.055**	-0.055**	0.010
(6)	-0.036**	-0.040**	0.035**	-0.042**	0.130**	0.227**
(7)	0.000	-0.095**	0.027*	-0.035**	0.011	0.148**
(8)	0.284**	-0.147**	0.290**	-0.078**	0.044**	0.052**
(9)	1.000	-0.030*	0.142**	0.102**	-0.064**	-0.150**
(10)	-0.006	1.000	-0.079**	0.037**	0.069**	-0.025*
(11)	0.191**	0.003	1.000	-0.021	-0.124**	0.022
(12)	0.045**	-0.002	0.017	1.000	-0.052**	-0.039**
(13)	-0.011	0.000	-0.081**	-0.013	1.000	0.426**
	-0.081**	-0.013	0.028*	-0.087**	0.002	1.000

Notes: (1) *P_BTD*; (2) *DD_BTD*; (3) *GAAP_ETR*; (4) *post*Δ*reg*; (5) *State*; (6) *Foreign*; (7) *PP&E*; (8) *INTA*; (9) *Salesgr*; (10) *OCF*; (11) *R&D*; (12) Leverage; (13) Ln(ta)

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Panel B: VIF diagnostics

Variables	Tolerance	VIF
(1) PostΔreg	.939	1.065
(2) State	.870	1.150
(3) Foreign	.969	1.032
(4) PP&E	.675	1.481
(5) INTA	.857	1.166
(6) Salesgrh	.999	1.001
(7) OCF	.748	1.337
(8) R&D	.991	1.009
(9) Leverage	.991	1.009
(10) Ln(TA)	.886	1.129
Mean VIF		1.138

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics and correlation

Table 3 provides descriptive statistics for all the variables used in the model and other additional measurements for tax aggressiveness. Panel A of Table 3 presents the basic statistics by year and Panel B by ownership and share type. With respect to indicators for tax aggressiveness – *P_BTD*, *DD_BTD* and *GAAP_ETR*, Panel A shows that the mean of *P_BTD* is 0.0202 during 2007 to 2010, suggesting that there is 0.0202 permanent book-tax difference relative to total assets. Similarly the mean of *DD_BTD* is 0.0177 during 2007 to 2010, suggesting that there exists a 0.0177 'Desai and Dharmapala' (2006) measured book-tax difference relative to (lagged) total assets. The degree of tax aggressiveness reduced after the 'new tax reform' in China because the mean of *P_BTD* decreased from 0.0253 in 2007 to 0.0033 in 2008, *DD_BTD*

declined from 0.0164 in 2007 to 0.0032 in 2008. In Panel B, the mean of *P_BTD* is 0.0158 for state-controlled companies, and is smaller than the mean of 0.0231 for non-state-controlled companies. The mean of *DD_BTD* is 0.0159 for state-controlled companies, and is smaller than the mean of 0.0188 for non-state-controlled companies. The mean of *GAAP_ETR* for state-controlled companies is 0.2565 and is 0.1823 for non-state-controlled companies. This suggests that state-controlled companies are conservative in terms of their tax aggressiveness as compared to non-state-controlled companies.

Table 3

Panel A: Descriptive statistics by year

	2007		2008		2009		2010		All years	
Variables	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
P_BTD	.0253	.1305	.0033	.2071	.0100	.0649	.0376	.1268	.0202	.1400
DD_BTD	.0164	.2353	.0032	.2066	.0100	.0643	.0358	.1324	.0177	.1683
GAAP_ETR	.2053	.4546	.1420	.3253	.1912	.5833	.2857	5.0484	.2116	2.8033
PostΔreg	.0000	.0000	1.0000	.0000	1.0000	.0000	1.0000	.0000	.7800	.4130
State	.2612	.2333	.2243	.2261	.1270	.2087	.0915	.1878	.1678	.2235
Foreign	.0497	.1249	.0474	.1251	.0414	.1175	.0397	.1148	.0440	.1202
PP&E	.3590	.3688	.3223	.2742	.3039	.2467	.3604	.8100	.3372	.5109
INTA	.0538	.1014	.0579	.0877	.0608	.1030	.0719	.1455	.0619	.1145
Salesgr	2.8896	53.1784	-1.0426	59.9757	8.0794	295.6984	1.8254	27.0696	2.9711	153.5631
OCF	.0652	.1848	.0511	.2602	.0833	.1700	.0628	.3132	.0658	.2448
R&D	.0006	.0032	.0011	.0067	.0015	.0090	.0024	.01514	.0015	.0101
Leverage	.5858	3.3305	.5025	.5148	.4847	.3612	.4501	.7060	.5004	1.6338
Ln(TA)	21.4159	1.1638	21.5213	1.2228	21.5235	1.2676	21.3891	1.4754	21.4586	1.3045

Panel B: Descriptive Statistics by ownership type and share type

Variables	Ownership Type				Share Type			
	State-controlled		Non State-controlled		A-Share		B, AB and AH Shares	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
P_BTD	.0158	.08353	.0231	.1669	.0204	.1449	.01751	.0728
DD_BTD	.0159	.08323	.0188	.2057	.0176	.1749	.01784	.0723
GAAP_ETR	.2565	4.4255	.1823	.4350	.2187	2.9355	.1395	.3272
PostΔreg	.7600	.4280	.8000	.4030	.7800	.4120	.7500	.4310
State	.2838	.2443	.0920	.1704	.1581	.2183	.2669	.2503
Foreign	.0549	.1264	.0370	.1154	.0177	.0799	.3135	.1302
PP&E	.3735	.6391	.3135	.4042	.3350	.5200	.3596	.4062
INTA	.0606	.1173	.0628	.1126	.0608	.1081	.0733	.1662
Salesgr	7.1859	239.6726	.2157	37.8814	3.2355	160.9161	.2767	1.7978
OCF	.0805	.2512	.0562	.2401	.0640	.2472	.0842	.2186
R&D	.0014	.0098	.0015	.0103	.0016	.0106	.0006	.0029
Leverage	.5137	.1917	.4917	2.0953	.4965	1.7109	.5398	.1968
Ln(TA)	22.0526	1.4287	21.0702	1.0482	21.3314	1.1758	22.7610	1.7613

4.2 Regression analysis

Table 4 provides the regression results for the panel OLS (Model 1), panel fix-effects (Model 2) and backwards stepwise (Model 3) models. Both the Adjusted-R^2 for each of the three models and the *F*-statistics for each of the three models suggest that the independent variables are able to provide statistically significant information about tax aggressiveness as captured in the measures chosen.

With respect to the first hypothesis, the *t*-statistics of three models in Tables 4 are all significant and suggest that there is a negative correlation between *P_BTD* (or *DD_BTD*) and *PostΔreg*. Thus H1 is supported. This result verifies the regulatory environment theory and agency theory that suggest that the level of tax aggressiveness can be affected directly through the increased costs imposed by the new tax

regime, and indirectly by the resolution of tax-related agency issues that should bring tax aggressiveness closer to its optimal level.

In terms of the second hypothesis, as shown in Table 4, only the results of Model 1 support the argument that state-controlled ownership (*State*) and foreign-invested ownership (*Foreign*) have an impact on *P_BTD* (or *DD_BTD*). The coefficients on the *State* and *Foreign* variables in Models 2 and 3, although having the same sign as those in Model 1, are not statistically significant. Therefore H2a and H2b are not supported. The result for H2a is inconsistent with the findings of Chen, Lobo and Wang (2010) and Zheng and Han (2008), whose studies were based on data from an earlier period (and therefore under different accounting standards and tax regime requirements). This may suggest that with the process of privatisation in China differences in incentives to engage in tax aggressiveness between China's state-controlled companies and non-state-controlled companies have been decreased progressively, or have reduced significantly by regulatory change. In the case of H2b, the new 2008 enterprise income tax reform in China was expected to have an impact on foreign-invested listed companies considering that their previous preferential tax policy will be gradually removed. However, the impact of being a foreign-invested company over the timeframe involved in this study has not been statistically significant.

Table 4

Regression results (N = 6,287)

		Model (1): Panel OLS		Model (2): Panel fix-effects		Model (3): Backwards Stepwise	
Variables	Expected sign	P_BTD	DD_BTD	P_BTD	DD_BTD	P_BTD	DD_BTD
postΔreg	–	-0.0087*	-0.0098**	-0.0180***	-0.0170***	-.0750*	-.0750*
		(-2.40)	(-3.20)	(-6.18)	(-6.22)	(-2.081)	(-2.109)
State	–	-0.0243***	-0.0217***	-0.0018	-0.0062	-.0410	-.0410
		(-3.50)	(-3.72)	(-0.20)	(-0.72)	(-1.119)	(-1.108)
Foreign	–	-0.0041	-0.0079	0.0153	0.0070	-.0800*	-.0780*
		(-0.34)	(-0.76)	(0.49)	(0.24)	(-2.190)	(-2.147)
PP&E		-0.0121***	0.0062*	-0.0196***	-0.0167***	.1830***	.1880***
		(-3.52)	(2.12)	(-4.60)	(-4.16)	(4.227)	(4.361)
INTA		0.0307*	0.0283*	0.0424**	0.0509***	.0170	.0140
		(2.25)	(2.47)	(2.64)	(3.37)	(.476)	(.384)
Salesgr		-0.0000	0.0000	0.0000	0.0000	.0820*	.0810*
		(-0.23)	(0.04)	(1.07)	(1.21)	(2.368)	(2.348)
OCF		0.3170***	0.2530***	0.3090***	0.3020***	.4290***	.4320***
		(46.42)	(44.03)	(41.65)	(43.35)	(10.114)	(10.226)
R&D		0.5670***	0.4760***	0.5550*	0.548*	.0230	.0230
		(3.94)	(3.93)	(2.33)	(2.44)	(.646) ***	(.663) ***
Leverage		0.0205***	-0.0714***	0.0568***	-0.0569***	-.1220	-.1190
		(23.07)	(-95.47)	(60.58)	(-64.43)	(-3.367)	(-3.296)
ln(TA)		-0.0018	0.0021*	0.0009	0.0033	-.0200	-.0200
		(-1.54)	(2.15)	(0.27)	(1.04)	(-.526)	(-.528)
Constant		0.0404	-0.0020	-0.0315	-0.0291		
		(1.61)	(-0.09)	(-0.43)	(-0.43)	(1.681)	(1.698)

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3 Robustness check

In addition to the above two measures for tax aggressiveness—*P_BTD* and *DD_BTD*—another of the three measures *GAAP_ETR* is used in the robustness test. As B-, AB- and AH- share companies apply much more stringent requirements for information disclosure, and so may display differences in tax aggressiveness, the type of cross-listed share is used a control variable in the robustness test. The final results of regressions in the robustness check are consistent with the results reported above.

5. CONCLUSIONS

Corporate tax aggressiveness is a manifestation of the agency problem. Existing research has thus examined the motivation for this tax aggressive behaviour by corporates and the impact of internal governance mechanisms often from the agency perspective. Much of this research has had a U.S. focus. However, research on tax aggressiveness in case of an economy in the process of transition to a market-oriented economy is limited, as has been the opportunity to study the impact of significant tax regulatory reform on this behaviour. It is in these two areas that this paper has made its contribution to the literature.

This study has been guided by agency, effective tax planning and tax avoidance theories in assessing the impact of tax regulatory change on tax aggressiveness in China. The effectiveness of changes in China's tax regime, and thus potentially in the incentive provided to corporates to engage in tax aggressiveness, have been assessed using a panel data sample derived from 1,900 companies listed on China's Shanghai and Shenzhen Stock Exchanges. The timeframe chosen was 2007 to 2010 (providing 6,287 firm-year observations), period that provides the opportunity to utilise a 'natural experiment platform' given the 2007 introduction of the *Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting* and the 2008 implementation of the new *Enterprise Income Tax Law*. The chosen companies exhibit different ownership structures, being comprised of state-controlled, foreign-invested and non-state-controlled enterprises listed in China.

Several implications can be drawn from this study. Our results indicate that the tax aggressiveness of listed companies as measured by the book-tax gap measure has reduced as a result of China's 2008 *Enterprise Income Tax reform*. This shows the potential for tax policy change and its enforcement to have a significant impact on tax aggressiveness in a transition economy context. We leave for future study the market reaction of these changes in tax aggressiveness, and thus their impact and importance to equity values.

We find that a lack of statistical support for the importance of ownership structure on tax aggressive behaviour in China in contrast to earlier studies such as that of Zheng and Han (2008) who identify different tax planning behaviours for China's state-controlled and private listed companies during the 2002 to 2005 period (thus predating the tax and accounting regime changes in this study). This may suggest that with the process of privatisation in China differences in incentives to engage in tax aggressiveness between China's state-controlled companies and non-state-controlled companies have been decreased progressively, or have reduced significantly by regulatory change. However, we suggest that our results in this area be treated with some caution. Thus, it is necessary to identify some of the limitations to this study that may impact on the reliability of our conclusion in this area (impact of ownership). Firstly, there is matter of the special criteria for categorising state-controlling and foreign invested ownerships in China, making classification difficult. Secondly, a lack of conclusive results re ownership may call for a different strategy in examining differences between state-controlled and non-state-controlled enterprises, and between foreign-invested and domestically-controlled enterprises, under changes to China's tax regulatory regime. Finally, future analysis may consider use of a balanced panel data set which, although more restrictive a sample, may better allow the impact on individuals types of ownership structure to be more accurately assessed.

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THE COMMON CRITERIA AND INFORMATION SYSTEMS SECURITY CERTIFICATION

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Abstract

Information security is a vital business requirement in today's information systems (IS). Last decades, the prospect of information technology security evaluation became a great worldwide challenge for many national institutes, agencies and schemes. Eventually, on the road to international harmonisation the Common Criteria Editorial Board (CCEB) managed to establish a common worldwide platform and called it: Common Criteria for Information Technology Security Evaluation (known as CC).

Purpose: The number of the information threats and violations are increasing while technology is developing. The need for certifying the efficiency and the safety of an IS is a fundamental business issue. This paper discusses the sufficiency of the CC IS security evaluation-certification and it is intended to shed light to the shortcomings of the CC.

Design/methodology/approach: The Common Evaluation Methodology (CEM, 2009) has been studied and used in order to examine the security certification of IS.

Findings: The results of the specific study revealed the weaknesses of the CC international standard to evaluate and to certify an IS as a secure one. No matter to what extent the components products of an IS have been evaluated, when they are combined and connected into a network or system, further security issues are going to arise. Moreover, the information system security evaluation takes time, but the Target Of Evaluation (TOE) belongs to a very frequently changing world. On the other hand, an IS comprises not only hardware, software and networks, but also people; and the prediction of human error and its frequency in a Protection Profile (PP) is very close to a practical impossibility.

Research implications: There is a fundamental requirement for better assurance of IS and for a continuous improvement of the common worldwide security evaluation platform, which is called Common Criteria.

Originality/value: This study opens a road to an essential and efficient information system security evaluation, which is a common concern for every business or enterprise.

Keywords: information systems security, information security management standards, information security certification.

1. INTRODUCTION

The concern for information security starts with the first appearance of computer networks. The essential pillars of information security continue to be until now the confidentiality (prevention of the unauthorised

disclosure of information), integrity (prevention of the unauthorised modification of information) and availability (prevention of the unauthorised withholding of information or resources). Information is a key aspect in the success of any e-business. As more information is created, stored and moved around computer networks, so the associated risk increases as well as the vulnerability of source data. Last decades the prospect of IT security evaluation became a great worldwide challenge for many national institutes, agencies and schemes (Cugini, 1995). Eventually, on the road to international harmonisation an International Standard ISO/IEC 15408 was developed based upon the Common Criteria for Information Technology Security Evaluation (CC). However, in spite of the fact that the current version of CC (2009) refers also to system evaluation, this study reveals that the CC are unable to evaluate, to certify and to accredit an information system (IS) as a secure in whole. Furthermore, various important drawbacks of CC need to be solved in order this international united attempt in the neuralgic field of security evaluation to continue existing and being improved.

2. THEORETICAL BACKGROUND

2.1 Historical review of IT security evaluation

The origin of the information systems security evaluation stems from the United States (US) in the end of 1960s. According to Ware (1970), in October 1967 the Advanced Research Projects Agency (ARPA) assigned a task force to thoroughly study and recommend appropriate computer security safeguards that would protect classified information in multi-access, resource-sharing computer systems. It is worthy of remark that those days the Arpanet, the parent of the Internet, was in its infancy and the revolution of the personal computers had not yet occurred. The confidential final report of the task force was published by The Rand Corporation (1970) for the Office of the Director of Defence Research and Engineering - the report was declassified by the Defence Advanced Research Projects Agency in 1975. Almost for one decade, the above mentioned report, known as Rand Report R-609, along with Anderson's (1972) later study were the most prominent comprehensive discussions for the information systems security.

In 1981, the National Computer Security Centre (NCSC) was established in US and after two years it published the first official security evaluation standard which was named Trusted Computer System Evaluation Criteria (TCSEC), known as Orange Book. Undoubtedly, the TCSEC was the precursor to the next developments of IT security evaluation criteria (ITSEC, 1991). According to the updated DoD TCSEC (1985), the purpose of the TCSEC was the evaluation and accreditation of the overall Automatic Data Processing (ADP) system security policy. The TCSEC consisted of four divisions: D, C, B and A. The division A (the highest security assessment) and the divisions C, B and A were divided into a series of hierarchical subdivisions called classes: C1, C2, B1, B2, B3 and A1. Since the first publication of the Orange Book and until the early 1990s, many other important Books were published by Rainbow Series of NCSC as updates of the TCSEC, like the publication of the Trusted Network Interpretation (TNI, 1987), known as the Red Book, which was nothing more than a network context of the Orange Book.

On the other hand in Europe (1990), the corresponding agencies from France, Germany, the Netherlands and the UK decided to cooperate in order to build and adopt a common IT security evaluation policy better fitted to the needs of the European Community. The new IT security evaluation policy would be based upon the existing IT security criteria of:

a) The US Department of Defense Orange Book (DoD TCSEC, 1985),
b) The UK Communication and Electronic Security Group Memorandum Number 3 (UK Systems Security Confidence Levels, 1989),
c) The proposals of the Department of Trade and Industry, known as the Green Book (DTI Commercial Computer Security …, 1989)
d) The German Information Security Agency (Criteria for the Evaluation of Trustworthiness ..., 1989)
e) The French Central Service of Information System Security, the so-called "Blue-White-Red Book" (Catalogue de Critères …, 1989)

The result of the above cited harmonised effort was the development of a security evaluation criteria set known as Information Technology Security Evaluation Criteria (ITSEC, 1991). The ITSEC became the foundation for the joint DTI/CESG Scheme, which was launched in 1992. According to Harris and Hunt (1999), the ITSEC places emphasis on integrity and availability, and attempts to provide a uniform approach

to the evaluation of both products and systems. Herson (2000) noted that both US and Japanese products began coming to Europe to be evaluated. The ITSEC defined seven assurance levels: E0, E1, E2, E3, E4, E5, and E6. The assurance level E0 was reserved for products that failed evaluation, while El to E6 represented increasing assurance. Moreover, a common methodology (known as ITSEM) defined both how evaluations should take place and how they should be certified. Roles of Developers in ITSEC (1996) provided a general indication of the appropriate time to have a product evaluated under the ITSEC scheme: For assurance level E1 up to 6 months, for E2 6 to 18 months, for E3 8 to 24 months and for E4 and higher the evaluation took several years.

The rest international community adopted various related approaches. In 1993, the Canadians developed the Canadian Trusted Computer Product Evaluation Criteria (CTCPEC), which were very similar to the TCSEC, but they had included also features of the ITSEC in order to enable its application to a wider range of products and systems (CTCPEC, 1993; Harris and Hunt, 1999). In Australia the Defence Signals Directorate (DSD) announced the establishment of the Australian Information Security Evaluation Programme in June 1994. Australia and New Zealand merged their evaluation and certification capabilities in 1998, and the AISEP was renamed to Australasian Information Security Evaluation Program. On the other hand, US made an effort to revise-replace the TCSEC with more flexible criteria and so, the National Institute of Standards and Technology (NIST) and the US National Security Agency developed the Federal Criteria (FC) for IT Security. Though a draft version was released for public comment in December 1992, however, this effort was overtaken by the Common Criteria and the FC never progressed beyond the draft stage (FC, 1992).

In June 1993, the European Commission, the US and Canada, took a decision to try to develop the Common Criteria for IT security evaluation. The authors of the TCSEC, ITSEC, CTCPEC and FC made a paramount combined effort to align-merge their criteria and create a single draft of the CC. Eventually the Common Criteria Editorial Board (CCEB) managed to establish a common worldwide platform and called it: Common Criteria for Information Technology Security Evaluation (CC). A draft version (ver. 0.9) was issued for public comment in October 1994 and the first version of CC (ver. 1.0) in January 1996. Then, on 7 November, 1996, in Brussels, Belgium, the European Commission hosted a full day conference on security evaluation and common criteria. Furthermore, representatives from US, Canada, UK, France, and Germany signed an agreement in Paris, on 12 March, 1998, for directly recognition of certificates issued by each other. On October 5, 1998, the above CC partners officially signed a Mutual Recognition Arrangement (MRA). The purpose of the MRA (then CCRA) is to formalize and promote a situation in which IT products that earn a CC certificate can be recognized by member nations without the need for re-evaluation and re-certification (Herson, 1996; Hickson, 1997). In 1999, the ISO/IEC approved the CC as an International Standard ISO/IEC 15408 and opened the way to the worldwide mutual recognition of evaluation results. ISO15408 security evaluations are performed by independent, accredited evaluation organisations, which are licensed by an appropriate certification body. The current version of CC is ver3.1R3 (CC, 2009).

2.2 Common criteria structure

The CC consist of requirements for the security evaluation, certification and accreditation of IT systems and products (TOE - Target Of Evaluation). These requirements are separated into the distinct categories of functional requirements (CC, 2009:Part 2) and assurance requirements (CC, 2009:Part 3). The CC functional requirements define desired security behaviour and the assurance requirements are the basis for gaining confidence that the claimed security measures are effective and implemented correctly (CC, 2009:Part 1). The CC discuss security using a hierarchical framework of security concepts and terminology. So, the CC are grouped into modular structures which are called components and they consist of indivisible statements of security needs named elements. The set of components that share a similar goal is called family and the groups of families that share a common intent are called classes. Moreover, the CC evaluation is based upon the concept of a Protection Profile (PP), which is nothing more than a platform of security specifications for a category of products, in order the security target (ST) to be achieved (Cugini, 1995). After all, the final CC Evaluation Assurance Levels range from EALl to EAL7, where EAL2 to EAL7 represented increasing assurance (and correspond very much to ITSEC El to E6).

3. COMMON EVALUATION METHODOLOGY

The well-known Common Evaluation Methodology (CEM, 2009) has been studied and used in order to examine the security certification of Information Systems. CEM (2009:13) quoted: "The Common Methodology for Information Technology Security Evaluation (CEM) is a companion document to the Common Criteria for Information Technology Security Evaluation (CC). The CEM defines the minimum actions to be performed by an evaluator in order to conduct a CC evaluation, using the criteria and evaluation evidence defined in the CC." Thus, the target audience for the CEM is primarily evaluators applying the CC and certifiers confirming evaluator actions. An evaluation is either both successful and granted a CC rating, or it simply does not get a rating. Unlike the ITSEC where a failed evaluation denotes as E0, CC has no concept of a failed evaluation such as EAL0 (Madsen, 1998).

4. RESULTS AND DISCUSSION

An information system comprises hardware, software, networks and people. According to CC (2009) and CEM (2009), the common criteria can specify-cover security issues for hardware, software and mainly, for the messages transferring over a network. In addition, an inherent shortcoming of IT evaluations is that the various TOE are examined independent of the real environment in which they use to operate. This means that, no matter to what extent the component products of an IS have been evaluated, when they are combined and connected into a network or system, further security issues are going to arise due to the complex interactions between the variety of products. Thus, the use of evaluated IT products in a network would not purge the system-level work, but it would reduce the probability of expensive errors (Mason, 2000). However, the most important component of an information system is people. The development of such a PP where the human resources would be evaluated and furthermore, the human error would be detected and not only the on purpose attacks is infeasible with CC standard. Subsequently, the total information system cannot be evaluated through the CC mechanisms.

Also, the current version of CC (2009) is a quite complex and large document of more than 1,000 pages, even for those who are familiar with standards. Moreover, the PPs created under CC are also complicated documents and by themselves could be International Standards, individually. It is worthy of remark that there is not automatic method of evaluation, which could facilitate the whole process of assessment. Therefore, the concept of developing user-friendly CC and/or PPs documentation and also, the automation of routine procedures would be an indeed progress as well as a wide spread of IS security evaluation.

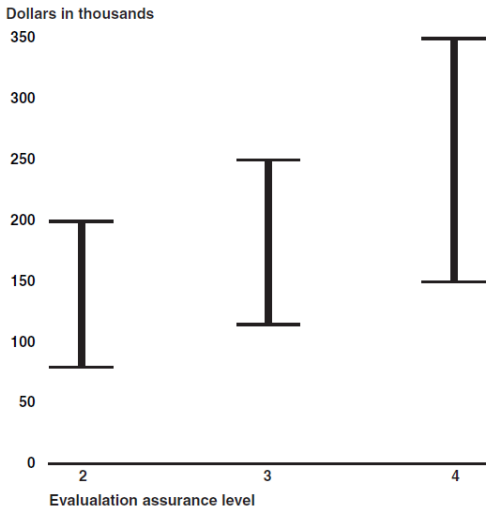

Figure 1. Range of sample cost of NIAP evaluations to vendors by EALs
Source: Information Assurance National Partnership ... (2006)

According to the Government Accountability Office (Information Assurance National Partnership ..., 2006), it was revealed that IT security evaluation takes noteworthy time and has a significant cost. For instance, for EAL4 a vendor has to spend $140,000 to $350,000 (Figure 1) and the whole evaluation process takes from 8 to 24 months (Figure 2). According to laboratory officials, the average time for vendors to

complete the required documentation before test and evaluation can begin is about six months (Information Assurance National Partnership ..., 2006). While the information system security evaluation takes time (e.g. many years for EAL5 to EAL7), the TOE belongs to a very frequently changing world and also, PP and ST maintain a slow updating rate. As a result, the evaluation delays getting the vendors' product to the market. On the other hand, the evaluation cost maybe is reasonable for large-scale IT companies, but for small or medium-scale IT companies which develop a unique product the unit cost per product is high. In both matters of time and cost, CCEB continues to appear a lack of solution even after thirteen (13) years from the recognition of CC as an International Standard ISO/IEC. Perhaps, this delay of response to the demands of the market by CCEB leads the vendors to an ignorance of CC or worst to a fatal ignorance of IT security. Table 1 illustrates a perturbing decreasing tendency in the CC certified products, since the positive peak of year 2007. In the same table, it is also notable that since 1998, only 1,785 products were certified and only 4 achieved the EAL7.

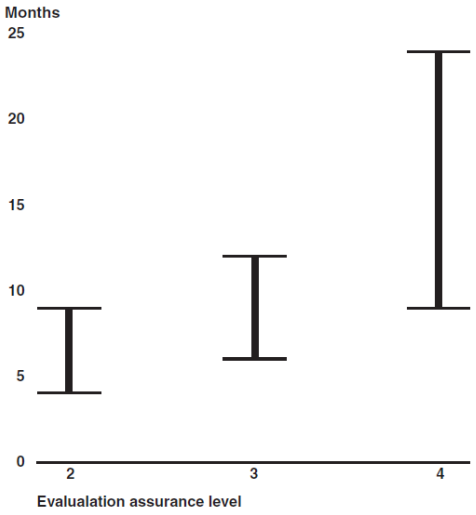

Figure 2. Range of time required for completing product evaluations at various EALs
Source: Information Assurance National Partnership ... (2006)

Table 1

Certified products by assurance level and year of certification

EAL \ Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
EAL1	0	0	0	0	0	1	0	0	1	26	3	1	0	2	2	**36**
EAL1+	0	1	0	0	0	0	0	0	0	17	2	2	6	2	0	**30**
EAL2	0	0	0	2	2	1	6	13	16	113	29	17	6	12	0	**217**
EAL2+	0	0	0	0	1	1	1	1	2	57	21	29	21	38	19	**191**
EAL3	0	0	0	0	2	0	7	5	5	75	22	35	35	32	11	**229**
EAL3+	0	0	0	1	0	0	2	2	4	63	17	25	22	36	22	**194**
EAL4	1	0	2	2	3	1	0	1	0	72	6	11	6	6	1	**112**
EAL4+	0	0	1	1	3	3	2	8	4	207	75	90	67	77	35	**573**
EAL5	0	0	0	0	0	0	0	0	0	7	3	2	0	0	0	**12**
EAL5+	0	0	0	0	0	0	0	0	0	52	28	31	38	27	4	**180**
EAL6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
EAL6+	0	0	0	0	0	0	0	0	0	0	1	2	3	1	0	**7**
EAL7	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	**2**
EAL7+	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	**2**
Basic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Medium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**

US Std	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
None	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Totals:	**1**	**1**	**3**	**6**	**11**	**7**	**18**	**30**	**32**	**691**	**207**	**246**	**205**	**233**	**94**	**1785**

Source: Common Criteria (2012)

5. CONCLUSIONS

CC security evaluation was a unique, incredible worldwide achievement of paramount combined and united efforts from different countries. The history of CC was indeed brilliant. However, if the CCEB desires to have also a brilliant and successful future, the CC security evaluation needs to be changed - improved now more than ever before. This is in line with the keynote speaker Szakal (2011:19) in the 12th International Common Criteria Conference (ICCC) in Kuala Lumpur, who mentioned that: "Without a structural/group dynamic change, Common Criteria reform will stagnate and become less relevant. An unreformed and unreformable CC will degrade, fragment and… become increasingly irrelevant". The results of the current study revealed the weaknesses of the CC international standard to evaluate, to certify and to accredit an IS as a secure one. Moreover, the complexity of documentation, time-consuming procedures, lack of automatic routines and the significant cost of CC security evaluation remain unsolved for many years. Our research group works on that direction and aspires to develop integrated models that would be depended on the actual industrial environment of IS and they will contibute to the long-awaited solution of the security evaluation shortcomings.

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