

Masaryk University
Faculty of Economics and Administration
Department of Finance



European Financial Systems 2012

21st and 22nd June 2012

BRNO

Czech Republic

Edited by Mgr. Petr Červinek

Technical collaboration: Mgr. Petr Červinek

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ISBN 978-80-210-5940-5

International conference European Financial Systems 2012 focused on prevailing scientific inquiries in the area of global financial markets and financial systems. Particular attention was paid to the European financial and sovereign debt crisis, comprising the possibilities of its resolution and options of its prevention in the future. Fruitful discussions covered recent findings and trends in banking, insurance, financial engineering, and financial management alongside with developments in accounting practices and taxation systems.

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COST BUDGETING METHODS IN CONSTRUCTION PROJECTS IN POLAND

Dorota Adamek-Hyska, Piotr Tworek

ANNOTATION

The methodical approach to project cost management in the construction industry requires the knowledge of accounting principles applicable to cost calculations. Such knowledge helps to exert actual control over expenses incurred on the execution of a construction investment project. There are various approaches to cost calculation for the presentation in the cost budget of a construction project. In practice, the methods which can be used for this purpose include expert estimation, estimation by analogy, parametric modelling and the specific identification method. The paper focuses on these methods and its main aim is to outline them and indicate their possible applications in economy, taking Poland as an example.

JEL classification: G31, L74, M49

KEY WORDS

costs, cost budgeting methods, construction projects, construction industry, Poland

INTRODUCTION

A 'budget' should be understood as a quantitative action plan, with appropriate resources allocated for its implementation, established for a given decision-making entity in an accounting period¹. In particular, a budget is the outcome of a budgeting process, i.e. a set of various activities performed under the principles and by means of the methods appropriate to this process². An entity which carries out a project in the construction industry must have an up-to-date project cost budget (plan, estimate) for the entire project lifecycle as well as for specific reporting periods and works included in a contract³. Such a document is the basic action plan, including the allocation of specific resources for its implementation in specific time. It is also used to measure the project progress and create adjusted cost budgets to reflect the changes, which occur throughout the performance of construction and assembly works. The precondition for correctly prepared cost budgets for contracts implemented in an investment and construction process is to show a true picture of the given project, including effective provisions of a contract and associated agreements, e.g. financial agreements, insurance policies and contracts with subcontractors, accepted construction techniques and technologies, types of resources to be used and the manner in which works are to be performed (in-house, subcontracting), as well as real price levels and pay rates. In Poland, cost budgets for construction projects aren't governed by any legal regulations. Nevertheless, the experience shows that cost budgeting for a construction project may be divided into the following stages, i.e. communication of data about a budgeting policy, which has been adopted, and guidelines for people responsible for preparation of a project cost budget; identification of factors which may limit the implementation of the construction project;

¹ B. Niedbała: *Controlling w przedsiębiorstwie zarządzanym przez projekty*. Oficyna Wolters Kluwer Business, Kraków 2008, p. 99 and A. Piosik: *Zasady rachunkowości zarządczej*. PWN, Warszawa 2006, p. 192.

² A. Jaruga, W. Nowak, A. Szycha: *Rachunkowość zarządcza, Koncepcje i zastosowania*. Wydawnictwo Społecznej Wyższej Szkoły Przedsiębiorczości i Zarządzania, Łódź 2001, p. 658.

³ Appendix to Resolution No. 9/06, passed by Accounting Standards Committee of 18 September 2006 on adoption of National Accounting Standard No 3 'Unfinished construction services', 2006 Official Gazette of the Ministry of Finance, No. 13, item 93, point II.1.

preparation of so-called partial budgets, e.g. a budget of construction material consumption, a labour budget, a budget of other direct costs or a budget of indirect project costs; budget negotiations with superiors; incorporation of partial budgets in the overall project cost budget; budget coordination and review; final approval of the budget; regular review of the budget in course of its execution⁴.

AIM AND METHODOLOGY

The paper aims to present the cost estimation methods, used to quantify construction project costs for the needs of preliminary investment cost budgets, which are most popular in Poland. Therefore, the paper first identifies direct and indirect costs of projects and then moves on to describe the selected cost estimation methods, i.e. the expert method, estimation by analogy, parametric modelling and the detailed calculation method. The paper draws on the literature and analyses the Polish accounting regulations. The paper is also based, to a certain extent, on the authors' practical knowledge, the results of their scientific studies and their own experience. The methods of deduction and synthesis are utilised.

Methods for estimating construction project costs in Poland

The basis for a well-calculated cost budget are possibly most reliable estimates of costs included in the budget for specific stages and works covered by the contract. Costs of the project in the construction industry are defined as the value of in-house resources, expressed in monetary units, held by an enterprise which carries out this project, and external resources used directly or indirectly for the project preparation, implementation and operation⁵. According to the definition given in the Polish Accounting Act, these are a reduction of returns, likely to occur in the reporting period, whose value has been determined in a fair manner, in the form of a decrease in the value of assets or an increase in the value of liabilities and reserves, leading to a reduction of equity or a growth of its deficit otherwise than by the withdrawal of funds by the shareholders or proprietors⁶. Such costs comprise costs incurred in the entire project lifecycle and represent costs directly relating to a given project, as well as a reasonable portion of indirect costs of construction relating to activities performed in order to prepare, plan or implement the project and operate its product, which are not the contract implementation costs⁷.

- Direct costs of a construction project cover all costs which may be directly, without any additional allocations and calculations, referred to a given contract underlying the project and specific stages of the project lifecycle. At every stage, the scope of works and, consequently, the level of indirect costs, differ. Costs at the preparation stage are all costs incurred before the commencement of works and related to the preparation to the implementation of the given project, which directly refer to a specific contract. The provisions of the National Accounting Standard that is effective in Poland specify the costs, which are related to the preparation of an offer as direct contractual costs, but they do not give any further explanation. The International Accounting Standard No. 11 indicates the reason for classification of these costs as indirect contract costs. Under the international regulations, construction and assembly companies should strive to „(...) include the biggest possible part of the costs incurred before the commencement of the contract in the overall budget of contractual costs. (...) It should be done, however, in view of the possessed knowledge and an investment profitability calculation so that the costs of

⁴ C. Drury: Rachunek kosztów. PWN, Warszawa 2003, pp. 375-379 and A. Piosik: Op. cit., pp. 199-202.

⁵ M. Łada, A. Kozarkiewicz: Rachunkowość zarządcza i controlling projektów. Wydawnictwo C.H. Beck, Warszawa 2007, p. 114.

⁶ Accounting Act of 29 Sept. 1994, 2002 Journal of Laws No. 76, item 694 as amended, art. 3 par. 1 point 31.

⁷ Accounting Act of 29 Sept. 1994, 2002 Journal of Laws No. 76, item 694 as amended, art. 28 point 3.

information gained this way does not exceed any possible income in this respect”⁸. A criterion to be adopted by entities for the incorporation of pre-contract costs in total costs of the contract should be the likelihood of the contract conclusion, in addition to the contract identification, cost breakdown and reliable cost estimates⁹. The implementation stage costs comprise costs incurred during the performance of work, which may be unambiguously attributable to a given contract, including material consumption costs, valued at purchase prices of construction materials, payroll costs of production workers plus charges, including payroll costs of site supervision staff, costs of transport/transfer of machines, equipment, materials, soil from and to a construction site, costs of subcontracted services. The operation stage costs are costs whose values result from estimates prepared by management of an entity, which performs the contract and relating to the value of future services under the contract, e.g. costs of corrections and guarantee work, costs relating to maintenance of the facility in non-deteriorated condition, costs of repairs, maintenance and improvement of the existing facility.

- Indirect costs of a construction project are these cost items which are only partly connected with the given project. They are often called common costs of the project and the entity’s other activities. Although the accounting regulations in Poland don’t provide any definition of indirect project costs, it’s mentioned that indirect costs include only a reasonable portion of indirect variable costs and indirect fixed costs. The values of variable contract costs depend on progress in contract execution. These costs are quantified by means of various units of measure, such as e.g. man hours, machine hours, ton-kilometres, days etc. Examples of such costs are operational costs of the entity’s own machines and equipment used in course of contract execution, i.e. costs of inspections and repairs, fuel costs, operator costs and machine maintenance costs, in case when natural depreciation, e.g. depreciation in relation to the number of worked machine hours, is used. The values of fixed contract costs, in turn, do not depend on progress in work. Examples of such costs are costs of technical support for a construction site, depreciation costs of machines and equipment (excluding natural depreciation), costs of a project architect’s supervision and an investor’s supervision, costs of geological, geophysical and geodesic tests, costs of property insurance for the construction site, costs of land use fees during construction work, costs of establishment of protection areas, costs of protection for the construction site, costs of activities carried out by functions which support the project, such as purchasing or administration¹⁰.

Indirect contract costs (variable indirect costs and fixed indirect costs), which are costs of manufacture of a specific facility, are attributable to a given contract by means of additional allocations and appropriate allocation keys. Allocation keys are the figures representing technical and economic parameters, which have or real or contractual connection with deductible costs¹¹. When it comes to indirect costs, the basis for their allocation is most often progress in work, total direct salaries and wages including charges, time measured by machine hours or man-hours and the volume and value of consumed direct materials.

Other costs of construction projects comprise costs of liabilities incurred to finance these projects and related foreign exchange gains/losses, minus income derived from it. It should

⁸ J. Kalinowski: Kompendium wiedzy o Krajowym Standardzie Rachunkowości nr 3 Niezakończone usługi budowlane. Analizy-komentarze-przychody, Difin, Warszawa 2007, p. 81.

⁹ Międzynarodowe Standardy Sprawozdawczości Finansowej a ustawa o rachunkowości - podobieństwa i różnice. Edited by A. Jarugowa. Stowarzyszenie Księgowych w Polsce, Warszawa 2006, p. 103.

¹⁰ Appendix to Resolution No. 9/06, passed by Accounting Standards Committee of 18 September 2006 on adoption of National Accounting Standard No 3 ‘Unfinished construction services’, 2006 Official Gazette of the Ministry of Finance, No. 13, item 93, points II.1 and VI.3.

¹¹ E. Nowak, R. Piechota, M. Wierzbński: Rachunek kosztów w zarządzaniu przedsiębiorstwem. PWE, Warszawa 2006, p. 39.

be stressed, however, that International Accounting Standard No. 23 clearly specifies the conditions which need to be met if borrowing costs are to be included in costs of manufacture of a given asset. These costs must be likely to bring returns for an entity in the future and it must be possible to reasonably estimate a cost of manufacture of a given asset¹².

In business practice, the estimation of identified costs of the project is the determination of approximate values of costs of resources needed to perform the project activities¹³. Resource planning means finding out what resources, in what quantities and at which project execution stage will be needed. Input materials for resource planning are frequently: a list of tasks defined at specific project stages, historical data about types of resources consumed in similar investments carried out in the past, a pre-defined scope of work or description of resource pools, i.e. description of potentially accessible resources. Such techniques and tools as expert opinions and project management support software may be used to this end. It should be pointed out that cost estimation for the project at the preparation and design stage is, by necessity, approximate, as it's done before the project is defined completely¹⁴. Therefore, in practice, cost estimations at this stage will be based on general assumptions, will concern substantial cost aggregates and will help to find the best possible option for execution of a given project.

Both in theory and in practice, there are various approaches to cost estimation for the needs of cost budgeting in construction projects. For instance, the following methods can be applied: 1) expert estimation method, 2) estimation by analogy method, 3) parametric modelling methods, 4) detailed calculation method.

The expert estimation method is based on judgements and experience of people who prepare estimates¹⁵. This is an inaccurate and subjective method but it's often employed, when costs are estimated for projects carried out in a new area or for projects which use new technologies. The estimation by analogy method (also known as *top-down* estimation) means using actual costs of previous, similar projects as the basis for a current project's costs¹⁶. This method is frequently deployed when no detailed information about a given investment project is available. It is less time-consuming but also less accurate. Parametric modelling methods use various features demonstrated by a project to estimate this project costs. Such methods include, for example, the cost estimation relationship method and the mathematical model method. These methods may be employed when data for creation of a relationship or a model is accurate, and parameters may be quantified. As emphasized by B.J. Madauss „(...) cost estimation relationships are simple formulas which show that costs are directly proportional to such physical parameters as volume or weight¹⁷. In many industries all over the world¹⁸ standard relationships, labour-intensity norms and material unit costs have been developed and defined. In the US aviation industry, cost estimation relationships (CER) have been used for many years to estimate costs of designing and producing parts with specific parameters. For example, production costs of a helicopter fuselage can be estimated using the following formula: $C = 2060 \times W^{0,766} \times Q^{-0,218}$, where C is the total cost of the fuselage, W - fuselage weight in pounds, and Q - the number of units produced. In the Polish construction industry, in turn, there is a system called e-sekocenbud. This is a system which provides comprehensive information about prices in the construction industry, based on a market price

¹² International Financial Reporting Standards 2004, International Accounting Standard No. 23, § 12.

¹³ M. Pawlak: Zarządzanie projektami. PWN, Warszawa 2007, p. 118.

¹⁴ M. Pawlak: Op. cit., p. 120. After: R.G. Clught, G.A. Sears, S.K. Sears: Construction Project Management. John Wiley & Sons, Inc., New York-Chichester-Weinheim-Brisbane-Singapore-Toronto, 2000, p. 27.

¹⁵ B. Nita: Rachunkowość w zarządzaniu strategicznym przedsiębiorstwem. Oficyna Wolters Kluwer business, Kraków 2008, p. 259.

¹⁶ M. Pawlak: Op. cit., pp. 119-120.

¹⁷ B.J. Madauss: Handbuch Projektmanagement. Schäffer-Poeschel Verlag, Stuttgart 1994, p. 259.

¹⁸ M. Pawlak: Op. cit., pp. 120-121.

survey conducted on respondents from all over Poland¹⁹. Parametric methods are highly popular, mainly due to the fact that they are very easy to use. In the Polish construction business, the most popular cost estimation method is the detailed calculation method, i.e. the engineering cost estimate method, in which for specific stages and tasks within the construction project execution process, contractors' man-hours, material consumption and machine use are determined and then multiplied by cost rates²⁰. This method uses procedures which are appropriate to the standard cost accounting system. If the effect of a construction project is a typical facility, e.g. a building or a structure belonging to business or social infrastructure, which is well, or very well, defined, then existing productivity norms and costs of previously executed similar projects are used in cost estimation²¹. In innovative projects i.e. the ones done for the first time, however, all cost budget elements are estimated from scratch, based on assumptions resulting from current knowledge about the scope of projects, with certain confidence levels²². Therefore, what matters is not precise accuracy of estimated costs but the fact that they need to be determined on the basis of currently available data, rates and prices. The detailed cost estimation method may be used only in case when the structure of project tasks is already known, and that is why it is seldom used in preliminary cost estimation of construction projects.

It should be emphasized that irrespective of the cost estimation method chosen, cost estimates in construction projects often carry factors which affect decisions to start or quit projects and are caused, for example, by various political influences, too pessimistic attitude to the projects shown by people who prepare estimates and the experience of these people in producing cost estimations for untypical projects. In addition, people who estimate costs know that the more accurate the breakdown of the entire project into specific tasks or sub-tasks, the more accurate cost estimates. Besides, the following phenomena may be mentioned as factors contributing to unreasonable cost estimates, i.e. over-optimism, inaccurate identification of risk areas, inaccurate identification of required expenditure. Therefore, cost estimates should be given special attention, no matter whether they concern preliminary projects, main projects or detailed projects, as the criticism caused by a failure to meet assumed costs is often used by numerous stakeholders to give an unfavourable opinion about the entire project. In general, this is about a risk of deviations of actual costs incurred during the project execution from planned costs. Such deviations may be calculated by means of specific quantitative methods and risk measures²³.

CONCLUSION

In the construction industry in Poland, the selection of an appropriate cost estimation method for a specific investment project is largely determined by two key factors, i.e. the type of project (a new project, a project based on new technologies, a project similar to other projects, a labour-intensive project or a material intensive project), as well as the competence, knowledge and experience demonstrated by the people who produce the estimates. Every time the selected method should lead to reliable project cost estimates, irrespective of a project execution stage. In practical terms, well-estimated costs are the core of every project budget. If costs are estimated at the first (initial) phase of a project lifecycle, the figures obtained will always be approximate and calculated for aggregate costs. This is most frequently connected

¹⁹ Webpage: <http://www.esekocenbud.pl/index2.php>, dated 30.12.2009.

²⁰ M. Pawlak: *Op. cit.*, p. 118 and B. Nita: *Op. cit.*, p. 260.

²¹ Z. Szyjewski: *Zarządzanie projektami informatycznymi*. Placet, Warszawa 2001, p. 128.

²² *Ibidem*.

²³ See: P. Tworek: *Ryzyko wykonawców przedsięwzięć inwestycyjnych*. Akademia Ekonomiczna im. K. Adamieckiego w Katowicach, Katowice 2010, pp. 141-152.

with inaccurate definition of project risk areas and expenses needed. These estimates will be more accurate if the people producing them possess better knowledge of a given project, as well as specific tasks and subtasks included in this project.

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THE ANALYSIS OF THE CORPORATE FINANCIAL AND TAX ACCOUNTING IN THE EU AND THEIR HARMONIZATION

Beáta Blechová

ANNOTATION

In some EU Member States, there is a long and complex relationship between financial and tax accounting, which can be significantly affected by the introduction of new international financial reporting standards such as IAS/IFRS (International Accounting Standards/International Financial Reporting Standards). This article therefore aims to analyze the relationship between financial accounting and reporting for corporate income tax purposes in the EU and also explore the effects of adopting IAS/IFRS on tax accounting within the EU. At the same time also reflects on the possibilities of effectively influencing the further development of the relationship between financial and tax accounting in connection with the growing influence of IAS/IFRS and possible harmonization of the tax base in corporate income tax.

KEY WORDS

Financial accounting, tax accounting, harmonization of financial and tax legislation, IAS/IFRS, CCCTB, convergence of financial and tax accounting.

JEL classification: H25, H71, M41

INTRODUCTION

One area that has seen an unprecedented level of international coordination and harmonization in the last decade is the field of accounting. The emergence of *International Accounting Standards/International Financial Reporting Standards (IAS/IFRS)* and in particular the commitment by the European Union (EU) to mandate the use of IAS/IFRS for certain EU entities has set in motion a series of changes in global accounting. Global and EU accounting developments have also created very specific challenges for tax authorities, because historically, accounting figures have formed the starting point of tax calculations in many countries. The introduction of IAS/IFRS in Europe introduces a whole new set of accounting standards which should be assessed by tax authorities to determine whether or to what extent accounting figures may be appropriate to use in tax calculations. Close interconnection of the data that forms the input to the corporation financial and tax accounting brings to the conclusion that these two systems should be closely linked, but this not too corresponds with the fact, that both of these systems serve to substantially different purposes. The content of this paper is an attempt to analyze this issue and formulate conclusions about the relationship between financial and tax accounting, which would respond to the facts found in the analysis.

AIM AND METHODOLOGY

This article aims to assess the effectiveness of the close interdependence of tax and financial accounting and to verify validity of hypothesis, that this *“close link is advantageous and therefore desirable with regard to reducing the administrative burden in the area of financial and tax reporting”*.

For this assessment is primarily used method of analysis focused on:

- analysis of the major functions of financial and tax accounting,

- analysis of the current degree of harmonization of each of these accounting systems within the EU,
- analysis of the arguments for convergence or separation of the two accounting systems.

Using the methods of synthesis of the findings identified through these analyses are then phrased the conclusions about the suitability of the close link these two accounting systems and is assessing the validity of initial hypothesis about the effectiveness of their close relationships.

RESULTS

These key findings that emerged from analyses can be summarized as follows:

- main functions of the two accounting systems are quite different and in many cases even contradictory, so that their interdependence can lead to distortion of their desired outputs,
- degree of harmonization of these accounting systems within the EU is significantly different, where the unification of financial reporting has been modified by the existence of international accounting standards IAS/IFRS as well as a variety of control acts of EU Community law („acquis communautaire“), while the tax reporting system is not yet harmonized, and the harmonization activities undertaken in this area by the European Commission do not find desirable support of the majority of Member States, which consider the tax policy as an internal matter for each state,
- further continuous development of international accounting standards IAS/IFRS is focused on improving financial reporting function, which has a different mission and aims than tax reporting, whose needs this development does not take into account, which greatly complicates the possibility of continuous maintenance of close links between these systems and increases the administrative burden of it,
- development of IAS/IFRS provides a private company, whose activities may not be in line with the wishes and intentions of governments in the EU Member States, relating to tax systems, which represent a significant element of fiscal policy of these states.

The findings gained during the analysis leads to the conclusion, that the close interconnection of the two accounting systems is not appropriate, as does not reduce the administrative burden in this area, but rather causes its growth and unwanted interaction of these systems which will have a negative effect on the proper functioning of these systems, whose objectives are different. This conclusion does not confirm the validity of the hypothesis set out in the introduction, that the close interconnection of these two systems is advantageous and therefore desirable.

The analysis of major tasks which should fulfill the financial and tax accounting

The main task of the corporation's financial accounting is the mandatory disclosure of annual accounts to interested parties (owners, financing banks, business partners, employees, etc.). Material of IASB [1] from 2010 as the main objective of financial statements considers:

- providing information about the financial position, performance and changes in financial position of the enterprise, that are useful for a wide range of users, who carry out economic decisions,
- displaying the results of careful and responsible management or results that reflect management responsibility for the entrusted resources.

In EU Member States, the principles for determining accounting profit are derived from the relevant provisions of *Community law (acquis communautaire)*, relating to financial accounting, from implementation of these provisions in national laws, from international or national accounting standards and from generally accepted practices, for details see e.g.

material [2]. The main objective of financial accounting, especially when is based on IAS/IFRS, is to evaluate the company's ability to generate profits in the future, as a result of the success (or failure) of the company in managing its capital, which is reflected in its balance sheet.

The main task of the corporation's tax accounting is compulsory submission of tax returns from corporate income to tax authorities. Taxable profit (tax loss) is the difference of taxable income and tax expenses, calculated according to binding tax rules set out by the tax authority, from which is paid the corporate income tax. In EU Member States, the principles for determining the taxable income are derived from international tax law (e.g. bilateral agreements between EU Member States and other countries regarding the treatment options of double taxation of profits), from the national tax laws and regulations in various states, from judicial decisions and practice of the courts and from generally accepted practices. The main objectives of tax accounting include:

- providing the necessary amount of revenue for the state budget,
- redistribution of income, for example higher taxes on the rich than the poor,
- redistribution of resources, for example by encouraging certain types of investments or “generous” provision of depreciation for tax purposes in certain regions,
- political or paternalistic objectives such as taxation of tobacco products and alcohol in order to discourage their consumption,
- stabilizing the economy, such as reducing tax rates, where the recession will come.

The historical development so resulted in a spectrum of approaches in the EU Member States. At one end of the spectrum there are Member States that maintain tax and financial accounts completely separate. At the other end of the spectrum are the Member States which have established a direct legal relationship between the financial and tax accounting to prevent the creation of two different sets of rules. In this case, there is used either “*positive*” approach, in which tax legislation continues to carefully targeted aspects of financial accounting and accepts these aspects either with regard to their text or on their concept, or “*negative*” approach, whereby tax legislation adopted financial accounting as a starting position and then adjust them by exclusion of those aspects of financial accounting, which are not suitable as a basis for calculating taxable profits.

The analysis of harmonization degree of financial and tax accounting in the EU

While in the area of financial accounting in EU exists already a certain common platform, in the field of tax accounting such a common platform yet does not exist. In other words, the policies of Member States relating to financial accounting, has been strongly influenced by a number of provisions of Community law, while the choice tax policy has a much greater flexibility.

The harmonization of financial accounting in the EU over time become a means, which through increased transparency and comparability of financial reporting, that such harmonization would imply, contributed to the facilitation of freer trade and capital movements between Member States. A certain degree of harmonization of financial accounting has been achieved by introducing a series of accounting guidelines and regulations laying down common requirements for financial accounting, which must respect all EU Member States. In particular this means the amended directives and regulations as instruments of Community law, concerning the annual accounts of certain types of companies (Fourth Council Directive No. 78/660/EEC from 1978), the consolidated financial statements (Seventh Council Directive No. 83/349/EEC from 1983), the financial statements and

consolidated financial statements of banks and other financial institutions (Council Directive No. 86/635/EEC from 1986), the annual financial statements and consolidated financial statements of insurance companies (Council Directive No. 91/674/EEC from 1991) and using of International Financial Accounting Standards IAS/IFRS (J Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002). These standards are often described as “*investor-oriented*” accounting standards, whose main objective is to make available the financial information for provider of venture capital, so they can make informed decisions regarding the companies, in which the venture capital was invested. Investor focus IAS/IFRS is evident from some their basic properties, to which can be included in particular the *focus on the balance sheet, fair value accounting and substance over form approach*

Harmonization of the corporate income tax accounting in the EU is the subject of intense interest the European Commission (EC) for more than 10 years, as this sees in the harmonization of national tax systems in the area of corporate tax a tool to help reduce the so-called “*compliance costs*”. These arise in multinational companies operating in several EU Member States, because of the need to adjust the calculation of its tax obligations to different tax systems existing in these States. In the EU is currently 27 different rules for calculating corporate income tax and for companies that operate simultaneously in several Member States, it causes the emergence of the high compliance costs. The EC believes that the creation of a common tax base would allow companies to fall them away a portion of these costs, which could increase the amount of cross-border activities and investment and thereby also increase the competitiveness of European multinational companies, new jobs creation and higher economic growth. Thus already in 2001 the EC presented a proposal to create the ***Common Consolidated Corporate Tax Base (CCCTB)***, but since then it has been unable to find enough support among the Member States. In March 2011 EC introduced the document COM(2011) 121 final: “***Proposal for a Council Directive on a common consolidated corporate tax base CCCTB*** [3]. The Commission expects that the proposal for a directive could be adopted unanimously in 2013 and its implementation would then be carried out in 2013 - 2016th.

Comparison of the arguments for and against the convergence between financial and tax accounting

One of the principal arguments for the convergence of fiscal practices and financial reporting practice is the efficiency of administration. If both systems follow the same rules of accounting is needed to operate (and verify) only once. The full benefits can be achieved only if the tax rules are exactly the same as the rules of financial reporting, in other words, if there are no tax rules.

Another advantage of convergence is that tax implications may limit the natural tendency of some companies overstate profits. This argument likely involves above all of publicly traded groups, because other companies have less incentive to overstate profits. In the absence of harmonization of tax and financial reporting, tax system may suffer by the company attempt to show the highest costs or losses, that are convenient for them in terms of taxation, but do not meet the goals of financial reporting to present as objectively as possible the economic efficiency of these companies.

Another argument for the harmonization is ensuring fair distribution of profits between investors and the state. If the purpose of financial reporting was in the calculation of distributable income, then there exists a strong argument for harmonization of the calculation of taxable income with this calculation. This means that it would be fair that the share of

profit allotted to investors and the share allotted to the state would be calculated from the same profit. But the purpose of financial reporting (at least according to IAS/IFRS) is not to determine distributable profit or taxable income.

On the contrary, the basic argument for the divergence of the financial accounting and income tax system is the difference between the purposes of these systems described above. Another reason for this separation is the need to protect the financial reporting against the tax “pollution” (negative tax effect). If the company is profitable and does not think with decrease the tax rates, then management is motivated to charge a maximum annual cost for tax purposes, although they are economically unjustified.

Further reason to preserve the differences of financial and tax accounting system is the possibility of using different financial reporting rules for different types of entities, such as publicly traded and not traded companies, where the main justification for a different approach is that financial reporting typically serves for another purposes in companies with thousands of shareholders than in companies that have no shareholders. If the purposes of financial statements are different, it would probably be different also the ways of their assembling. The simplest would be a total exemption of small publicly not traded companies from the statutory financial reporting with the fact that these companies would have led only to their accounts in accordance with the tax requirements. The strict separation the tax and financial reporting would also allow for some companies to use IAS/IFRS in their jurisdiction, while other companies in this jurisdiction would continue reporting in accordance with relevant national accounting rules, where both groups would be come to the common tax base.

The difference in financial and tax accounting system will also facilitate the implementation of changes in these systems. If there is a strong link between financial reporting and taxation, the tax rules can not be changed, without such a change had impact on unwanted accounts and vice versa.

CONCLUSION

By comparing the reasons for and against close interconnection of financial and tax accounting we can conclude that the negative impact, that brings close interconnection of these systems are much more significant than the positives. Similar conclusions also present e.g. the authors J. Freedman [4], [5], F. Gielen and J. Hegarty [6], F. Roedler [7] and W. Weaver [8]. It is therefore important for Member States where there is a strong relationship between the two systems to review the current level of this relationship, because maintaining the status quo could have detrimental consequences, such as unintended consequences on the economy, unforeseen effects on tax collections, the development of a yet more complex tax accounting system etc. This is especially true in those countries where there is more widespread mandatory use of IAS/IFRS by different groups of companies, since the amendments to IAS/IFRS and/or national accounting standards may have a knock-on effect on the determination of taxable profit, so an innocuous change to financial accounting may threaten an economic activity and have an unpredictable impact on tax revenues.

From the above it is clear that it is almost inconceivable that IAS/IFRS could be adopted wholesale and without qualification as a basis for the determination of taxable profit. Rather, if a tax accounting system is to be aligned to any degree with IAS/IFRS (financial accounting), this will almost inevitably involve selecting certain features of IAS/IFRS which provide a workable basis for computation of taxable profit. The resulting tax accounting

system will almost inevitably become more complex, and the strong relationship between corporate financial and tax accounting system can thus cause that neither of these accounting systems will achieve its basic goals.

Therefore, already from the very beginning should be given significant attention to the macroeconomic implications of convergence or isolated tax and financial accounting. This decision should only be made after considering these implications at the highest level within the relevant government agencies and a thorough consultative interaction between these agencies and the relevant private sector advisers and interest groups, taking into account the current situation in that Member State and the outcome of the negotiations in EU regarding CCCTB.

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A NONPARAMETRIC SERIAL CORRELATION TEST OF THE CENTRAL AND EASTERN EUROPEAN STOCK MARKETS

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ANNOTATION

We test weak form efficiency for the Central and Eastern European stock markets applying runs tests. We investigate the price changes of seven CEE markets (Austria, Hungary, Estonia, the Czech Republic, Poland, Romania, Slovakia) for the period 1991-2011. In order to make the results for these markets directly comparable with results for other developed markets, Germany, United Kingdom and the USA were also incorporated. Our results present contrarian pricing behavior in the investigated countries while instead of the mean reverting (negative autocorrelation) pricing process experienced in the US or in the UK we measure positive autocorrelation especially in the early years of the investigated stock exchanges. However we document continuous development in the efficiency of pricing. Our results show that if the prices are recalculated in USD the significance of inefficiency measures are weakening or even vanishing.

JEL classification: G14

KEY WORDS

Market efficiency, CEE countries, Runs test

INTRODUCTION

By the original definition of Efficient Market Hypothesis (EMH) holds prices are not predictable, since supposing rational well-informed investors who properly anticipate the prices based on their knowledge generate randomly fluctuating prices (Samuelson, 1965). In order to test the EMH Fama (1970) classified three different forms of market efficiency, which were slightly modified later (Fama 1991) to the three forms of market efficiency to tests for return predictability, event studies and tests for private information.

Fama (1965) provided tests of market efficiency by using serial correlations and runs tests and found that the degree of dependence in daily price changes was not strong enough to increase the expected profits of investors. Most of the tests about return predictability concentrated on developed stock markets; only some authors investigated the problem in emerging markets as well. Harvey (1994) investigated 20 emerging countries (three European among them: Greece, Portugal and Turkey) in the period from 1976 (or later where data was not applicable) through 1992 and observed low correlations with returns of developed countries and found these markets more predictable than developed ones, which can be caused by the segmentation of these markets from world capital markets. Kawakatsu and Morey (1994) examined the effects of liberalization in 16 emerging countries (the Czech Republic and Hungary among them) and found that the liberalization hadn't improved efficiency, hence these markets were already efficient before the actual liberalization. Huber (1997) rejected the random walk hypothesis on the Vienna Stock Exchange for the period 1987-1992 but returns in years 1990-1992 were closer to random walk than the whole period. Smith and Ryoo (2003) accepted the random walk hypothesis only for Turkey and rejected for four other European emerging economies (Greece, Hungary, Poland and Portugal) for the period 1991-1998. Worthington and Higgs (2004) tested weak form market efficiency in twenty European markets (sixteen developed countries including Austria, Germany and the UK in the period

1987-2003 and four emerging ones including the Czech Republic, Hungary and Poland in the period 1994-2003) and found that daily returns followed random walk only in four of the developed (Germany and UK among them) and one of the emerging countries (Hungary). Borges (2010) examined stock market indexes of six European countries in the period 1993-2007 and found Germany and Spain weak form efficient, while the results for Portugal, Greece, France and the UK were mixed.

The goal of this paper is first to examine whether the Central and Eastern European stock markets are weak for efficient, second how this efficiency evolved during the past two decades and third if there are any departures from efficiency these are the same as in the developed markets or we can find different anomalies.

AIM AND METHODOLOGY

We focus on return predictability on the stock exchanges of the Central and Eastern European region, investigating daily closing prices from 02/January/1991 (or from a later date from when data is available) to 30/December/2011 of the indexes of the following stock markets: ATX – Vienna Stock Exchange, Austria; BUX – Budapest Stock Exchange, Hungary; OMX Tallinn (EST) – Tallinn Stock Exchange, Estonia (from 03/June/1996); PX – Prague Stock Exchange, the Czech Republic (from 06/April/1994); RMBET (RM) – Bucharest Stock Exchange, Romania (from 19/September/1997); SAX16 (SAX) – Bratislava Stock Exchange, Slovakia (from 14/September/1993); WIG20 (WIG) – Warsaw Stock Exchange, Poland (from 18/April/1994).

The indexes are calculated based on the prices of the stocks in their baskets denominated in local currencies, in order to get comparable results with the international findings we also calculated the returns in US dollar terms. Beside the aforementioned indexes some others representing developed markets were also incorporated, again in order to make the results for the region more comparable: DAX – Frankfurt Stock Exchange, Germany; FTSE100 (FTSE) - London Stock Exchange, United Kingdom; S&P500 (SP) – United States.

All of the indexes are capitalization weighted, and are total return indexes, so returns are calculated assuming dividends paid by the stocks are reinvested. The source of the data is Thomson Reuters Datastream.

Return predictability can easily be investigated by runs tests. If a run is defined as a series of successive price changes in the same direction, the number of runs in the series can be compared to the expected value that would be generated by a random process. If the actual number is below the expected value it shows positive correlation (as the sequences are longer than the random process') while a number result above the expected value indicates negative correlation (as the sequences are shorter than the random process').

Runs tests are not sensitive to extreme observations as only the direction of changes are taken into consideration the size of changes are not. Runs test is a nonparametric tests, so the returns are not required to be distributed normally.

The returns can be measured in absolute terms or compared to the mean return. In the first case returns above zero are considered as positive returns, in the second case returns above the mean return of the investigated period are considered as positive changes. So the question is whether we measure changes as returns or abnormal returns, but given the fact that the mean of daily returns is close to zero, this differentiation does not have significant impact on the results (and our actual results confirm that expectation), the second approach accounts for the effect of time drift in the series of returns. We made the tests using both approaches in defining the positive or negative changes.

If N_A denotes the number positive changes (positive returns according to the first approach or returns above the mean return of the period according to the second approach), N_B denotes the negative changes, N the number of observations ($N=N_A+N_B$) and R the actual number of runs.

For large sample sizes the test statistic is approximately normally distributed with the following parameters (Wald-Wolfowitz 1940):

$$Z = \frac{R - \mu_R}{\sigma_R}$$

$$\mu_R = \frac{2N_A N_B}{N} + 1$$

$$\sigma_R = \sqrt{\frac{2N_A N_B (2N_A N_B - N)}{N^2 (N - 1)}}$$

RESULTS

As the results show in Table 1 and Table 2 the null hypothesis of randomness is rejected at 1% level for the whole period for all CEE indices except WIG, and at 5% level for S&P500. But while the actual number of runs are fewer than the expected for CEE indices which indicates positive autocorrelations, for S&P500 the actual number is higher than expected indicating negative autocorrelation for the period 1991-2011. The null hypothesis cannot be rejected for WIG, DAX and FTSE.

If we look at the returns measured in USD in Table 4 we have the same result of rejection at 1% for PX, SAX, RM, EST and no rejection for FTSE. For ATX and BUX the null hypothesis can be rejected only at 10% level for returns measured in USD, with fewer number of runs than expected. For DAX there is a 5% level rejection for USD terms with higher actual than expected runs indicating negative autocorrelation.

It is also worth to mention that whether we define positive and negative returns relative to zero or relative to the mean return of the period doesn't influence the results, the only index was BUXUSD where the level of rejection was different: 10% for positive-negative returns and 5% for returns above-below the mean return¹.

We performed the runs tests not only for the whole period but for 5 year subperiods starting each year as well (see Table 3 and 4). For ATX and BUX the null hypothesis can be rejected only for the periods before 1999, for WIG before 2000 and for PX before 2004 (with less runs than expected for all cases) so in the last decade these indices seem to follow random walk with the exception of WIG for the period 2007-2011 where the null hypothesis can be rejected with more than expected runs. For SAX, RM and EST the null hypothesis can be rejected for most of the 5 year sub periods (except 1993-1997, 1994-1998, 2000-2004, 2001-2005 for SAX and 2006-2010, 2007-2011 for RM) with fewer than expected runs (indicating positive autocorrelation) for all cases and at 1% level for most. For DAX, FTSE and S&P500 the null hypothesis is accepted for almost all periods before 2000 (except FTSE for 1997-2001). For DAX and FTSE the null hypothesis is rejected for years 2002-2010, for S&P500 for years 1999-2011 with higher than expected number of runs for all these rejections indicating negative autocorrelation similarly to the finding of De Bondt and Thaler (1987).

For DAXUSD the null hypothesis can be rejected only for periods before 1999, while for FTSE there is only one period (2004-2008) when the null hypothesis can be rejected, so the results for USD returns for these two indices differ significantly from results for local currency returns. Among the CEE indices only WIG has different results for local currency and USD measured returns for the 5 year periods, the null hypothesis can be rejected for more periods for the WIGUSD than WIG.

¹This is the reason why we present only the result of runs test where the returns are compared to the mean returns. As we run the test when the sequences are measured relative to zero as well these results are available upon request

Table 1. Runstests for returns measured in local currencies

	period	1991	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
		2011	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
ATX	NA	2862	656	656	657	681	686	685	677	677	670	668	674	689	702	726	707	692	683
	NB	2333	580	581	577	552	548	547	554	556	564	567	565	549	535	514	532	548	559
	runs	2435	519	543	556	577	576	593	593	597	596	612	599	602	604	599	592	608	607
	E(R)	2571.57	616.66	617.23	615.41	610.75	610.28	609.27	610.35	611.56	613.45	614.37	615.71	612.08	608.23	602.88	608.14	612.64	615.81
	p-value	0.000	0.000	0.000	0.001	0.052	0.048	0.348	0.317	0.402	0.317	0.892	0.339	0.561	0.807	0.820	0.349	0.789	0.613
BUX	NA	2746	613	595	617	674	685	695	688	665	637	651	645	654	663	677	659	659	659
	NB	2495	631	640	616	558	546	545	556	580	609	598	606	604	591	578	593	594	595
	runs	2450	509	472	471	509	531	568	608	615	629	638	636	638	640	605	615	627	642
	E(R)	2615.49	622.87	617.68	617.50	611.54	608.65	611.93	616.00	620.60	623.69	624.38	625.89	629.01	625.93	624.60	625.26	625.81	626.37
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.646	0.750	0.763	0.440	0.567	0.611	0.425	0.265	0.561	0.946	0.376
DAX	NA	2897	655	669	692	697	701	707	708	687	683	677	695	699	692	715	710	701	692
	NB	2412	596	585	560	554	552	550	552	577	583	593	578	576	582	560	562	570	581
	runs	2685	624	641	621	631	628	626	609	617	634	646	650	668	691	659	666	656	632
	E(R)	2633.35	625.11	625.19	620.04	618.33	618.64	619.70	621.34	628.21	630.05	633.22	632.12	632.57	633.25	629.08	628.39	629.75	632.66
	p-value	0.153	0.950	0.369	0.956	0.468	0.592	0.718	0.480	0.525	0.823	0.471	0.312	0.045	0.001	0.089	0.032	0.136	0.970
EST	NA	2104						628	693	690	667	669	651	625	656	699	692	673	659
	NB	1820						527	570	570	592	595	616	637	606	560	561	576	593
	runs	1705						500	572	581	568	563	544	519	512	522	531	535	538
	E(R)	1952.72						574.08	626.51	625.29	628.27	630.83	634.02	631.94	631.01	622.83	620.65	621.73	625.26
	p-value	0.000						0.000	0.002	0.012	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FTSE	NA	2803	639	652	658	669	674	677	671	673	669	676	681	681	687	683	676	673	672
	NB	2499	621	610	602	592	588	585	590	588	593	588	583	582	577	582	588	592	592
	runs	2686	638	647	615	621	610	606	582	603	622	644	645	665	662	677	664	665	654
	E(R)	2643.28	630.87	631.30	629.76	629.15	629.07	628.65	628.90	628.64	629.71	629.94	629.20	628.62	628.21	629.47	629.94	630.91	630.47
	p-value	0.239	0.688	0.376	0.405	0.645	0.281	0.200	0.008	0.147	0.663	0.426	0.371	0.039	0.055	0.007	0.054	0.054	0.184
PX	NA	2373			656	671	659	645	639	656	664	683	686	695	712	687	671	653	
	NB	1983			448	555	588	602	609	589	578	564	565	558	544	568	583	600	
	runs	1954			386	463	511	549	565	583	579	604	599	614	610	610	624	643	
	E(R)	2161.54			533.41	608.51	622.48	623.76	624.64	621.70	619.02	618.82	620.65	620.01	617.76	622.86	624.91	626.38	
	p-value	0.000			0.000	0.000	0.000	0.000	0.001	0.028	0.022	0.397	0.216	0.731	0.655	0.464	0.959	0.347	
RM	NA	1912						545	644	644	644	644	641	664	687	678	689	700	
	NB	1649						523	607	594	593	589	593	573	558	565	562	559	
	runs	1570						440	530	542	556	520	535	529	549	577	604	611	
	E(R)	1771.79						534.77	625.95	618.99	618.45	616.27	617.07	616.15	616.82	617.36	620.05	622.60	
	p-value	0.000						0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.359	0.508	
SAX	NA	2562			567	666	734	717	712	701	677	654	645	660	684	712	731	757	746
	NB	1428			467	551	449	429	423	429	449	473	507	474	397	284	174	139	183
	runs	2059			534	628	599	583	575	581	596	571	576	588	558	508	448	445	474
	E(R)	1834.85			513.16	604.07	558.17	537.81	531.71	533.26	540.92	549.97	568.73	552.75	503.40	407.04	282.09	235.87	294.90
	p-value	0.000			0.191	0.166	0.012	0.004	0.006	0.003	0.001	0.198	0.664	0.031	0.000	0.000	0.000	0.000	0.000
SP500	NA	2825	627	637	641	652	656	657	659	646	648	663	677	683	694	718	715	713	712
	NB	2465	635	627	622	610	606	605	597	610	608	593	579	576	564	540	543	545	547
	runs	2761	642	640	633	633	634	620	635	644	664	665	679	695	706	695	697	685	669
	E(R)	2633.75	631.97	632.96	632.36	631.30	631.01	630.93	627.47	628.48	628.36	627.05	625.18	625.95	623.28	617.41	618.24	618.78	619.69
	p-value	0.000	0.572	0.692	0.971	0.924	0.866	0.538	0.670	0.381	0.044	0.032	0.002	0.000	0.000	0.000	0.000	0.000	0.005
WIG	NA	2313			604	637	647	640	646	638	643	658	657	660	684	667	655	664	
	NB	2085			532	609	601	609	603	612	612	598	600	597	573	587	601	591	
	runs	2176			503	581	587	615	610	626	627	639	650	649	647	640	656	673	
	E(R)	2194.09			566.72	623.69	624.15	625.12	624.76	625.73	628.12	627.57	628.21	627.92	624.60	625.45	627.84	626.38	
	p-value	0.5843			0.000	0.015	0.035	0.567	0.403	0.988	0.950	0.518	0.218	0.233	0.203	0.409	0.111	0.008	

So the randomness in daily returns cannot be rejected by runs test for the examined CEE markets. The results of runs tests for these markets are mixed in the literature. Andor et al. (1999) investigated the price changes in the Budapest Stock Exchange for the period 1990-2000 and they found actual number of runs close to the expected values. Worthington and Higgs (2004) examined 20 European capital markets, among them Austria, Germany and the UK, (for the period 31/12/1987-28/05/2003), the Czech Republic and Hungary (for the period 30/12/1994-28/05/2003) and Poland (31/12/1992-28/05/2003), and accepted the null hypothesis of randomness only for Germany and the UK. Borges (2010) investigated six European markets: France, Germany, Greece, Spain, Portugal, UK for the period 1993-2007 and found that the actual number of runs using daily data were significantly below the expected value in Greece and Portugal, while for other four countries the actual number was above the expected, but the differences were not significant.

Table 2. Runstests for returns measured USD

period	1991	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
	2011	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
ATXUSD	NA	2858	673	677	683	694	684	667	658	652	653	661	664	684	691	719	695	695	693
	NB	2337	563	560	551	539	550	565	573	581	581	574	575	554	546	521	544	545	549
	runs	2503	577	597	598	605	608	593	577	583	583	579	607	610	617	590	599	608	629
	E(R)	2572.37	614.11	613.97	610.94	607.76	610.72	612.78	613.57	615.46	615.90	615.44	617.30	613.17	611.00	605.19	611.30	611.93	613.65
	p-value	0.0518	0.0333	0.3301	0.4559	0.8732	0.8752	0.2563	0.0362	0.0635	0.0601	0.0371	0.5561	0.8552	0.7293	0.3757	0.4779	0.8208	0.3771
BUXUSD	NA	2835	659	653	643	689	699	695	686	682	665	678	669	681	701	694	677	681	674
	NB	2406	585	582	590	543	532	545	558	563	581	571	582	577	553	561	575	572	580
	runs	2528	581	564	563	561	591	591	610	607	609	612	620	616	617	613	608	627	640
	E(R)	2603.94	620.80	616.46	616.36	608.35	605.17	611.93	616.41	617.81	621.17	620.92	623.47	625.70	619.27	621.45	622.85	622.76	624.48
	p-value	0.035	0.023	0.003	0.002	0.006	0.410	0.228	0.713	0.536	0.488	0.611	0.843	0.582	0.897	0.629	0.398	0.809	0.378
DAXUSD	NA	2894	695	684	689	701	688	678	693	675	676	684	684	689	692	704	696	697	684
	NB	2415	556	570	563	550	565	579	567	589	590	586	589	586	582	571	576	574	589
	runs	2712	661	683	667	669	666	648	629	622	620	642	655	653	643	649	648	631	
	E(R)	2633.89	618.78	622.82	620.66	617.39	621.46	625.60	624.70	630.07	631.08	632.22	633.96	634.34	633.25	631.56	631.34	630.55	633.96
	p-value	0.031	0.016	0.001	0.008	0.003	0.011	0.203	0.807	0.862	0.608	0.490	0.650	0.244	0.265	0.517	0.317	0.323	0.868
ESTUSD	NA	2082						625	682	679	655	662	653	635	652	676	661	658	666
	NB	1842						530	581	581	604	602	614	627	610	583	592	591	586
	runs	1774						508	579	599	605	601	610	591	563	544	549	548	555
	E(R)	1955.66						574.59	628.46	627.19	629.47	631.58	633.90	631.97	631.30	627.07	625.60	623.70	624.44
	p-value	0.000						0.000	0.005	0.110	0.167	0.085	0.179	0.021	0.000	0.000	0.000	0.000	0.000
FTSEUSD	NA	2844	655	675	665	670	668	668	656	661	674	683	674	672	680	699	694	702	697
	NB	2458	605	587	595	591	594	594	605	600	588	581	590	591	584	566	570	563	567
	runs	2630	628	627	632	631	623	615	604	614	606	622	624	639	648	659	646	648	640
	E(R)	2637.95	630.01	628.93	629.06	629.03	629.83	629.83	630.47	630.02	629.07	628.88	630.21	629.90	629.35	626.51	626.92	625.86	626.31
	p-value	0.826	0.910	0.913	0.868	0.911	0.699	0.402	0.135	0.365	0.192	0.697	0.726	0.607	0.291	0.065	0.278	0.207	0.436
PXUSD	NA	2341				644	662	667	648	627	651	663	677	669	674	707	688	677	679
	NB	2015				460	564	580	599	621	594	579	570	582	579	549	567	577	574
	runs	2002				439	533	543	565	579	573	596	599	595	598	610	615	623	
	E(R)	2166.80				537.67	610.08	621.47	623.54	624.99	622.20	619.16	619.91	623.47	623.90	619.06	622.67	624.01	623.10
	p-value	0.000				0.000	0.000	0.000	0.001	0.009	0.005	0.008	0.172	0.164	0.100	0.227	0.470	0.608	0.995
RMUSD	NA	1907							554	659	655	650	659	642	660	686	678	687	691
	NB	1654							514	592	583	587	574	592	577	559	565	564	568
	runs	1606							434	526	557	575	559	565	559	561	573	594	601
	E(R)	1772.51							534.25	624.71	617.91	617.90	614.57	616.99	616.72	617.02	617.36	620.45	624.49
	p-value	0.000							0.000	0.000	0.001	0.014	0.001	0.003	0.001	0.001	0.011	0.131	0.181
SAXUSD	NA	2441			561	681	729	718	710	696	677	659	655	646	660	649	650	659	667
	NB	1549			473	536	454	428	425	434	449	468	497	488	421	347	255	237	262
	runs	2023			533	632	611	591	569	579	588	585	598	594	554	481	442	443	465
	E(R)	1896.29			514.26	600.86	560.54	537.31	532.72	535.63	540.92	548.31	566.16	556.99	515.08	453.21	367.30	349.62	377.22
	p-value	0.000			0.240	0.070	0.002	0.001	0.021	0.006	0.003	0.024	0.056	0.025	0.013	0.052	0.000	0.000	0.000
SP500	NA	2825	627	637	641	652	656	657	659	646	648	663	677	683	694	718	715	713	712
	NB	2465	635	627	622	610	606	605	597	610	608	593	579	576	564	540	543	545	547
	runs	2761	642	640	633	633	634	620	635	644	664	665	679	695	706	695	697	685	669
	E(R)	2633.75	631.97	632.96	632.36	631.30	631.01	630.93	627.47	628.48	628.36	627.05	625.18	625.95	623.28	617.41	618.24	618.78	619.69
	p-value	0.000	0.572	0.692	0.971	0.924	0.866	0.538	0.670	0.381	0.044	0.032	0.002	0.000	0.000	0.000	0.000	0.000	0.005
WIGUSD	NA	2366				601	641	653	646	648	662	653	648	660	667	683	693	687	693
	NB	2032				535	605	595	603	601	588	602	608	597	590	574	561	569	562
	runs	2138				507	567	573	589	593	595	608	613	620	637	650	648	663	683
	E(R)	2187.32				567.08	623.48	623.65	624.76	624.62	623.81	627.46	628.36	627.92	627.14	624.77	621.05	623.46	621.66
	p-value	0.135				0.000	0.001	0.004	0.043	0.073	0.102	0.271	0.385	0.654	0.577	0.151	0.124	0.024	0.000

CONCLUSION

In this paper we find that the examined Central and Eastern European stock market indexes show continuous development in terms of weak form market efficiency during the past two decades. The results of runs tests show that the null hypothesis of randomness can be rejected mostly for years before 2000; however, since then the daily returns of the indexes follow a random walk process. In the periods when daily returns do not follow random process the actual number of runs are lower than expected indicating positive autocorrelation, on the contrary the rejection of the null hypothesis of randomness in the case of developed countries were associated negative autocorrelation.

Not only for investment decisions is the efficiency of capital markets relevant but for corporate finance analyses as well. Berk and DeMarzo (2011) summarize the implications of

Efficient Market Hypothesis from corporate viewpoint as firms should invest only in projects with positive net present value in order to maximize its shareholders' wealth.

Based on the results presented in this paper corporate financial decisions should not differ in CEE countries from the decisions in developed countries.

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THE INSURANCE MARKET IN EUROPE

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ANNOTATION

The paper shows the characteristics of insurance market in Europe, as well as of CEA insurance market economies and the EU single insurance market. Various indicators of the level of the insurance market are used in the paper. In this paper we present data on the level of the insurance market in several advanced economies, with particular regard to data on indicators of the level of the insurance market in Slovakia and the Czech Republic.

KEY WORDS

insurance market, insurance market level indicators, premium written, insurance penetration, insurance companies, life insurance, non-life insurance

JEL classification: G220

INTRODUCTION

The insurance market in Europe can be defined in several ways. For example: geographically as the insurance market of all the European countries, or as the insurance market of 27 Member States (EU single insurance market), or as the insurance market of the Member States CEA (European insurance and reinsurance federation), in 2011 already with number of 34 in (CEA, 2011). In this paper we use the combined methods of definition of data on the level of the insurance market in Europe.

AIM AND METHODOLOGY

The paper is to give a picture of developments in the insurance market in Europe, based on selected indicators in the years 2000-2010, with special reference to data on the level of indicators of the insurance market in Slovakia and in the Czech Republic. In order to achieve the aim, we will use the methods of analysis, synthesis and comparison.

RESULTS

The insurance market and insurance industry has in each market economy a major status with specific objectives and importance. It is a special branch, in other words, service sector of the economy, which helps eliminate the risks affecting the activity of people. The insurance industry consists of insurance companies, their clients, insurance brokers, insurance supervision, insurance associations and other subjects. (Čejková, Martinovičová, Nečas, 2011)

The Insurance Market and its level indicators

If goes about the number of companies carrying out insurance activities, it had been declining steadily for a decade, after a wave of mergers and acquisitions at the end of the 1990s following market liberalisation and deregulation in the EU. In 2010, however, this trend was reversed and there were 5350 insurance companies in the CEA countries. (CEA, 2011) Three biggest countries (England, Germany, France) with the largest markets also had the most insurers. The potential and the level of the European insurance market can be proved by some indicators. For instance: share of premiums written to gross domestic product (insurance

penetration) or premiums written per capita (insurance density) and other indicators. Level indicators of insurance market assess market completely. These are the indicators used in developed economies. They are primarily used as the essential indicators those are tracked separately and in the life insurance sector, non life insurance:

- Premium written,
- Insurance benefit,
- Loss ratio,
- Insurance penetration,
- Concentration of the insurance market. (Čejková, Martinovičová, Nečas, 2011)

The above basic indicators of maturity of the insurance market, insurance market concentration indicator used outside of the Czech and Slovak insurance market, in modified form as a percentage of representation of 5 or 10 largest insurers in the relevant insurance market. The insurance market can be monitored and evaluated also by additional indicators. (Čejková, Martinovičová, Nečas, 2011)

Other indicators can include, for example indicator of premiums written per capita, which is in CEA member countries commonly used, is vice versa not indicated in the annual report of the Slovak Insurance Association, thus not used in insurance practice of Slovak Republic. The Annual Report of the Czech Insurance Association in 2009 mentions that the Czech Republic and Slovakia are among the leaders in Central and Eastern Europe. In the Czech Republic, this indicator is about one-third higher (EUR 499 instead of EUR 366 in Slovakia). Even so, it's only one-fourth the average in the EU (EUR 1989). (ČAP, 2010) If we look at figures published by Swiss Re for the year 2010, the situation stays almost the same (Czech Republic – USD 753, Slovakia – USD 481). (Swiss Re, 2011)

When comparing insurance markets of continents, countries of these continents and insurers of these countries, it does not mean that national insurance markets of individual insurers are well-defined by national borders. On the contrary, each insurer's effort is to extend the offer and sale of its own insurance products abroad, not only for reasons of business, but also actuarial (risk greater variance). Often the nature of insurance itself predetermines this approach; most telling example would be a major syndicate of underwriters Lloyd's insurance and shipping.

The prosperity and growth of the insurance sector is closely linked to overall economic development of countries and continents. The biggest insurance group in the European continent - by indicator premiums written - is the German Allianz. Other entities that belong to the European leader in insurance, the insurance company AXA (F), Generali (I), Zurich (CH), Prudential (GB), Aegon (NL) ING (NL), AVIVA (GB) and others (see the table 1).

Table 1 The largest insurance groups in Europe by premium written in 2008

Top 10 European insurers	
1. Allianz	6. ING
2. AXA	7. CNP
3. Generali	8. Aegon
4. Zurich	9. Crédit Agricole
5. Aviva	10. Prudential

Source: authors according to CEA. CEA Statistics N°40: European Insurance in Figures, Data 1999-2008 [online]. 2010 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/publications/statistics>

If we look at insurance penetration in selected European countries, the development of this indicator ranged at first 10 states from 7.2 to 10% (data for 2010) with the exception of a few countries (e.g. United Kingdom, Netherlands, Finland, France). The average height of the indicator was in the EU 8.0% and 7.7% in CEA. For more on the development of this indicator, see data in Table 2.

Table 2 Insurance penetration in selected European countries (%)

Countries	2000	2002	2004	2006	2008	2010
Switzerland	11.2	12.2	11.2	10.1	9.9	10.0
United Kingdom	15.8	14.9	13.9	15.1	13.6	12.2
Ireland	10.1	8.6	8.0	9.1	7.4	8.2
Netherlands	10.2	9.5	9.9	13.6	12.8	13.2
Finland	8.9	8.5	8.7	8.9	8.6	10.4
France	9.1	8.5	9.5	10.9	9.4	10.7
Denmark	6.3	7.3	8.1	8.5	8.9	8.9
Belgium	7.9	8.3	9.8	9.3	8.5	8.3
Germany	6.4	6.6	6.9	7.0	6.6	7.2
Italy	5.7	6.7	7.3	7.2	5.9	8.1
Czech Republic	2.8	3.2	3.8	3.6	3.6	3.9
Slovakia	2.9	3.3	3.5	3.2	3.1	3.1
The EU average	8.4	8.3	8.4	9.0	8.0	-
CEA	8.2	8.1	8.2	8.6	7.7	8.2

Source: authors according to CEA. CEA Statistics N°40: European Insurance in Figures, Data 1999-2008 [online]. 2010 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/publications/statistics> and CEA. CEA Statistics N°44: European Insurance in Figures [online]. 2011 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/uploads/Modules/Publications/european-insurance-in-figures-2011.pdf>

If we look at the position of this indicator in Slovakia and also in the Czech Republic, the achieved levels (in comparison with EU or CEA average) are less than half and don't correspond to the possibilities and prerequisites for the development of insurance industry in both countries. It can be assumed that the insurance markets in the CR and the SR have still enough scope for supply extension of insurance products, particularly in life insurance.

During the 1990s, the growth in premiums written in Central and Eastern European countries was about 35%. In particular, Poland, Slovenia, Hungary, Slovakia and the Czech Republic overcome very quickly the consequences of long absence of a market environment. Some countries in Central and Eastern Europe reached in total insurance penetration relatively good results (see data in Table 3).

Table3 Insurance penetration in selected countries of Central and Eastern Europe (%)

Countries	1996	1998	2000	2004	2006	2008	2010
Czech Republic	2.6	3.1	2.8	3.8	3.6	3.6	3.9
Estonia	1.8	1.7	1.7	2.1	2.1	2.3	3.0
Latvia	1.5	2.4	2.0	1.8	1.8	2.1	1.8
Hungary	2.2	2.4	2.9	2.9	3.5	3.4	3.2
Poland	2.1	2.8	2.8	3.0	3.5	4.6	3.8
Slovakia	2.4	3.1	2.9	3.5	3.2	3.1	3.1
Slovenia	4.8	4.7	4.4	5.4	5.6	5.4	5.9
The EU average	7.1	7.3	8.4	8.4	9.0	8.0	-

Source: authors according to CEA. CEA Statistics N°40: European Insurance in Figures, Data 1999-2008 [online]. 2010 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/publications/statistics>; CEA. CEA Statistics N°44: European Insurance in Figures [online]. 2011 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/uploads/Modules/Publications/european-insurance-in-figures-2011.pdf>; ČAP. Výroční zpráva ČAP 2006 [online]. 2007 [cit. 2012-04-26]. Available at: www.cap.cz/ItemF.aspx?list=DOKUMENTY_01&view=pro+web+Výroční+zprávy

The development of the breakdown of premiums by business sector (life and non-life insurance) in the countries of CEA seems to be a very interesting issue as well. Comparing the development in transition countries (Czech Republic and Slovakia), clear discrepancy between the status of these countries and in developed economies of Europe, where the situation is almost exactly the opposite (Slovakia has a few percent larger share of life insurance as Czech Republic). The development of this relationship is characterized by the CEA data in Table 4.

Table4 Development of breakdown of premiums by business sector in CEA countries

Years	Non-life Insurance(%)	Life Insurance(%)
1990	54,8	45,2
2000	35.0	65.0
2005	38.2	61.8
2006	38.7	61.3
2007	36.6	63.4
2008	40.3	59.7
2009	40.2	59.8
2010	40.2	59.8

Source: authors according to ČAP. Některé vývojové trendy životného pojištění v Evropě. In Pojistný obzor. 2002. No. 6, p. 4 and CEA: CEA Statistics N°45: The European Life Insurance Market: Data 2001-2010 [online]. CEA, 2012. [cit. 2012-06-19] Available at: <http://www.insuranceeurope.eu/publications/statistics>

The analyzed data of selected countries differ greatly in importance and status of life insurance in the relevant market and overall economy. First of all, there is a difference between the countries of Central and Eastern Europe and the states of EU. Of course, there are differences between the old Member States arising from different traditions, popularity of certain financial products, forms of pensions and insurance, tax system etc.

In Table 5, there are data on premiums written per capita in selected countries that joined the EU in 2004.

Table 5 Premiums written per capita (in EUR) in the countries of Central and Eastern Europe

Countries	2003	2006	2008	2010
Czech Republic	278	399	506	553
Estonia	124	212	277	317
Hungary	218	312	353	307
Latvia	84	127	210	145
Lithuania	70	125	176	n.a.
Poland	148	253	441	355
Slovenia	639	860	999	1022
Slovakia	187	267	376	380
Average of these countries	219	319	417	n.a.
Average in CEA	1540	1891	1805	1870
EU average (27)	1717	2117	2008	n.a.

Source: authors according to CEA. CEA Statistics N°40: European Insurance in Figures, Data 1999-2008 [online]. 2010 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/publications/statistics>; CEA. CEA Statistics N°44: European Insurance in Figures [online]. 2011 [cit. 2012-04-26]. Available at: <http://www.insuranceeurope.eu/uploads/Modules/Publications/european-insurance-in-figures-2011.pdf>

With the national markets in the EU and EEA countries, the European insurance market is a unique example of an integrated insurance space. Insurers can now sell their products on European markets according to license from their home country. Every European customer could theoretically choose any of the products offered by insurance companies of different states. Even in the U.S. we can not find a similar system of functioning of insurance market. Commercial insurance companies that operate there, they must apply in each State of the Union, where they want to sell their insurance products, the license for insurance activities.

CONCLUSION

In this paper we described and presented data on the level of the insurance market in several advanced economies, with particular regard to data on indicators of the level of the insurance market in Slovakia and in the Czech Republic. According to figures both countries achieve a distinctly lower level when comparing to insurance markets of advanced European countries. Further development of the insurance market in Europe is possible and will depend on several factors. In addition, it concerns the integration of business and maximum protection for clients of commercial insurance companies. An important theme of integration and the gradual unification of the market is to expand offer of insurers and sale of insurance products abroad.

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EMPIRICAL TEST OF THE CAPM USING LINEAR REGRESSION

Petr Červinek, Jana Hvozdenská

ANNOTATION

This paper summarizes the results of series of empirical tests of the Capital Asset Pricing Model (CAPM). The empirical tests were performed for the shares traded in the system SPAD of the Prague Stock Exchange. CAPM is the equilibrium model of the single-index model. Therefore we use test of linear regression for single-index model. The results indicate that the CAPM is not appropriate for modelling the return on the considered shares in the considered time interval.

KEY WORDS

CAPM, linear regression, analysis of variance

JEL classification: G11, C13

INTRODUCTION

Model CAPM is the equilibrium model of the return on a share related to the return on a stock market index. It technically represents the single-index model of the return on a share. The single index is the return on the market. The return on the market is represented by a stock market index. There are made simplifying assumptions on single-index model. Since there is assumption that the return on a share is linearly related to the return on a stock market it is possible to test such single-index model (and thus CAPM as well) using statistical methods applied to classical linear regression.

AIM AND METHODOLOGY

The aim of the whole empirical testing is to apply the classical linear regression to the single-index model. We use the method of least squares to estimate the regression coefficients and we do also the statistical verification of the obtained models. We carry out the analysis of variance for all obtained models including the statistical significance of the overall fit checked by the F-test. Furthermore we test the statistical significance of the regression coefficient including the confidence interval on different significance levels. We calculate the coefficient of determination and the adjusted coefficient of determination. We also test the assumptions of the classical linear regression and of the CAPM. We use MS Excel and STATGRAPHICS Centurion XV for calculation.

RESULTS

We chose the common stocks listed on the Prague Stock Exchange (PSE) traded via the system SPAD for empirical tests. Via the SPAD are traded so called blue chips of the Czech capital market. Actually there are 14 different companies which shares are traded via SPAD. These are as follows:

Fig.1 Companies traded via SPAD

Name	AAA Auto Group N.V.	CENTRAL EUROPEAN MEDIA	ČEZ, a.s.	Erste Group Bank	Fortuna Entertainment Group N.V.	KIT Digital, Inc.	Komerční banka, a.s.
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		ENTERPRISE S LTD.		AG			
Ticker	AAA	CETV	CEZ	ERSTE	FORTUNA	KITD	KB
Name	New World Resources Plc	Orco Property Group S.A.	PEGAS NONW OVEN S SA	Philip Morris ČR a.s.	Telefónica Czech Republic, a.s.	UNIPETROL , a.s.	VIENNA INSURANCE GROUP
Ticker	NWR	ORCO	PEGAS	PM	TELE	UNI	VIG

Source: author

We assume that stock market index PX is suitable approximation of the Czech stock market. The range of the tested data was set to time interval from May 11th, 2011 till May 11th, 2012. We used close prices to calculate historical one day returns on all the shares. We used these historical returns as input data for the tests. The extent of used data was 253 historical values for each share as well as the PX index.

We proceed from the SML (Security Market Line) in the beta version

$$r_i = r_f + (r_m - r_f) \cdot \beta_i + \varepsilon_i,$$

the first-pass regression had the form

$$r_i = \alpha_i + \beta_i \cdot r_m + \varepsilon_i, \text{ where}$$

$$\alpha_i = r_f \cdot (1 - \beta_i).$$

This form better implies the hypothesis that the return on a share (r_i) depends only on single factor, which is the return on the market (r_m), which is approximated by the return on a stock market index. The variable r_f represents risk free return and the variable ε_i represents the random (uncertain) element.

To get unbiased estimation of the regression coefficients we used the least squares method. The estimated values are as follows:

Fig.2 Estimated regression coefficients

Ticker	AAA	CETV	CEZ	ERSTE	FORTUNA	KITD	KB
est α_i	-0,00007	-0,00126	-0,00012	0,00013	-0,00002	-0,00131	0,00082
est β_i	0,74738	1,56014	0,72196	1,95893	0,52806	0,72922	1,19492

Ticker	NWR	ORCO	PEGAS	PM	TELE	UNI	VIG
est α_i	-0,00147	-0,00291	0,00034	0,00108	0,00016	0,00002	0,00051
est β_i	1,29963	0,96953	0,30441	0,16204	0,42559	0,22382	1,06409

Source: author

The obtained theoretical models were tested on the statistical significance of the overall fit using analysis of variance and the F-test. We present the analysis of variance of the AAA as the illustration.

Fig.3 Analysis of variance of the share AAA

Source	Sum of Squares (SS)	Degree of Freedom (DF)	Mean Square (MS)	F-Ratio
Regression Model (M)	0,03121466	1	0,03121466	79,12127511
Error (E)	0,09902368	251	0,00039452	
Total (T)	0,13023834	252		

Source: author

Values of the F-test statistic (F-Ratio) and F-Values $F_{1-\alpha}(DFM; DFE)$ are in Figure 4 and in Figure 5. By comparing F-Ratio and the appropriate F-Value for the given significance level and the given degrees of freedom (1 and 251) we made conclusion that we can reject the idea that the model is statistical insignificant with 90%, 95% and 99% confidence respectively for all obtained models.

Fig.4 F-Ratio (Values of the F-test statistic)

AAA	CETV	CEZ	ERSTE	FORTUNA	KITD	KB
79,121	171,752	210,628	521,447	72,977	15,877	396,950

NWR	ORCO	PEGAS	PM	TELE	UNI	VIG
261,553	66,575	45,173	7,571	67,294	37,661	228,202

Source: author

Fig.5 F-Values $F_{1-\alpha}(1;251)$

Significance Level	0,1	0,05	0,01
F-Value	2,725626	3,878774	6,736922

Source: author

Further we focused on the test of significance for the regression coefficients β_i because of the important role that this coefficient plays in the CAPM. The t-test statistic produced the following values:

Fig.6 Values of the t-test statistic

AAA	CETV	CEZ	ERSTE	FORTUNA	KITD	KB
8,895	13,105	14,513	22,835	8,543	3,984	19,924

NWR	ORCO	PEGAS	PM	TELE	UNI	VIG
16,172	8,158	6,721	2,751	8,203	6,137	15,106

Source: author

Fig.7 t-Values $t_{1-\alpha/2}(251)$

Significance Level	0,1	0,05	0,01
t-value	1,65094703	1,96946	2,595558

Source: author

By comparing values of the t-test statistic and the appropriate t-value for the given significance level and the given degrees of freedom (251) we made conclusion that we can reject the idea that the regression coefficient β_i is statistical insignificant with 90%, 95% and 99% confidence respectively for all obtained regression coefficients.

Thus we confirmed statistical significance of each model as well as of each estimated regression coefficient β_i .

Next we focused on the adequacy of the obtained models. We tested the assumptions about the random error in the classical linear regression model as well as the assumptions in the CAPM. After that we tested for each model how well the regression line approximates the real data points.

For classical linear model we assume that the random errors ε_i are independent, normally distributed random variables with mean equal to zero and with common variance σ_ε^2 . For testing of the normal distribution we used STATGRAPHICS Centurion XV and the Shapiro – Wilk W test. The obtained results are presented in the Figure 8. The red p-values mean that we can reject the idea that the residuals come from a normal distribution with 95% confidence.

Fig.8 Results of the Shapiro-Wilk W test

	AAA	CETV	CEZ	ERSTE	FORTUNA	KITD	KB
Statistic	0,866977	0,979656	0,984809	0,972946	0,950901	0,817845	0,973135
P-value	0,0000	0,2296	0,6288	0,0229	0,0000	0,0000	0,0248

	NWR	ORCO	PEGAS	PM	TELE	UNI	VIG
Statistic	0,981279	0,957916	0,958179	0,921397	0,935076	0,983676	0,939083
P-value	0,3390	0,0000	0,0000	0,0000	0,0000	0,5334	0,0000

Source: author

It is obvious that only for four shares we cannot reject the idea that the residuals come from a normal distribution with 95% confidence.

On that account we tested each assumption separately. The assumption of the mean of the random error equal to zero and the assumption of common variance of the random error were met for all shares. But for all shares was not met the assumption of independence – covariance between all possible pairs of the given shares was not equal to zero.

Model CAPM assumes another assumption apart from already mentioned assumptions. Model CAPM assumes that the covariance between the random error and the return on the stock market index is equal to zero for all possible pairs of given shares and the stock market index. This assumption can be written as

$$E(\varepsilon_i(r_m - \bar{r}_m)) = 0.$$

This assumption was met for all possible pairs of given shares and the stock market index.

We can state that no of the obtained model met all the assumptions given by theory.

Finally we calculated the coefficient of determination which is a statistic that will give some information about the goodness of fit of a model. Coefficient of determination is a statistical measure of how well the regression line approximates the real data points. A coefficient of determination of 1 indicates that the regression line perfectly fits the data.

Fig.9 Coefficient of determination

AAA	CETV	CEZ	ERSTE	FORTUNA	KITD	KB
0,2397	0,4063	0,4563	0,6751	0,2253	0,0595	0,6126
NWR	ORCO	PEGAS	PM	TELE	UNI	VIG
0,5103	0,2096	0,1525	0,0293	0,2114	0,1305	0,4762

Source: author

CONCLUSION

As we can see from the presented results, in the Czech Republic is the model CAPM statistical significant as well as all regression coefficient but the goodness of fit is too small for all considered shares. It is evident that in the present circumstances of the Czech Republic is not the CAPM suitable for explaining the movements of the return on a share.

The use of the CAPM in the Czech Republic is in our opinion questionable. We suggest the use of alternative theories explaining the movements of the return on a share, for example Asset Pricing Theory (APT). The APT is the equilibrium model of the return on a share related to the more than one factor. It is a multi-index model. We recommend the return on a stock market index as one of the factor considered in a multi-index model.

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STOCK MARKET BUBBLES INVESTIGATION IN THE CZECH REPUBLIC

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ANNOTATION

In this paper, we employ a special methodological technique to examine the presence/absence of the phenomenon of stock market bubbles in the Czech Republic. The methodology is based on the examining of residuals of VAR fundamentals with exclusion of ARCH effects. The presence/absence of bubbles is studied by Hurst persistence tests and regime switching tests. Although we observed the bubbles presence over various time periods, almost no evidence of speculative bubbles was found in the Czech stock market.

KEY WORDS

Stock bubble, regime switching test, Hurst persistence test

JEL classification: G14, G15

INTRODUCTION

Conventional theory of speculative bubbles describes stock bubbles as stock prices that exceed their fundamental value because current owners believe that the stocks can be resold at an even higher price in the future. There is still no common framework on how to detect or predict the formation and burst of a bubble. Since 1980s bubbles are investigated with application of time series econometric analysis. However, the use of such mathematical apparatus raises the question of whether econometric tests can truly detect a bubble or just discover an error in the market evaluation of assets.

The literature on bubbles has taken giant strides in the last three decades that led to several classes of models with distinct empirical tests, but many questions remain unresolved [5]. Unfortunately, there are few studies investigating the existence of asset bubbles in emerging markets, especially considering the fact that in the last twenty years those economies were the subjects of large financial inflows and the data on dividends are of limited use. Emerging market studies are primarily focused on China or countries of MENA region (such as Jahan-Parvar and Waters [10], Billmeier and Massa [4], Lehkonen [12] or Ahmed et al [1], [2], [3]), and reveal inconsistent results. Obviously new methodological approaches and more research in the area are needed. The individual analysis of the possibility of stock market bubbles in smaller financial markets in Europe, including the Czech Republic, was not sufficiently carried out.

The main aim of this paper is to examine the presence of stock market bubble in the Czech Republic. PX Index including all its components is subject of our research. The presence of the 2007-2009 market turmoil brought by the global financial crisis is addressed by dividing the long-time horizon data into three periods: before, during and after the financial crisis.

Empirically testing for bubbles is a challenging task [5]. Since the fundamental value is not directly observable, it must be estimated. On the other hand, it is difficult to confirm the existence of a bubble with a particular certainty, since the determination of the fundamental value is not a trivial task [11]. The majority of valuation models include dividend payments in their calculations, which values are not available in our inquiry. Therefore, following the methodology of Ahmad et al [1], [2], [3], we assume that changes in dividends are reflected in the market prices, and abstract from dividends, basing our analysis only on the stock returns.

DATA

We employ the daily data of PX Index representing the Czech stock market and all of its 14 components (basic information about components is given in Table 1), weighted indices of the profitability of 10-year government bonds for the Czech Republic (as calculated in Bloomberg), and the MSCI world index, summarizing the development of the global stock markets. Daily data capture speedy information as both short run and long run dynamic linkages play role in the bubble formation. Returns of the variables as their first log differences are used.

Tab. 1 PX Index components

Tick	Name	Index Weight, %	Traded since
AAA CP Equity	AAA Auto Group NV	0.167845	2007/09/24
CETV CP Equity	Central European Media Enterprises Ltd	1.096195	2005/06/27
CEZ CP Equity	CEZ AS	20.740413	1995/07/26
RBAG CP Equity	Erste Group Bank AG	18.533592	2002/10/01
FORTUNA CP Equity	Fortuna Entertainment Group NV	0.650660	2010/10/21
KITD CP Equity	KIT Digital Inc	0.109325	2010/01/25
KOMB CP Equity	Komerční Banka AS	17.720545	1995/07/26
NWR CP Equity	New World Resources PLC	4.498707	2008/05/06
ORCO CP Equity	Orco Property Group	0.199178	2005/02/01
PEGAS CP Equity	Pegas Nonwovens SA	0.511181	2006/12/17
TABAK CP Equity	Philip Morris CR AS	2.844535	1995/07/26
SPTT CP Equity	Telefonica Czech Republic AS	15.916278	1995/07/26
UNIP CP Equity	Unipetrol AS	4.019679	1997/08/31
VIG CP Equity	Vienna Insurance	12.991867	2008/02/05

Source: Authors' calculations based on data from Bloomberg

The total sample period is divided into three sub-periods according to the clearly observed trends in the stocks. The sub-periods are pre-crisis period (May 2004 – July 2007), crisis period (August 2007 – March 2009) and post-crisis period (April 2009 – March 2012). The beginning of the study period is chosen as accession date of the Czech Republic to the European Union. The study period of individual equities depends on their first trading date. We chose the crisis period to not start with the Lehman bros. bankruptcy and major panic on the markets, we would like to capture prior anticipations on the market, when the 2007 banking crisis changed the comfort expectations with a fear of it becoming a sovereign debt crisis.

METHODOLOGY

To estimate the fundamental value of stock returns we apply the methodology based on the VAR modelling as Ahmad et al [1], [2]. The VAR model with index returns, government bond's interest rate and world index returns is employed for each country:

$$r_t = A_1 r_{t-1} + \dots + A_p r_{t-p} + B msci_t + C b_t + \varepsilon_t \quad (1)$$

where r_t are stock returns, $msci_t$ are returns of the MSCI world index, b_t are 10-year government bond interest rate and ε_t is an error term.

To exclude the phenomenon of changing volatility in the time series we should remove autoregressive conditional heteroskedasticity (ARCH) effects from VAR residual series. According to Engle [5] the nonlinear variance dependence measure of ARCH is:

$$\varepsilon_t = \hat{\sigma}_t \mu_t \quad (2)$$

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^n \alpha_i \varepsilon_{t-i}^2 \quad (3)$$

with μ is i.i.d. and α_i is a coefficient for chosen lags.

We use two tests for the identification of stock market speculative bubbles. First, we employ the Hurst persistence test to find the existence of long-term linear dependence in the stock market volatility. Second, we perform the rescale range test. This test was developed by Hurst [9] and was firstly implemented in economic analysis by Mandelbrot [13]. Using the rescale range (R/S) analysis, the Hurst exponent H is estimated from the VAR residual series:

$$(R/S)_n = \frac{1}{\hat{\sigma}_n(q)} \left[\max_{1 \leq t \leq n} \sum_{t=1}^n (\varepsilon(t) - \bar{\varepsilon}_n) - \min_{1 \leq t \leq n} \sum_{t=1}^n (\varepsilon(t) - \bar{\varepsilon}_n) \right] \quad (4)$$

where $\hat{\sigma}_n$ is the standard deviation estimation and $\bar{\varepsilon}_n$ is the sample mean of the VAR residual series:

$$\bar{\varepsilon}_n = (1/n) \sum_n \varepsilon(n) \quad (5)$$

R/S is then described as:

$$(R/S)_n = (n/2)^H \quad (6)$$

Hurst exponent allows us to reveal the behavior of stock market efficiency over time [14]. If $0 < H < 0.5$, it denotes an anti-persistent behavior, which means that positive trends in one period tend to become negative and vice versa. If $0.5 < H < 1$, a persistent behavior is indicated in stock market behavior, that is, positive trends in one period tend to continue being positive and vice versa. If H is close to 0.5, it indicates a random walk in data, meaning that market returns are independent. Estimated Hurst exponents are then used to compute F-values for the Chow test to examine its statistical significance.

Second test to detect bubbles in stock market time series is the regime-switching test introduced by Hamilton [8]. The approach of Engle and Hamilton [6] is utilized to test the null hypothesis of no bubbles:

$$\varepsilon_t = \text{trend}_t + z_t \quad (7)$$

where z_t is the white noise and $\text{trend}_t = \mu_1 + \mu_2 s_t$ (8)

with $s = 1$ being a positive trend and $s = 0$ being a negative trend. Moreover, we let:

$$\text{Prob}[s_t = 1 | s_{t-1} = 1] = p, \text{Prob}[s_t = 0 | s_{t-1} = 1] = 1 - p \quad (9)$$

$$\text{Prob}[s_t = 0 | s_{t-1} = 0] = q, \text{Prob}[s_t = 1 | s_{t-1} = 0] = 1 - q \quad (10)$$

The null hypothesis of no trend is given by $p = 1 - q$ and the Wald test statistic calculated as:

$$\frac{p - (1 - q)}{\text{var}(p) + \text{var}(1 - q) + \text{covar}(p, 1 - q)} \quad (11)$$

The Wald test statistic evaluates how close the unrestricted estimates come to satisfying the restrictions under the null hypothesis.

EMPIRICAL RESULTS

Both tests' results show the same situation of no bubbles in the Czech stock market. There is no significant difference in persistence of stock returns among all PX Index components, none of the exponent is significantly in excess of 0.5 (see Table 2).

Stock prices indicate random walk and do not show any speculation developments. The statistical significance of Hurst persistence tests is verified by the Chow test, F-values of which are above its critical values, hence the null hypothesis of no persistence in the time series is rejected. At the same time, Hurst exponents reveal the information on which stocks are struggling to stay liquid, such as Vienna Insurance, New World Resources PLC, Fortuna Entertainment Group NV.

Tab. 2 Hurst exponents and related Chow test results

Estimated Hurst exponents of residuals				
Component	Full sample	Pre-crisis period	Crisis period	Post-crisis period
CEZ AS	0.57601	0.56752	0.51430	0.49570
Komercni banka AS	0.44444	0.48113	0.53153	0.46061
Erste Group Bank AG	0.53023	0.44858	0.56045	0.56429
Telefonica Czech Republic AS	0.48278	0.51558	0.48049	0.44419
Philip Morris CR AS	0.60144	0.55643	0.66025	0.55190
Unipetrol AS	0.52699	0.54491	0.47263	0.58606
Orco Property Group	0.62472	0.55656	0.48505	0.55976
Central European Media Enterprises Ltd	0.55572	0.51335	0.54610	0.58601
Pegas Nonwovens SA	0.60181	0.63538	0.58011	0.57169
AAA Auto Group NV	0.62470	-	0.51658	0.59340
Vienna Insurance	0.57333	-	0.54670	0.60305
New World Resources PLC	0.64067	-	0.66200	0.58261
KIT Digital Inc	0.51803	-	-	0.51803
Fortuna Entertainment Group NV	0.66456	-	-	0.66456
PX Index	0.52619	0.57286	0.50823	0.50451
F-values for Chow test				
Component	Full sample	Pre-crisis period	Crisis period	Post-crisis period
CEZ AS	56.22	56.72	59.83	60.94
Komercni banka AS	64.12	61.83	58.81	63.11
Erste Group Bank AG	58.86	63.87	57.12	56.90
Telefonica Czech Republic AS	61.71	59.74	61.88	64.15
Philip Morris CR AS	54.81	56.38	51.73	57.61
Unipetrol AS	59.05	56.01	62.37	55.68
Orco Property Group	53.55	57.35	61.60	57.16
Central European Media Enterprises Ltd	57.38	59.88	57.96	55.68
Pegas Nonwovens SA	54.80	53.12	56.03	56.48
AAA Auto Group NV	53.56	-	59.70	55.27
Vienna Insurance	56.38	-	57.95	54.74
New World Resources PLC	52.72	-	51.68	55.87
KIT Digital Inc	59.60	-	-	59.60
Fortuna Entertainment Group NV	51.51	-	-	51.51
PX Index	59.09	60.66	60.19	60.40
Critical value F = 4.61				

Source: Authors' calculations based on data from Bloomberg

Results of regime switching tests are reported in Tab. 3. The null hypothesis of no trend in all investigated stock returns is rejected. Estimated critical value for rejecting the null hypothesis is in all cases lower than the values of the Wald test statistics. From our test results it even might seem that such methodology could not disclose the anomalies in stock returns. Nonetheless, the similar studies on other stock markets prove the ability of the methodology to capture bubbles in stock prices. For example, using this methodology, Ahmad et al. [1] cannot reject the null of no trend (presence of price bubble) in Mexico, Sri Lanka and Taiwan. Therefore, the methodology should be considered to some extent efficient and beneficial.

Tab. 3 Wald test results

Component	Full sample	Pre-crisis period	Crisis period	Post-crisis period
CEZ AS	1284.73	789.23	199.73	636.50
Komerční banka AS	1154.61	658.73	224.51	466.42
Erste Group Bank AG	797.98	876.70	138.00	340.65
Telefonica Czech Republic AS	1152.57	501.19	233.27	563.54
Philip Morris CR AS	1501.57	644.70	365.56	541.49
Unipetrol AS	961.53	395.81	195.65	537.62
Orco Property Group	893.97	416.45	162.42	740.31
Central European Media Enterprises Ltd	1049.05	549.18	208.13	804.76
Pegas Nonwovens SA	924.45	101.68	23.70	771.86
AAA Auto Group NV	545.68	-	142.01	472.78
Vienna Insurance	852.63	-	230.64	753.92
New World Resources PLC	690.52	-	171.68	628.11
KIT Digital Inc	452.08	-	-	452.08
Fortuna Entertainment Group NV	358.78	-	-	358.78
PX Index	819.36	568.25	136.25	304.38
Critical value $\chi^2(1) = 3,84$				

Source: Authors' calculations based on data from Bloomberg

CONCLUSIONS

Almost no evidence of stock market speculative bubbles was found in the Czech stock market. However, taking into consideration the limitations of the proposed methodology, we could not declare with the full certainty that asset bubbles are not present in those markets. If tests have not proved the existence of bubbles, they at least have identified the substantial volatility. Further search of relevant methodology is needed.

ACKNOWLEDGEMENTS

Support of the Czech Science Foundation within the project GAČR 403/11/2073 „Procyclicality of financial markets, asset price bubbles and macroprudential regulation“ is gratefully acknowledged.

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THE APPLICATION OF OCA CRITERIA ON THE EUROPEAN MONETARY UNION

Michal Fabus

ANNOTATION

The paper deals with the application of selected OCA criteria on the European Monetary Union, which monitors whether EMU is or is not an optimal currency area. Concludes that EMU is not according to OCA theory an optimum currency area and outlines what may follow in the future.

KEY WORDS

Theory of optimum currency areas, European Monetary Union, OCA criteria, future of EMU.

JEL classification: E50, E69

INTRODUCTION

Mongelli defines optimum currency area than the optimum geographical area with a common currency or several currencies whose exchange rates are irrevocably locked with the possibility of future reunification. Third currencies against the common currency can float.

The territory of the OCA is the territory of sovereign states using the single currency or to each other their currencies are fixed. Optimality is defined as the fulfilment of several criteria involving the mobility of production factors, economic openness, diversification of production, price and wage flexibility, and more. In achievement of these criteria should the revenues from membership in a monetary union exceed its costs.

According to another characteristic of OCA, a positive relationship between benefits and costs will be achieved if the following conditions are observed:

1. The economies of the countries forming the monetary union should be primarily sufficiently similar to:

- Symmetric shocks affecting them and did not lead to the emergence of imbalances in the balances of payments;
- Economic cycles are synchronized; resulting in all member countries would prefer the same interest rates;
- Changes in monetary policy affect them similarly.

2. If the imbalance between the countries' balances of payments, they should be sufficiently flexible labour markets and capital mobile enough to minimize the cost of adjustment.

3. The single currency area, there is a fiscal mechanism automatically transferred resources from prosperous regions with low unemployment in depressed regions with high unemployment.

AIM AND METHODOLOGY

The aim of this paper is to analyze the EMU from the perspective of the theory of optimal currency areas, identify and evaluate the problems which currently the European Monetary Union has. The paper contains only outputs of a study aimed to examining the issue.

The economic aspect will be explained using the selected optimum currency area criteria by which point out the ability or inability to further functioning of the European Monetary Union.

RESULTS

The countries forming the OCA apply among themselves fixed rates, respectively joint currency and from foreign countries and flexible courses are closely linked to trade in goods and services, as well as the mobility of production factors. The essence of the OCA theory is the idea that adopting the single currency, which means waiver of adjustment of monetary and exchange rate policy is optimal for countries that are exposed to symmetric shocks, or have flexible mechanisms of absorption of asymmetric shocks. (Šikulová, 2006, p. 11)

The symmetric shocks should not have concerns in this regard, because inside the monetary union does not cause the need for exchange rate changes. Asymmetric shocks are economic shocks with different impacts on individual economies and may affect the monetary union, member states reaching a similar economic level. Although these economies are in fact varying the structural site, which critical impact of shocks is crucial on the economy. If countries face asymmetric shocks their negative effects can be muted through different mechanisms of adaptation defined OCA theory. (Šikulová, 2006, p. 11)

Due to the mutual fixing of exchange rates, or use the single currency, member exposed to asymmetric shocks, cannot respond changing exchange rate and therefore must choose a painful alternative in the form of adjustment of prices and wages.

If we consider the two countries and the shock will be affected only one of them comes to large differences between countries, with countries hit by the recession and the shock passes the contrary, the second country that is not affected by the shock, goes through boom. Monetary Union as a whole operates steady but its individual members are not in balance.

Criterion of labor mobility, which is also called Mundell criterion, the euro area does not meet because the mobility of labor between regions is low and thus its help in dealing with asymmetric shocks is insufficient.

The criterion of diversification of production in the euro area is only partly fulfilled. While there are opinions that the diversification of production and consumption in the euro area is high but "the opposite side of the coin" is that the smaller economies, which have a smaller share of manufacturing industry, are hardly struggling with the interventions of asymmetric shocks. Investments entered into less developed regions do not produce the desired effect only in the form of convergence but also result in economies such as the loss of competitiveness and ability to respond to asymmetric shock is weakened.

The criterion of openness, this criterion is met in the euro area. Larger economies are, from a logical point of view, less open, which is not a problem. The problem is again a D4 member's country, notably Greece and Portugal, which can include the smaller economies, but the level of openness to receive the same percentage as the major economies.

The criterion of fiscal transfers cannot be considered as satisfied, because of the euro area there is no centralized budget or any common European Treasury. A small shift in this area is the creation of the ESM, which acts as a guarantor of the safety net. There are more and more strong voices to create a fiscal union, which would function in parallel with monetary union. In my opinion the creation of a fiscal union will be necessary.

The criterion of consistency of priorities we highlighted the fact that achieving consensus in dealing with monetary policy, despite the institutional support, does not happen or is happening only in part. We pointed to the creation of two groups of countries of different levels of inflation, each group is moving in the opposite direction. The problem of the country D4 again found themselves in a group of countries that are going the evil path. Germany has also did not "in a good light" when it was decided to solve their economic situation so unflattering that their economic growth was accompanied by a weakening of other economies, the team that defended their interests against the interests of the community.

The criterion of consistency we revealed its negative outlook for the future, which in some countries such as Finland and Slovakia, already factored in the will of citizens to the will of the political, where the first case, was elected party refused to loan to Greece and the latter in order to support ESM government fell. The conclusion is that the euro area meets this criterion only partially, which may shift more towards the "red numbers" if irresponsible governments irresponsible states recovered.

CONCLUSION

Considering the first three criteria, the economic, the conclusions we suggest that the euro area's capacity to cope with asymmetric shocks is not good. If the situation remains unchanged and the euro area will still continue in the same way, it is possible that the costs of membership in a monetary union will, over time, higher than its benefits. Our point of view is that the establishment of a common fiscal policy is imperative.

Assume that the criterion of labour mobility is naive to suddenly improve, because the current lack of legislative support that would need to systems of different countries into line. Diversification of production may experience growth but also can also stagnate. There is a presumption that the criterion of openness, which is already met, may experience more positive outlook. The criterion of consistency of priorities and in particular inflation problem of differentiation will continue to do what can be more manifest at the entrance of new members. For the other two criteria, we refer to the fiscal criterion and the criterion of coherence transfer, they could in the future to record a positive direction, but which will require some changes. Changing the criteria would be both a centralized institution, which would be superior to national institutions.

Greater coordination in fiscal policy is likely to become, an integral part of the transformation that EMU must pass in order for their work better. A situation in which the EMU is, points to the fact that the validity of the central management of fiscal policies, is becoming essential. Individual management fiscal policies of individual nations, seems to be problematic because of poor discipline of several members of the EMU. Failure to adequately respond to asymmetric shocks, interventions, shows us how important it is to create a stable mechanism of automatic fiscal transfers, which would be able to set strict rules for all games, with which, by the ability to flexibly cope with asymmetric shocks has increased.

OCA criteria has shown us that the euro area is far from ideal and the monetary costs of EMU membership is growing more and more. Although it is difficult to clearly identify the relationship between costs and benefits of membership in recent years are beginning to politicians, citizens and realize that the cost of membership can be too high and constantly pouring money into countries like Greece, also affects the atmosphere of solidarity and relations between countries. Because of irresponsibility countries such as Greece, the criterion of coherence in the future even more limited.

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BIASES IN CONTINGENT VALUATION METHOD USED FOR INVESTMENT PROJECT APPRAISAL

Monika Foltyn-Zarychta

ANNOTATION

The paper is devoted to theoretical analysis of problems arising in contingent valuation method used in project appraisal for estimating the value of non-market goods. Using hypothetical markets for deriving people's willingness to pay or willingness to accept compensation for changes in public goods due to project implementation is followed by a number of specific biases that can distort the final outcome of the analysis. Although the literature offers various definitions as well as classifications and ways to overcome those tendencies, some new overview may be seen as indispensable for clarity and efficiency in using CVM in investment project appraisal procedure.

KEY WORDS

investment appraisal, non-market goods, contingent valuation, bias

JEL classification: G31, H 41, H43

INTRODUCTION

Contingent valuation method (CVM) domain of applicability embrace any quasi-public good (where are some implicit markets for comparison) and pure public goods (where no such market exists) [1]. It rests on the assumption of possibility to create a hypothetical market for such goods and use questionnaires to elicit people's willingness to pay (WTP) or willingness to accept compensation (WTA) for those goods, which are not directly observable in prices on real markets.

Bias itself can be defined as the difference in responses from true values which is non-random, systematic, which means that the answers under- or overestimate the expected results of the study. If the effects vary, i.e. some answers are lower, some are higher than the true values, the researcher is faced rather with a random error, not with bias itself [2].

The goal of the research is identification of biases appearing in contingent valuation method (CVM) used for estimating the value of non-market goods that significantly influence investment projects appraisal in the light of certain types of investments. Research hypothesis was formulated as follows: certain characteristics of investment projects make them more prone to CVM biases.

AIM AND METHODOLOGY

The paper aims at identifying the biases in CVM used for investment project evaluation. The analysis may be of use for some amendments in appraisal procedure of projects influencing non-market goods.

The cognitive layer of the research was based on critical studies of literature descriptive for CVM as well as project appraisal. Biases were observed and analysed in details with use of deduction and induction methods to reveal their main impact sphere and connection between investment projects. Then, applying induction method, the investments were divided into four dimensions to be intertwined with possible biases and to identify their impact on evaluation results and to test the hypothesis and synthesize the paper goals.

RESULTS

Identification of biases in contingent valuation method

The literature on CVM presents vast variety of biases and errors that may emerge during the assessment process, starting from design, choice of sample, interviewing process and estimating aggregate willingness to pay or willingness to accept. However, the aim of the study is identifying biases that are crucial for investment appraisal process considering special features that an investment project may possess. Therefore, the list of biases presented in the paper is limited to those mentioned as main types of errors. The identified biases are: strategic, starting point, payment vehicle, information, hypothetical, temporal, context, order, embedding and warm glow.¹

1. Strategic bias – the bias results in overestimating or underestimating of WTP or WTA values and arises when the good being valued is a public good or has some features of a public good, i.e. non-excludability from consumption or non-divisibility. The respondents tend to understate their true preferences expecting that others will state their bids high enough to secure providing the good or overstate in order to make sure the good will be available and due to the fear of “free riders” [3].

2. Starting point bias – appears in close-ended, dichotomous choice or bidding game format questions², where respondent may adapt her answer to the first valuation included in the question. However Pearce and Markandya [4] indicate that the results testing for mean estimate starting point are discrepant.

3. Payment vehicle bias – emerges from payment vehicle chosen in the questionnaire for enquiring people’s WTA or WTP. Bias exists when payment vehicle is perceived by respondents as not acceptable. Typical payment vehicles include levies on income taxes, water or land rates, increased entrance fees and increased sales taxes. However, in many countries a relative unfamiliarity with the use of tax levies and referenda can affect the plausibility of payment vehicles and lead to payment vehicle bias [5].

4. Information bias (framing effect) – results from changes in valuation due to information received by the respondent. Mathews, Freeman and Desvousges [6] pay attention to the fact that the information in the survey must be adjusted to the respondents and their cognitive abilities. It is sometimes quite demanding issue when a scenario must include some sophisticated, technical issues, percentage information, etc. The danger here lies in filling the missing or non-understandable information by respondents themselves. What is worth highlighting is the fact that information effect applies also to normal, marketed goods, present on real markets [7]. By the same token, the differences in estimations of non-market goods values can be regarded as, to some degree, natural, as they follow the same patterns as observed in real markets. Worth underlining is the variety of definitions of information bias. For example, Pearce and Turner [8] point out that information bias may arise from various sources, i.e. starting point bias may be interpreted as information bias as well. Hanley and Spash include this into design biases. On the other hand, Garrod and Willis [9] interpret it as a framing effect, which they associate with the variations in bids for risk-averse or risk-seeking individuals depending on the frame the question is put into.

¹ Some biases in the literature have different names for the same error or may be identified as a special kind of some other bias. Therefore, the list presented in the paper is a selection and compilation of the whole range of specific effects and, in any way, can not be perceived as complete presentation of all systematic errors appearing in CVM studies.

² Dichotomous choice questions (referendum method) are questions where one value is presented and respondent may only accept or reject it; iterative bidding game – respondent answers a series of questions: if he accepts the first bid, in next step the amount is increased (usually doubled), if he rejects it – the value is diminished.

5. Hypothetical bias – the bottom line for the bias is non-existence of actual market for the good being valued and due to that it can be perceived unsuitably. Boardman (et al.) [10] underlines the need to precisely specify the good and its effects, especially using sufficient quantity of information backed up by visual aids to ensure the respondent will be familiar with the issue. Spash and Hanley explain that the hypothetical market lacks the opportunity for „learning by doing”, debating on the true value of a good and involving actual cash outflow from the respondent budget.

Along with hypothetical bias some differences in definitions also emerge. Pearce and Turner distinct here two separate biases: (a) hypothetical – concerning the problem that the payment declared by respondents is not actual, that means that he or she does not bear real costs of a transaction as it is in real market; (b) operational – covering the problem of consistency in “operating conditions” between hypothetical and actual markets.

6. Temporal bias - Whitehead and Blomquist define temporal bias as an inconsistency in evaluation due to time difference between the moment of declaring willingness to pay and the moment of collecting the benefits. Willingness to pay (or willingness to accept) can be estimated here twofold: as a periodical payment for life cycle of the project or as single payment “in advance” for all future effects. The former creates the flow of values that should be discounted as the appropriate rate of discount, whereas the latter can be instantly interpreted as overall present value for the project benefits, which seems more convenient for investment appraisal procedure. However, what Whitehead and Blomquist underline, the latter valuation has its own shortcomings, as respondents often tend to use unrealistically high discount rates. The problem here may emerge also from overestimation of respondents financial resources, especially when a long time frame is involved. For investment projects the choice between those two may not be completely discretionary as it can be determined by the type of the project and mechanisms of paying for its benefits. The particular interests should be given here to the investments where the time distance between the payment and the benefits is long. Under such circumstances the value of discount rate becomes one of the crucial inputs in the analysis both for financial side and for respondents estimations, where discounting can be inherently included in their declared preferences.

7. Context effect (availability bias) produces various bids depending on the context of the event, even if average effect is similar. Higher bids apply to goods or events that are perceived by society as more dangerous like plane crashes, metro accidents, etc. There is also a tendency that some sort of risks are perceived as more dangerous (and gather higher bids) than others even if actual mortality or morbidity rates are similar in the light of probability of such events. Garrod and Willis enumerate risks like cancer, fire, and flood, genetic engineering opposed to asthma, diabetes or stroke. Bid inconsistencies are caused by psychological factors that make certain types of risks more important than others, especially involuntary risks, catastrophic risks, epidemic risks and others that one has no control over or when the consequences have not been fully known yet.

8. Order bias (sequence effect) – the ordering of questions may suggest respondents the importance of a good and influence their bids. Whitehead and Blomquist point out that the ordering of valuation questions is also important as usually the amounts declared for the first one are the highest.

9. Embedding bias (scale and scope, part-whole, symbolic, insensitivity to scope) – bias emerges when different quantities/qualities of a good are valued by respondents at various levels, i.e. two wilderness areas valued on the same level as only one. The reason for this is that respondents may perceive some public good as one whole, in some sort of a symbolic way and do not take into consideration specific features of the good as well as its various levels [11]. Schwarz [12] brings closer the issue of scale effects sketching the following bottom line: “respondents do not value the good as described, but the good as represented in

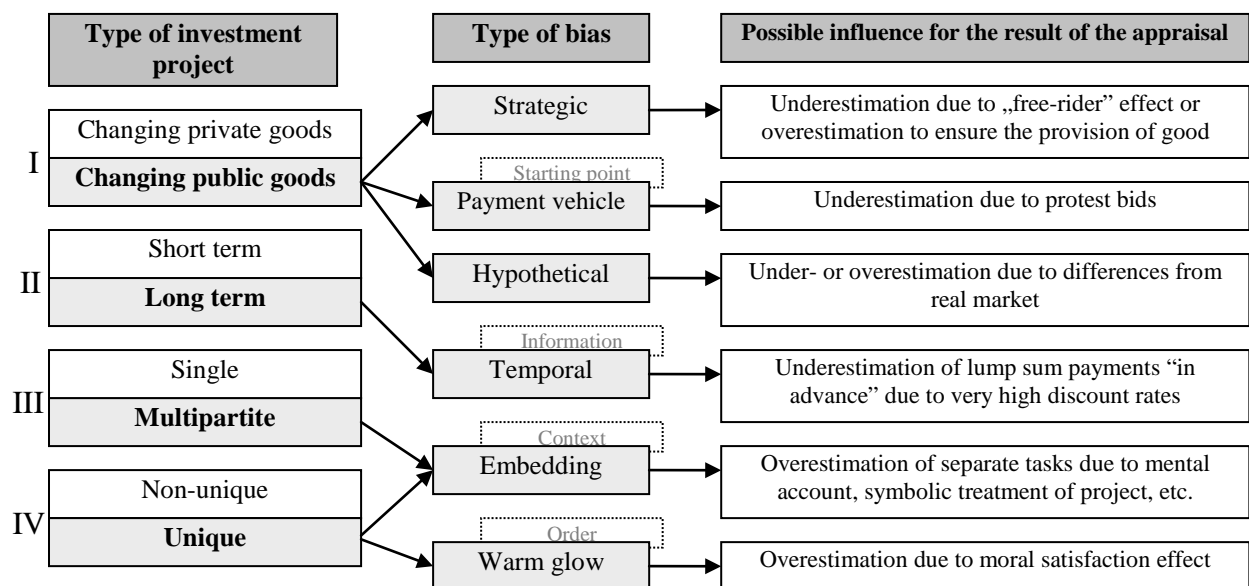
their own mental construal of the scenario”. Boardman (et al.) turn attention to the embedding bias danger when a good possesses existence value due to the fact that respondents may declare their moral standing towards the problem (like environmental goods) instead of their actual bids. He indicates that embedding bias is also connected with the existence of substitutes. If public goods are substitutes for each other, then if they are valued together they are less desired than separately.³

10. Warm glow bias (moral satisfaction) – respondents declare willingness to pay due to moral satisfaction they achieve from supporting a problem that is perceived by society as important and fair. The bias may emerge especially when some goods with existence value⁴ are taken into account, as it is motivated by a form of altruism. The moral satisfaction rises with the amount of money declared, which leads to overestimation of results [13].

The influence on investments depending on type of the project

The theoretical analysis of characteristics of biases enumerated in the proceeding section served as a basis to identify the impact of each one to investment projects and to indicate those types of investments that are particularly prone to non-random inaccuracy in valuation results. In order to analyze the influence of biases, investments were divided into dichotomous types according to four dimensions: (I) type of good that is changed by the project (private vs. public⁵), (II) time frame (long-term vs. short-term), (III) homogeneity (single vs. multipartite) and (IV) uniqueness (non-unique vs. unique).

Fig. 1. The bias influences on appraisal results according to type of investment project



Source: own study

³ The problem of scope effect can be also seen in studies valuing air quality in Poland conducted by Dziegielewska and Mendelsohn [14] who changed the pollution reduction level between the 25% and 50% in the sub-samples and found that the resulted WTP values were insensitive to the above. The example of embedding problem is the result of survey done by Foltyn-Zarychta [15] estimating the willingness to pay for an investment in sewerage system consisting of 4 tasks, where each was valued from 0,55 to 0,72 PLN in terms of additional payment for m³ of tap water while The whole project valuation was 1,28 PLN (in terms of additional payment for m³ of tap water), while the sum of task valuations were 2,54 PLN.

⁴ Existence value (passive value) is part of total economic value not connected to any human use. It is an implicit value placed on goods only because they exist. Typical goods that possess existence value are environmental resources, like wilderness areas, endangered species, etc.

⁵ Some goods are not purely public goods however possess some characteristic of a public good (i.e. non-excludability from consumption or non-divisibility) and also suffer similar kinds of biases as pure public goods. Therefore, any intermediate case is included into “public good” category.

The biases identified as influencing only special types of investment projects are: strategic, payment vehicle, hypothetical, temporal, embedding and warm glow. Four other biases (starting point, information, context and order; framed dotted in Fig.1.) are diagnosed to influence all kinds of projects, therefore the lines connecting them to projects types were omitted.

Out of eight types of investment projects divided according to the selected dimensions, four were identified as more prone to CV biases (shaded gray in Fig.1.). Projects that change public goods were found prone to strategic bias appearing due to “free-riders” underestimating their valuations or respondents tending to overestimate their bids to secure that the good will be provided. This type of investment is also sensitive to payment vehicle and hypothetical biases as respondents may tend to oppose to pay for goods available anyway and as not having the opportunity to “learn by doing” in real markets. Moving to next dimension, long-term investment appraisal may be distorted by temporal bias, especially when the questionnaire is aimed at elicitation of one-off payment for all future effects. Next, multipartite projects are prone to embedding bias, where bids may differ from actual preferences due to various reasons, usually overestimating the results. The last dimension refers to uniqueness of project, where two special features make such investments sensitive to embedding and warm glow biases: existence value and possession of no substitutes. The impact of those features makes respondents attaching moral value to project effects and treating it as symbolic way to express their interest in the problem which often leads to overestimation of bids.

Projects aimed at private goods as well as short-term, single and non-unique are more resistant to above biases as they are easier comprehensible by respondents, usually smaller, having substitutes and no existence value. However the result here may be distorted as well by other biases, especially those emerging from the very process of CVM itself, i.e. construction of questionnaires (ordering of questions, information, interviewer bias etc.).

CONCLUSION

The study in the paper identified the following biases (divided into two groups) that significantly influence investment appraisal: (I) strategic, payment vehicle, hypothetical, temporal, embedding and warm glow, and (II) starting point, information, context and order. The latter influences all kinds of project, whereas the former group impacts significantly only selected types of investments.

While identifying the sensitivity of appraisal results, investment were divided according to four separate dimensions to illustrate their specific features. Of highest sensitivity (measured by the number of first group biases) were found investments changing public goods (prone to strategic, payment vehicle and hypothetical biases) and unique projects (embedding and warm glow biases). Other two dimensions, represented by long time frame and complexity, were found sensitive to only one of biases from the first group (respectively: temporal bias and embedding bias). On the basis of the conducted analysis, the research hypothesis that certain characteristics of investment projects make them more prone to CVM biases was confirmed.

Investment appraisal is a complex process, starting from identifying the effects, through their valuation and calculation of the present value by applying appropriate discount rate. The valuation of non-market project effects is a crucial stage for achieving reliable results, especially when investments change public goods, generate effects for a long time, constitute of many tasks or are unique.

However, the question of achieving right results of investment project assessment needs further investigations. Even if contingent valuation allows for estimating the value of goods not present on real markets, it suffers various inherent disabilities, going beyond the problems

raised in the paper. The very process of gathering data is prone to interviewer bias or anchoring effect accompanied by some specific responses from respondents connected to the differences in perception between consumer and citizen, which all need profound studies to reduce those and other disadvantageous impacts.

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ANALYSIS OF BANKRUPTCY AND SECURE RISK MANAGEMENT MODELS AND APPLICATION FOR THEIR EXTENSION

Monika Garguláková

ANNOTATION

In modern management risk has management become an inevitable part of financial management. Company financial health is evaluated by financial standing and bankruptcy models. Article analyzes the selected financial standing and bankruptcy models in terms of their predictability and based on the results of this analysis suggests a new model for evaluation of financial risks in the corporate sector.

In the first part we define company financial health according to selected financial standing and bankruptcy models and analyze their explanatory power.

In article is presented own methodology for financial risk management in the company. Input data are expertly set based on financial analysis. These data are then used in the calculations of each of the selected methods. The final part is devoted to interpreting the results of selected analyzes and makes recommendations for their possible extend of the company risk management system.

KEY WORDS

risk, risk management methods, bankruptcy and financial standing models

JEL classification: G32

INTRODUCTION

The development of the economic environment, gradually increase the demands on quality, explanatory power and utility of the work with the financial risk. In the context of the global financial crisis and the instability of the overall financial system was to strengthen the importance of control and predicting tools for better stability of the system. According to Smejkal and Rais, one of very important prerequisites for a successful business is risk management. Risk conceals the uncertainties from the future events or developments [11]. For the correct determination of the economic situation of the company and its possible further development is needed to identify sources of risk and then use it for their management.

Correct identification of possible adverse events is an important part of business [4] [7] [9]. Based on the identification of risks are compiled particular possible development scenarios in which is tested the sensitivity of the risks to company activity and, moreover, possible impact on key financial indicators. This article will analyze the financial standing and bankruptcy models [1] [5] [10] [11]. To these models I have created own methodology for measuring risk, which is finally used for comparison of different methods and interpretation of informative value.

AIM AND BASIC METHODOLOGY

This article aims to introduce a new model for company financial risk management. Within this objective I analyze bankruptcy models, to which I create my own indicator, which I included in the calculation of basic research models. It is the intensity of risk, which is

incorporated into the simulated example, which shows the various changes mathematically. The main objective is to analyze the results of existing models and compare them with my own research of working with risk.

Risk management is a way of understanding the potential risks, which occur or may occur in the company. Risk management techniques associated with company analysis describes a wide range of literature [3], [5], [6]. For purposes of this article is risk management analyzed by financial standing and bankruptcy models. They work with such financial indicators that would be able to properly analyze the financial situation of the company, its health, and also predict the crisis development. The sources of data are financial statements, balance sheet, profit and loss statement and cash flow. The specialized literature describes in detail sources of information and their processing [2], [3], [5], [10].

The models are divided into two main groups. First group represent financial standing models that belong to the ex-post analysis, which focuses retrospectively, leading to knowledge of the causes that necessitated the current business situation. It describes only the results that already exist and cannot be changed. Their use is possible only on a large set of compared data. Second group represent bankruptcy models that already work with prediction of possible development. These models belong to the ex-ante analysis.

Selected models and their characteristics

There is a wide range of financial standing and bankruptcy models. Article works only with selected models, which are among the most used and debated. This is a Kralicek quick test, Altman bankruptcy Formula, husbands Neumaier Index IN and Taffler index.

Kralicek quick test

Kralicek choose from each group four indicators and according to their final values assigned to the company points. Description of the indicators:

Equity quote = own equity/total assets

Cash flow in % of sales = cash flow/sales

Profitability of total capital = profit after tax + interests/total assets

Debt repayment period for cash flow = (short + long-term payables + financial assets)/operating cash flow

Based on the values for individual indicators, the company is assigned by points and the final grade is calculated as the simple arithmetic average of points for each indicator. The scale of evaluation indicators is simplify expressed 1 - very good, 2 - good, 3 - middle, 4 – bad, 5 – company in danger. A more detailed assessment modification shows Kislinger [5].

Altman bankruptcy formula (Z score)

One of the best known bankruptcy models. The new version of the model dated 1983 is usable also in Czech conditions. It is used in two variants, which divides to joint stock companies and all others. For the purposes of this article I will use Z score formula for other companies:

$$Z = 0.717 \times X1 + 0.847 \times X2 + 3.107 \times X3 + 0.420 \times X4 + 0.998 \times X5$$

where:

X1 = NWC / Total assets

X2 = Profit after tax / Total assets

X3 = EBIT / Total assets

X4 = Basic capital / Total debt

X5 = Sales / Total assets.

Z value moves in the range between - 4 and +8. Rating scale is defined as:

Z > 2.9 financially strong company

1.2 < Z < 2.9 some financial difficulties, unclear further development

$Z < 1.2$ imminent bankruptcy

Index IN

In the Czech conditions also gradually emerged bankruptcy models which were compiled by husbands Neumaier who gradually developed models IN95, IN99, IN01 and IN05 when the numerical values correspond to year of usage inception. They are compiled from four trust indexes [8]. According to discriminant analysis and updates of the previous indexes is actual index IN05 for which the following applies:

$$IN05 = 0.13 \times A + 0.04 \times B + 3.97 \times C + 0.21 \times D + 0.09 \times E$$

Where:

A = Assets / Liabilities

B = EBIT / Interest expenses

C = EBIT / Total assets

D = Sales / Total assets

E = Current assets / Current liabilities

The resulting value moves in the range:

$IN05 > 1.6$ enterprise creates value

$IN05 < 0.9$ enterprise does not creates value

$0.9 < IN05 < 1.6$ gray zone

Taffler index

This is a bankruptcy model which works with 4 indicators in the form of discriminant function:

$$Z = 0.53 \times R1 + 0.13 \times R2 + 0.18 \times R3 + 0.16 \times R4$$

Where:

R1 = Profit before tax / Current liabilities

R2 = Current assets / Liabilities

R3 = Current liabilities / Total assets

R4 = Total sales / Total assets

Company with value higher than 0.3 has a small probability of bankruptcy, while company with value lower than 0.2 can expect bankruptcy with higher probability.

All models are compiled on the basis of already existing data that are processed mainly from the financial analysis. Individual results are interpreted in the selected interval, which indicates in what stage the business is located. They are assigned and compared through generated sample of monitored data.

EXTENSION APPLICATION

Analysis and comparison of different studied methods is performed on expertly selected data. Calculations are working with absolute values from financial analysis, especially with ratio indicators. These are shown in the tables below.

Table 1. Data from the balance sheet

	Total assets	Financial assets	Current assets	Basic capital	Equity	Liabilities	Current liabilities	Long term liabilities
in tsd. CZK	55000	11300	51000	2000	5000	50000	17600	33000

Source: own processing

Table 2. Data from P&L

	Cash flow	Revenues	Income	Interest expenses	Net profit	EBIT
in tsd. CZK	3600	700	135	100	2500	3500

Source: own processing

These indicators are used in conjunction with methodology of individual bankruptcy and financial standing models, which are dependent on existing data and examined group samples, from which the individual calculations are based. The determined values set position and status of the company in relation to financial health and established results interpretation of the model.

Table 3. Results of the models

	Kralicek quick test	Altman Z score	IN05	Taffler index
Value	3.25	1.58	2.05	0.29

Source: own processing

When using the Kralicek quick test, the company is located in the middle operation zone, i.e., in the worse average of the selected interval. Similarly is the result using the Altman Z score, where the company is located in the middle zone of the selected interval. This represents particular threat for further function of the company when can occur some financial problems. On the contrary, according to the index IN05 company adds value and classifies to the upper part of the interval. A similar result also interprets Taffler index, which provides a very low probability of company bankruptcy.

The main drawback of the calculations is the absence of possible future negative development of the indicators. This poses the risk that may more affect the status and functioning of the company. Therefore, I created another own indicator, which I included in the calculation of the basic models. It is the intensity of risk, Sensitive of risk (SR), which affects the examined model. I've illustrated it mathematically as the sum of the individual indicators, their intensity changes and the impact intensity of the risk. Values enter into the calculation in absolute terms. The correlation and the calculation are expressed in the following form:

$$SR_{ni} = \left(\frac{\Delta P_n}{P_n} \right) \times I_n + \left(\frac{\Delta P_i}{P_i} \right) \times I_i$$

Where:

P_n = Watched ratio indicator

ΔP_n = Change of watched ratio indicator

I_n = Particular sensitivity of risk

SR_{ni} = Total risk sensitivity

If the indicator is expressed as a percentage, it shall be adapted to the absolute value:

$$P_n = \left(1 + \frac{P_n}{100} \right)$$

To the simulated example I add a new indicator, Sensitive of risk, which may occur in the company. For easier interpretation of changes in the simulation I choose one indicator that is used in the financial standing and bankruptcy models. It is an indicator of sales, which will simulate the desired change. I expertly determine that company sales will reduce by 15%.

That this change is calculated by the risk sensitivity formula, which is then reflected in the final values of selected models. Particular sensitivity of risk is determined by the company based on the size of the investigated parameters effects. It moves in the interval:

$$0 < I_n < 1$$

Where:

0 = zero probability of influence, no impact

1 = one hundred percent probability of influence, high impact.

Based on the capital structure the company stated that the sensitivity of sales influence on its economy is 20%. This value is in the interval 0.2. Sensitivity can also be set using the sectoral analysis, for simplifying of the simulated example I am counting with sensitivity according the consideration of the company. After substituting into the formula Sensitive of risk results the following value:

$$SR = (114.75 \div 135) \times 0.2$$

$$SR = 0.17$$

The calculated value of 0.17 is assigned to each of the selected models. Since this is a possible negative impact of risk it is in individual samples of selected models deducted. The resulting values after inclusion of Sensitive of risk is shown in the table below.

Table 4. Change in value after the application of Sensitive of risk

	Kralicek quick test	Altman Z score	IN05	Taffler index
Value	3,25	1,58	2,05	0,29
Value with risk sensitivity	3,5	1,43	1,88	0,13
Change	Slight deterioration	Significant deterioration	Slight deterioration	Significant deterioration

Source: own processing

After adding risk indicator in the calculations we can see that all values have deteriorated. This meant a worsening of the position and status of the company. This is a logical change where in the company position is added possible negative scenario and the indicator should deteriorate. This effect was confirmed. The calculation was simulated by changing only one indicator, no additional effects are calculated with impact on other indicators that are likely to actually occur.

On the results of selected models and by me chosen indicator can be visibly seen the difference between classical scenario using financial standing and bankruptcy models and adding Sensitive of risk indicators. Using only one possible risk influencing the company was generated a major change in endpoint indicator of the company position. This change shows the low level of explanatory ability when without integration of risks the company can be stable but after adding risk is in bad position.

CONCLUSION

Article describes in the first part individual financial standing and bankruptcy models that are currently mostly used in common practice. Thereto was created own model, which is focused on the simulation of risk and its influence.

Based on the results of the simulation article points out the difference in the calculation of individual methods and points to a possible deficiency in the original models. Deficiencies can occur in the form of:

- reliability of the information and absence of work with risk,
- insufficiently large sample of surveyed area (i.e. companies),
- unaccepted macroeconomic impacts in the given time period (political situation, legislative measures, economic situation of the country, etc.).

The article also gives room for further discussion of the investigated area, when the work with risk allows a wide application in planning of its future development. Due to the fact that companies are operating in different sectors, regions and differ in their size, their problems may have greater or lesser impacts also on the macroeconomic level of the economy of the country or the region. Therefore, a more thorough focus on the negative effects management could also be beneficial for macroeconomic respect. I will continue to analyze and develop researched topic, especially relationships between risk indicators. Development and testing of the model is realized also in the commercial sphere. This paper is one of the research output of the projekt IGA/Fame/2012/012.

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IMPACT OF SELECTED FACTORS ON THE DIVIDEND POLICY OF JOINT-STOCK COMPANY

Radim Gottwald

ANNOTATION

The paper focuses on impact of selected factors on the dividend policy of joint-stock company. Especially, there are analyzed the factors like information asymmetry, managerial signaling motives and preferences of controlling stockholders. At the beginning of the paper, different types of the dividend policies are characterized. Then individual factors, which have an influence on dividend policy, are presented, including level of the influence. Based on the results of cited empirical analyses, trend in ratio of firms paying dividends and firms do not paying dividends is presented, along with payout concentration in terms of firms.

KEY WORDS

dividend policy, dividends, information asymmetry, dividend irrelevance theory, dividend payout, dividend growth

JEL classification: G12

INTRODUCTION

Investing in securities, investors can realize current and capital return. In case of stocks, current yield is realized by dividend payments. There are some advantages and disadvantages of dividend payments. Stock prices usually increase when some announcement about dividend payment is notified. Dividends can provide support to stock price and underscore good results of the joint-stock company. Dividends may attract investors who prefer current return, therefore return in the form of dividends. Dividends may reduce agency costs that arise from conflicts between shareholders and management of a joint-stock company. However, dividends can reduce internal sources of financing. They may force the company to rely on costly external equity financing and they are taxed as ordinary income.

AIM AND METHODOLOGY

The objective of the paper is to evaluate impacts of several selected factors on the dividend policy, which is realized by joint-stock company. Deductive, descriptive and comparative methods are used in the paper. The progress of relationship between firms that pay dividends and firms that do not pay dividends is derived from results of cited empirical analyses by deductive method. The types of the dividend policies are presented by descriptive method. Comparative method is used to compare number of firms that pay dividends and number of firms that do not pay any dividends. Within an empirical analysis, payout concentration and cross-sectional link between payouts and earnings are presented.

RESULTS

Different joint-stock companies realize different dividend policies. **Gottwald (2012)**, focusing on various types of dividend policies presents, that dividend policy may be explicitly stated, or investors may infer it from the dividend payments a company has made in the past. Furthermore, companies usually increase dividends only if they are confident that the increase is sustainable. Optimal dividend policy is – according to him – such a policy that strikes a

balance between current dividends and future growth and maximize the firm's stock price. These theories relate to dividend policy:

- the dividend irrelevance theory – firm's dividend policy has scarcely any effect on either its cost of capital or its value,
- the „bird-in-the-hand“ theory – firm's value will be maximized by a high dividend payout ratio,
- the tax preference theory – investors prefer rather low dividend payout than high dividend payout.

Joint-stock companies can pay dividends or need not pay dividends. In the first case, following three possibilities will turn up in time:

- no growth in dividends,
- constant growth in dividends,
- nonconstant growth in dividends.

Factors Having Impact on the Dividend Policy

Final decision to pay or not to pay dividends is formed under the influence many factors. Among the most important belong:

- information asymmetry,
- clientele demands,
- managerial signaling motives,
- tax deferral benefits,
- investors' behavioral heuristics,
- idiosyncratic preferences of controlling stockholders,
- behavioral biases at the managerial level.

Impact of Selected Factors on the Dividend Policy

Impacts of information asymmetry on dividend policy is founded by **Li and Zhao (2008)**. Joint-stock companies that are less subject to information asymmetry are more likely to pay, initiate, or increase dividends, and disburse smaller amounts. The results persist after accounting for the changing composition of payout over the sample period, the increasing importance of institutional shareholdings, and catering incentives. There is a negative relation between asymmetric information and dividend policy.

Impacts of information asymmetry and other factors on dividend policy is also founded by **DeAngelo, DeAngelo and Skinner (2008)**. Simple asymmetric information framework that emphasizes the need to distribute free cash flow and that embeds agency costs and security valuation problems does a good job explaining the main features of observed dividend policies - the massive size of corporate payouts, their timing and, to a lesser degree, their (dividend versus stock repurchase) form. Other factors like clientele demands, managerial signaling motives, tax deferral benefits and investors' behavioral heuristics have at best minor impacts on dividend policy. Factors like the idiosyncratic preferences of controlling stockholders and behavioral biases at the managerial level have a first-order impact. Controlling stockholders generally make a difference in observed payout policies. The probability that a UK firm pays dividends increases with the vote ownership of executives on the board. At UK firms, dividends vary inversely with insider ownership. There is no material difference in average payout ratios of US firms that have and do not have blockholders that own 15%-plus of the stock. Bank control of a German firm increases the probability that the firm will omit dividends. German firms are usually controlled by a large blockholder, and

there is a u-shaped relation between dividends and the proportion of voting equity held by the largest stockholder. It is possible to compare number of firms that pay dividends and number of firms that do not pay dividends. Percent of firms that pay dividends and percent with negative current earnings (losses) are presented in Tab. 1.

Tab.1 Percent of firms that pay dividends and percent with negative current earnings

Year	Percent that pay dividends	Percent with loss	Dividend payers / Percent with loss	Without dividends / Percent with loss
1991	29.5	37.8	13.3	48.1
1992	29.6	34.2	11.6	43.7
1993	27.6	35.3	10.9	44.6
1994	26.1	32.5	7.3	41.4
1995	25.6	34.4	9.5	42.9
1996	23.8	36.1	9.7	44.3
1997	22.8	37.7	9.3	46.0
1998	22.7	39.7	12.2	47.8
1999	21.0	41.2	9.7	49.5
2000	19.3	46.5	11.3	54.8
2001	19.5	51.6	20.0	59.2
2002	19.9	45.0	12.2	53.1
2003	23.4	39.3	10.7	48.0
2004	26.1	33.6	7.6	42.7
2005	27.6	33.5	8.2	43.1

Source: DeAngelo, DeAngelo and Skinner (2008)

Relatively small number of firms pay most of the aggregate dividends. Similarly, relatively small number of firms generate most of the aggregate earnings of publicly held industrial firms. Payout concentration is presented in Tab. 2, concretely percent of total payouts (dividends plus net stock repurchases) for CRSP/Compustat industrial firms ranked in descending order of total payout.

Tab.2 Payout concentration

Year	Top 25 distributors (%)	Top 100 distributors (%)	Top 200 distributors (%)	Top 500 distributors (%)
1991	43.2	74.6	86.5	96.7
1992	43.6	74.1	85.9	96.4
1993	39.2	72.4	85.1	96.1
1994	37.6	70.7	84.7	95.9
1995	48.4	76.1	87.3	96.5
1996	38.2	69.7	83.6	95.1
1997	40.8	70.9	83.5	95.2
1998	38.9	69.9	82.5	94.5
1999	45.1	72.8	84.8	95.4
2000	47.7	75.1	86.1	96.2
2001	52.4	80.2	89.9	97.5
2002	53.7	79.6	89.5	97.5
2003	54.0	79.3	89.6	97.7

2004	48.5	76.5	87.5	97.0
2005	50.2	75.5	86.9	97.0

Source: DeAngelo, DeAngelo and Skinner (2008)

These values mean percents of aggregate payouts supplied by firms in specified group. Total equity payouts by US industrial firms are highly concentrated among a small number of firms. In every year, the top 500 firms supply over 90% of total payouts. The supply of total payouts, like the supply of dividends, exhibits a two-tier structure. In this structure, a relatively small number of firms deliver the bulk of total equity payouts. The large number of remaining firms collectively distribute only a modest amount of cash to stockholders. A similar two-tier structure characterizes the cross-sectional earnings distribution. Earnings are what make equity payouts possible. Earnings and the concentration of payouts is presented in Tab. 3, concretely percent of total payouts (dividends plus net stock repurchases) for CRSP/Compustat industrial firms ranked in descending order of earnings before extraordinary items.

Tab.3 Earnings and the concentration of payouts

Year	Top 25 earners (%)	Top 100 earners (%)	Top 200 earners (%)	Top 500 earners (%)
1991	35.7	60.5	70.4	80.7
1992	37.7	62.9	73.5	83.9
1993	32.7	61.1	75.8	85.5
1994	32.8	65.5	77.6	89.9
1995	39.4	63.0	75.2	85.8
1996	34.2	61.8	76.0	88.1
1997	37.4	64.1	74.7	87.0
1998	32.9	58.4	68.2	82.3
1999	36.7	59.7	70.0	87.3
2000	41.3	64.4	74.0	86.4
2001	46.4	72.1	79.5	86.6
2002	46.0	68.2	77.7	85.6
2003	43.5	72.8	82.3	91.8
2004	42.6	66.4	78.2	88.4
2005	43.5	67.5	79.8	91.2

Source: DeAngelo, DeAngelo and Skinner (2008)

These values mean percents of aggregate payouts supplied by firms in specified earnings group. The vast bulk of payouts come from the small number of firms that generate most of the earnings of publicly held industrials. The lower tier of the industrial population contains, at the same time, a large number of firms that collectively generate only modest earnings and distribute only modest amounts of cash to investors. There is a strong cross-sectional link between payouts and earnings.

Information asymmetry can be reduced in case of public notice of dividend payment. The market response to some event depends on expected or unexpected event. There are some differences between stocks related to stock prices, trading volumes, stock prices volatility, which depend on expected or unexpected event. Different types of stocks are described by **Baye and Jansen (1995)**. Concretely, yield stocks focused on realization of an yield and growth stocks focused on realization of a growth. Concretely, profit growth of joint-stock

company. They describe dividend yield of yield stocks including ways how to calculate them. Stock prices of growth stocks can be estimated using expected yields in the future.

Company-by-company analysis of the relationship between dividend payout and future earnings growth is conducted by **Zhou and Ruland (2006)**. Dividends reduce the funds available for investment. Many investors associate high dividend payout with weak future earnings growth. Tests using aggregate market data, however, provided evidence that contradicts that view. Based on the results of research, high-dividend-payout companies tend to experience strong future earnings growth.

CONCLUSION

The dividend policy of joint-stock company can be realized by many ways. Several factors have positive or negative impact on the dividend policy. Factors like information asymmetry, clientele demands, managerial signaling motives and other play an important role in joint-stock company management decision. Many researchers try to quantify the importance. Based on cited empirical results, different types of the dividend policy are realized in the US, UK or Germany. Percent comparison of companies paying dividends and not paying dividends is presented. Payout concentration, concretely percents of aggregate payouts supplied by firms in specified group is also presented. The concentration is not distributed too uniformly. Some researchers also try to analyze the relationship between future earnings growth and dividend payout. In practice, dividend policy is also influenced by other factors, which are not mentioned in the paper. However, the mentioned ones belong among very important. Next research can also continue by study of various dividend policies realized by joint-stock companies in capital markets. Factors mentioned in the paper also influence other activities of joint-stock companies.

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DETERMINATION OF THE GENERAL VALUE OF SELECTED ENGINEERING ENTERPRISES

Igor Hudák, Eva Kafková

ANNOTATION

In calculating the technical efficiency of manufacturing companies is necessary, regard to the input and output variables of the model, to choose the appropriate method of calculating the general value of the enterprise. The aim of this paper is to present a business method as the most appropriate method of calculating the general value of the enterprise. As benefit of this paper we considered the evaluation of results calculated with business method, the identification of method weaknesses and generalization of knowledge for the whole group of engineering companies.

KEY WORDS

general value of the enterprise, business method, engineering companies, generated cash flows, sustained value of enterprise, weaknesses of business method.

JEL classification: G30

INTRODUCTION

Due to the economic crisis, the economic activity of enterprises of the global economy has reduced. The consequences of the crisis have had significant impact in economies with relatively high share of industrial output in GDP. An expression of the crisis was also a significant decline in industrial production and trade in the Slovak economy, as the business sector openness SR significantly affects the domestic economy. In 2009, the insolvency has become a standard phenomenon, often becomes a secondary insolvency, result of conservative and cautious behavior of banks was limited access to bank loans. The existence of so many businesses was threatened. This paper deals with the problem of determining the general value of the research sample of firms using business methods in the period 2006 - 2010.

AIM AND METHODOLOGY

The main objective of this paper is finding a general value of selected engineering companies under division 28 – Machinery and equipment calculated by the business method with use of financial data for the period 2006 – 2010. The content represents partial contribution of the research to determine the effectiveness of selected engineering firms. To quantify the general value of the enterprise, we use business method from regulations by the Ministry of Justice for determining the general value of assets (Z. z. 492/2004). For valuation of selected companies we use the method proposed by the authors F. W. Ross, R. Brachmannom and P. Holzner, which is included in the Expert standard for determining the business value¹.

By the selected methods some authors differentiate between business value, the substance and mean value of business². The basis for determining the business value will be as follows:

¹ MIKOLAJ, J. – FORMELA, V. a kol.: Znalecký štandard pre stanovenie hodnoty podnikov. Ministerstvo spravodlivosti SR: Vysoká škola dopravy a spojov v Žiline, Ústav súdneho inžinierstva, 1993. 151 s. ISBN 80-7100-163-5

² Tamtiež. s. 16 – 17.

$C = f(Z_t, t, i)$, where

- C – yield value;
- Z_t – net income in period t ;
- t – time period;
- i – interest rate (or discount rates, capitalization rates).

In the calculations we used a business method for determining the general value of the enterprise at a unlimited lifetime of the enterprise as follows:

$V\check{S}HP = H_{oz} + H_t$ [in €], where

- $V\check{S}HP$ – general value of enterprise determined by business method;
- H_{oz} – general value of generated cash flows during the reporting period;
- H_t – sustained value.

General value of generated cash flows (H_{oz}) we determined as follows:

$H_{oz} = \sum_{t=1}^n \frac{OZ_t}{(1+i)^t}$ [in €], where

- OZ_t – general value of generated cash flows (in €);
- n – length of reporting period (in years);
- i – interest rate coefficient (in %/100), less the level of risk, the average rentability and structure of use capital.

Interest rate coefficient i is calculated in accordance with regulations as follows:

$i = (1-DS).NPK.(PK/CK) + NVK.(VK/CK)$,

where DS is the coefficient of income tax rates, NPK costs associated with the use of borrowed capital, NVK cost of own capital, PK volume of borrowed capital, VK volume of own capital, CK total capital of enterprise. Sustained value (H_t), necessary to calculate the general value of the enterprise, is determined by value of enterprise generated cash flows H_{oz} and their parts in the year following the reporting period, reflecting the assumptions of enterprise to product OZ_t over unlimited duration period, which is converted to the current value at the date of valuation. Sustained value is calculated by the quotation:

$H_T = \frac{OZ_{n+1}}{i-g} \cdot \frac{1}{(1+i)^{n+1}}$ [in €], if $i > g$, where

- OZ_{n+1} – volume of generated cash flows in the year following the reporting period (in €);
- i – interest rate coefficient (in %/100), less the level of risk, the average rentability and structure of use capital;
- g – sustainable growth rate of general cash flows (in %/100);
- n – length of reporting period (in years).

Generated cash flows are defined as cash generated by the expression of particular benefit of disposable income, earnings or cash flows from the balance to be obtained from the enterprise activities, the amount depends on the past development of enterprise, current market position and anticipated development. Generated cash flows can be written as follows:

$$OZ = (Z - DS) + Odp - Inv [in \text{€}], \text{ where}$$

- *Z* – the difference between total income and expenditure in the annual accounts (in €);
- *DS* – corporate income tax (*v* %);
- *Odp* – depreciation and other costs are included in profit or loss from operations, which are not spending in the current period, for example, creation of reserves, provisions for long-term tangible and intangible assets (in €);
- *Inv* – investment in acquisition and adjustments of operational-necessary working capital, while the adjusted working capital is determined by subtracting non-remunerated current liabilities from current assets, revenues included in profit or loss from operations that are not income in the current period, such as dissolution of reserves, dissolution adjustments to the capital of an enterprise (in €)

The objects of research were selected small and medium enterprises in the industrial division no. 28 - Manufacture of machinery and equipment according to the classification of SMEs European Commission, Commission Recommendation 2003/361/EC. This classification is established by the European Commission adopted a uniform and binding in all EU countries. The object of investigation was chosen because a key position in the engineering development of the Slovak economy - employees the largest number of workers, creating a substantial part of GDP and its products make up the largest share of exports. Criteria for the establishment survey sample were as follows:

- operation on the Slovak market for at least 5 years (2006 - 2010),
- place of business in region Košice or Prešov,
- small and medium enterprise (employees),
- availability of financial statements of enterprises for the period 2006 - 2010.

The first and second criterion met 107 enterprises, of which met the third and fourth criteria 54. The original base was set in this way reduced to a set of 54 enterprise in sample, from which were selected by the availability of the accounts 30 companies. The research sample contained 3,5 % of the industrial business division no. 28 - Manufacture of machinery and equipment.

RESULTS

We used business method of determining general value of the enterprise on sample of 30 enterprises under division no. 28 in the period 2006 – 2010. As the range of processed data does not allow us to present the results for all businesses, we decided to describe the calculation procedure of the enterprise model, which is part of the sample.

The following table shows the development of selected indicators values, actually achieved in the company during the period 2006 – 2010.

Fig. 1 The real value of the indicators in selected enterprise (in thousands €)

Indicator	2006	2007	2008	2009	2010
Revenues	5 630	5760	5 487	5 593	5 653
Value added	2 496	2 602	2 716	2 841	2 867

Profit from economic activity	570	601	448	338	228
Profit from accounting period	440	472	318	236	158
Own equity	1 134	1 467	1 453	1 658	1 743

Source: own elaboration.

For companies reporting positive value of the profit throughout the whole period is usage of the chosen method without problems. However, if we have company, reporting in the last year of the period loss (value of 2010 represents the input data for calculation of the permanent value of the company), it disproportionately reduce the resulting general value of enterprise.

Fig. 2 The volume of the generated cash flows in reporting period (in thousands €)

Indicator		2006	2007	2008	2009	2010
Profit from economic activity after tax		363	274	184	138	162
Depreciation	(+)	354	481	523	543	547
Other costs, which are not spending in the current period	(+)	0	0	0	0	0
Investment in operating capital (operationally required)	(-)	21	1	37	1	8
Revenues, which are not income in the current period	(-)	0	0	0	0	0
Investments in the procurement of fixed assets (operationally required)	(-)	273	414	465	365	398
Generated cash flows		423	340	205	315	303

Source: own elaboration.

The most important indicator of the calculation of enterprise value (in terms of its value) is the profit from operations after tax and depreciation. Other items with their values (positive and negative) cancel each other. The real problem in calculating the general value of the enterprise is the availability of the required financial data.

Fig. 3 Calculation of the general value of enterprise (in thousands €)

t = 1 - n	OZ _t	(1 + i) ^{-t}	OZ _t x (1 + i) ^{-t}	(OZ _{n+1} /(i - g)) x (1 + i) ⁻ⁿ	VŠH _p
2006	423	0,9579			
2007	340	0,9177	343		
2008	205	0,8791	233		
2009	315	0,8421	404		
2010	303	0,8067	525		
RESULT			1 505	15 503	17 008

Source: own elaboration.

The available financial statements do not always contain all the information. When we are calculating the generated cash flows, is necessary to establish sustained value of enterprise. The calculation procedure is shown in Table 3. According to the results shown in Table 3, we see a significant share calculated by sustained value of enterprise (15 503 thousands €) to the general value of enterprise. If will the company achieved a negative generated cash flows in 2010 (negative profit, negative amortization), would depend only on what a big drop recorded in the period of substitution variables in the calculation of the generated cash flows. If a negative value exceeded – 1 505 thousands €(which is the general value of generated

cash flows), would be the resulting general value of enterprise useless (statistically incorrect) for the detection level of technical efficiency of enterprises through the CCR DEA models.

CONCLUSION

Determination of the general value of the enterprise is necessity for the need of review the effectiveness of business. The business method of determining the general value of the enterprise has its weaknesses especially in the calculation of sustained business value, thus resulting general value of enterprise may become unusable for calculating the efficiency of the investigated companies. The problem is mainly a negative profit or a loss in the last year of the period. If this value several times lowers than the calculated value of the generate cash flows in future years of the period, resulting in negative general value of enterprise. A negative value is for further data processing useless and entity is excluded from the statistical file. Despite this deficiency, it was able to determine the general value of 26 companies, representing 87 % of the sample enterprises, which results are usable for further processing.

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THE ALTERNATIVE INVESTMENT FUNDS MANAGERS DIRECTIVE AND THE REGULATION ON VENTURE CAPITAL FUNDS - SELECTED COMMENTS

Zdenek Hustak

ANNOTATION

The Alternative Investment Funds Managers Directive (AIFMD) published in July 2011 aims to capture all diverse forms of funds which have not been previously subject to the harmonised UCITS rules in the EU. The AIFMD represents two tier systems - harmonised regime for managers of AIFs above certain limit of assets under management (AuM) and less demanding national regime for smaller players. The AIFMD will be accompanied by implementing regulation thus adding to the complexity of this new regime. The paper focuses on anticipated impact of new regime on the private equity and the venture capital industry in the EU. The Commission proposed specific regulation of the venture capital industry at December 2011. This may provide an opportunity to re-examine the merits of the AIFMD and establish more appropriate regime for venture capital industry.

KEY WORDS

AIFMD, investment funds, private equity, venture capital, regulation

JEL classification: G28

INTRODUCTION

Establishment of harmonised EU-wide regime for private placement and fund managers of collective investment funds not already captured by the Undertaking for Collective Investment in Transferable Securities Directive (UCITS) had been a priority on the Commission agenda for quite long.¹ AIFMD was published in July 2011 and implementing Commission's regulation is due by July 2012. These rules will be accompanied by numerous technical standards issued by ESMA thus adding to the complexity of new regulatory regime. Recently, draft of new EU regulation on venture capital funds was proposed by the Commission. All these documents represent framework for very diverse spectrum of funds and managers. The impact on various fund sectors is expected to vary significantly. The venture capital and private equity funds do represent significant players not only on the financial markets but also on private companies markets. Given the Commission intentions it seems that the PE/VC managers will need to tackle numerous regulatory challenges in coming years.

AIM AND METHODOLOGY

This aim of article is to deal with the main features of the new regulatory regime for non-UCITS funds managers in the EU from the perspective of private equity and venture capital sector primarily. Given the current stage of development and implementation of the AIFMD, the focus is on the likely impact on corporate governance arrangements and the business of the private equity and venture capital funds managers and the relationship towards investee companies. New directives, draft implementing regulation and proposed regulation on venture

¹ Cf. The Commission White paper on Financial Services Policy 2005-2010 issued in late 2005 and White paper on Enhancing the Single Market for Investment Funds (SEC(2006) 686 Final).

capital and numerous policy documents have been reviewed in order to analyze aspects of the new regime. Certain data from EVCA and CVCA² were obtained and analysed and numerous interviews with representatives of the PE/VC sector were held as well. Author's personal engagement in preparation of the AIFMD directive in the course of the Czech Republic presidency to the Council of EU provided useful framework and background information as well.

RESULTS

Scope of the AIFMD regime

The AIFMD refers to all AIFM managing or marketing Alternative Investment Funds (AIF) in the European Union (EU). The term AIF covers all types of funds irrespective of legal form or structure. Unlike the UCITS directive which does not apply to closed-ended types of collective investment schemes³ the AIFMD capture those funds. The term "Alternative" means an alternative to funds compliant with the UCITS directive – i.e. AIF is an entity raising capital from number of investors which is not subject to the authorisation under the UCITS. E.g. in case of single investor investing in an entity, then such an investment vehicle cannot qualify as an AIF. The term will be specified in the implementing regulation.

Second element delineating the scope of new regulatory regime is "active marketing" of an AIF to investors in the EU. This means a direct or indirect offering or placement at the initiative of the AIFM or on behalf of the AIFM of units or shares of an AIF it manages to or with investors domiciled or with a registered office in the EU. However, this definition does not prevent investors domiciled in the EU to invest in the third country AIFs whose managers do not meet criteria of AIFMD. The marketing of an AIF should be targeted at the "professional investors". The term professional investors encompass diverse categories of investors - primarily "professional clients" as defined by MiFID.⁴

While scope of the AIFMD is very broad it does not apply to certain entities such as holding companies meeting certain criteria, pension and social security system institutions etc. Interestingly an exemption is provided to intra-group AIFM managing AIFs whose investor are only members of the group the AIFM belongs to while no such investor is AIF. The AIFMD establish special exemption for small AIFMs - managing assets, including any assets acquired through use of leverage, in total do not exceeding EUR 100 million; or managing unleveraged AIFs that have no redemption rights exercisable during a period of 5 years following the date of initial investment in each AIF in total not exceeding EUR 500 million. Member states may choose not to apply full AIFMD regime to small AIFMs. Nevertheless, such AIFMs should be subject to mandatory registration and regular reporting regarding AuM and certain other issues. Interestingly, the AIFMD provides for an opt-in regime for smaller AIFMs - i.e. they can voluntarily apply for authorisation under AIFMD.

The leverage should be determined at the level of the AIF and should cover any financial and/or legal structures involving third parties controlled by the relevant AIF (or an AIFM acting on behalf of the AIF), where such structures directly or indirectly create leverage at the level of the AIF. From the practical perspective, the use of leverage at the level of a fund does

² EVCA - European Venture Capital Association, CVCA - Czech Venture Capital Association

³ Art.3 lett.(a) UCITS.

⁴ MiFID Annex II, s. II.1. *"In the course of the above assessment [of a potential client to be undertaken by an investment firm], as a minimum, two of the following criteria should be satisfied:*

— *the client has carried out transactions, in significant size, on the relevant market at an average frequency of 10 per quarter over the previous four quarters,*

— *the size of the client's financial instrument portfolio, defined as including cash deposits and financial instruments exceeds EUR 500 000,*

— *the client works or has worked in the financial sector for at least one year in a professional position, which requires knowledge of the transactions or services envisaged."*

not seem to be a typical case for venture capital and private equity funds, as the fund investments are backed by investors' commitments to investment money in a fund. For private equity funds, the issue of leverage could be potentially relevant in the case that the strategy of a fund provides for leverage buy-outs and the fund is involved in such a transaction.

European private equity and venture funds under AIFMD

Given the threshold set in the AIFMD, there is the practical question of how many of the AIFs marketed in the EU will be caught under this regulatory regime. In respect to private equity and venture capital funds there are only limited data available from the industry associations. In 2009 overall, private equity sector managers in the EU managed more than 532 billion EUR from which venture capital funds accounted for 58 billion EUR. What are particularly relevant are assets under management per individual fund managers. For individual Member States the average assets under management managed by a single manager ranges from 52 million EUR in Baltic States to 753 million EUR in the UK for the private equity sector as such. EU-based venture capital managers manage from 6 million EUR in Romania to 143 million EUR in France on average. According to the EVCA 2010 annual report more than 80 per cent of portfolio companies that members of EVCA invest in met the criteria of SMEs. However, while assessing whether an AIFM is caught under the AIFMD or not the critical issue is whether a group the AIFM belongs to manages AIFs with assets under management reaching the threshold limits.

These data clearly imply that a majority of AIFMs which are members of private equity and venture capital industry associations may not reach the thresholds set out in the AIFMD; and thus could qualify for the exemption and should be regulated under the national registration regime. As it is still unclear what shape these national regimes will have, it is difficult to precisely assess the impact of new regime for private equity and venture capital managers. Should the member states opt for more stringent regime close to the AIFMD requirement then an advantage to be regulated under national regime for AIFMs would be very limited.

Operating conditions

The AIFMD sets out specific requirements regarding capital, internal governance arrangements and remuneration, use of outsourcing, valuation, and depositary functions. In addition the Directive imposes overarching obligation on AIFMs to:

- (a) Act honestly, with due skill, care and diligence, and fairly in conducting their activities;
- (b) Act in the best interests of the AIFs or the investors of the AIFs they manage and the integrity of the market;
- (c) Have and employ effectively the resources and procedures that are necessary for the proper performance of their business activities;
- (d) Have in place effective processes for identification and management of conflicts of interests;
- (e) Comply with all regulatory requirements applicable to the conduct of their business activities so as to promote the best interests of the AIFs or the investors of the AIFs they manage and the integrity of the market;
- (f) Treat all AIF investors fairly.

Capital requirements basically follow the UCITS standards thus requiring AIFMs to have initial capital of 300,000 EUR in case of internally managed AIF and at least 125,000 EUR in case of external managers. An additional capital requirement imposed relates to the amount of assets under management and to the requirement to cover professional liability risks when professional indemnity insurance may also be used. The level 2 measure should specify professional liability risks which should be covered and the conditions for determining the appropriate level of own funds and the insurance to cover these risks.

Internal governance rules for AIFMs are outlined in detail in the AIFMD. These rules build on similar principles already applicable to the governance of UCITS management companies.

The primary focus is on risk and liquidity management, conflict of interest management and remuneration. The new element is regulation of remuneration of AIFM staff which is based on similar principles as regulation of remuneration in the banking sector introduced by revised CBD in 2009. Outsourcing is another area of particular interest to regulators. In fact, rules regarding outsourcing in the AIFMD represent a standard pattern which can be found in number of EU directives such as MiFID and UCITS. Delegation of key functions by AIFM manager is subject to strict conditions and a detailed disclosure obligation to the competent authority and to investors as well.

The obligation of AIFMs to establish an independent valuation function is another specific feature which gave rise to extensive discussion when the directive was negotiated. The valuation function should be set for each AIF and AIFM manager. While the AIFMD does not provide for specific valuation methodology it requires extensive disclosure towards investors and competent authorities.

Following the template set out in the UCITS directive AIFMD requires appointment of a single depositary for individual AIF by its manager. Functions of depositary of an AIF should typically cover safe keeping of the assets of the fund, administration of the fund's assets, monitoring of the funds operations and individual transactions, ensuring compliance of operations and transactions with the fund rules and applicable legislation. Depositary should also ensure that the calculation of the value of units or shares of the AIF is conducted properly in compliance with the applicable laws. Unlike in the case of UCITS funds as depositary may be appointed not only credit institutions but also investment firms and in certain cases of close-ended funds also notaries. There are specific rules regarding liability of a depositary for any loss of assets of AIFs introduced by AIFMD.

Specific requirements do apply for AIFs acquiring control over companies, primarily not-listed ones. The AIFMD provides an exemption from this regime for acquisition of SMEs by AIFs as those were not considered as "*companies of wider-public interest*" and to special purpose vehicles. Interestingly, EVCA data indicate that vast majority of portfolio companies of the EVCA members are SMEs thus the AIFMD requirements in respect of these portfolio companies do not apply unless these are issuers of listed securities. The obligations for the AIFM are mainly of a disclosure nature – specific notification regarding acquisition of control and of certain other levels of the stake on the company's capital, disclosure of the policy for preventing and managing of conflicts of interest, intentions on future business of the company acquired including impact on the employment at the target company. Interestingly, these disclosures should be made not only to the company and the regulator but also to other shareholders of the target company while these (not being AIFs) do not have any corresponding obligation. There is also a specific obligation imposed on the AIFMs which should require the board of the target company to further disclose all information disclosed to the company to representatives of employees or, should there be no such representatives, directly to employees. Also specific anti asset-stripping policy rules applicable to all AIFM managing funds which have acquired control of a company. In particular these represent limits on distributions and payment of dividends to the shareholders and preventing an AIFM from either facilitating or providing support to any such action

Proposed regulation on the European Venture Capital Funds

In June 2011 the Commission issued a new policy document setting out a potential policy objective in respect to the establishment of a single market for venture capital. Among background considerations mentioned in this document the Commission explicitly state that "*AIFMD does not always appear to be the ideal instrument for the promotion of the cross-border activity of venture capital in EU. ... Since venture capital was not at the focal point of the AIFMD rules, the AIFMD requirements are not tailored for venture capital managers.*" In respect of relevant legal framework the initial one option considered was re-examination of

the AIFMD and setting a more tailored regime for managers of such funds. Nevertheless, the second option - the establishment of a completely separate system for venture funds forming new regulation on the European venture capital funds was chosen at the end. Subsequently the Commission published new legislative proposal regarding the regulation of venture capital in December 2011 aiming to put new regime in place by mid 2013.

The main feature of this new regulation is voluntary registration of venture capital managers with their respective competent home authorities in order to enable passporting of their activities also to other Member States, i.e. a regime similar to passport of a UCITS/AIFMD management company. Aside from this harmonised regime a national regimes for managers of venture capital under limit of AuM set by the AIFMD not wishing to use passport should be maintained. According to the draft regulation the registration requirements should be relatively "light" compared to the AIFMD authorisation requirements. The notification procedure for venture fund managers should represent a simplified version of the UCITS/AIFMD notification procedures. A new harmonised regime should be available only for venture capital funds whose investors are professional investors within the definition of MIFID and certain other qualified investors and so far no national discretion to enable investing in such funds also to retail investors is proposed. Regulatory reporting should be restricted to annual reporting on the basis of a fund's audited accounts and annual report. Similarly to AIFMD, this new regime should apply to any legal form of the venture fund.

The draft regulation elaborate quite in detail on description of what a venture capital fund is – limiting investment focus to SMEs which should meet certain criteria, e.g. are not publicly traded, do not borrow money or issue debt securities and entities which are not financial entities (funds, banks etc.).

The exact scope of new harmonised regime for venture capital funds and its interaction with AIFMD is delineated clearly – the new European venture capital funds regime should apply only to managers managing assets under AIFMD exemption thresholds.

Operating conditions which are seen as the critical point of AIFMD having produced extensive requirements and significant compliance costs to venture capital funds are outlined in much lighter form in the Commission proposal. Nevertheless, some elements of the proposal should be subject to a further scrutiny in order to achieve "minimizing of the compliance costs" as the Commission explicitly states in its proposal.

In respect to the third country entities, the aim articulated in the Commission proposal seems to be quite open to third countries entities – they should be able to obtain relevant registration within the EU and benefit from passporting rights as well.

CONCLUSION

The long-term intention of European institutions to regulate alternative funds active on the internal market has found the final form in AIFMD published recently. The aim to capture all different forms and sorts of funds led to very structured regulatory regime at the EU level providing for smaller players to be regulated at the national level in non-harmonised way still. For the AIFs and their managers which will be captured by the AIFMD new regulatory requirements are expected to require AIFMs to take numerous measures in order to comply with the AIFMD requirements thus implying additional costs to the funds and their investors. The most burdensome measures for the private equity and the venture capital sectors seem to be the obligation to appoint depositary and the valuation requirements and reporting and notification obligations towards the investee companies. In the private equity and venture capital sectors it seems that vast majority of managers VC/PE funds will be eligible for national registration regime. However, it is still unclear what shape these national regimes will have. It cannot be ruled out that even less demanding national registration regimes will bring not only marginal costs to the private equity and venture capital funds.

Recently issued proposal of the regulation on the European venture capital funds introducing special regime for venture capital funds seems to reflect the recognition that AIFMD regime is not an ideal platform for [at least] certain types of alternative funds. More flexible regime can be seen as welcome move.

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AGENCY THEORY AND ITS APPLICATION IN THE BUSINESS OF THE FINANCIAL SECTOR IN SLOVAKIA

Erika Mária Jamborová

ANNOTATION

Our contribution focuses on the concretization and implementation of the agency theory in terms of the economic practice, under the influence and impact of the financial and economic crisis. It is intended to define the different roles, which are significantly affecting business entities in the financial sector, in characterizing not only the traditional roles - investor-manager-employee-client, but also the role and position of the state as the regulator of the financial industry sector. The role of the state is determined by the specificity and significance of the financial sector for the national economy. The aspects of globalization increasingly emphasize the need for transnational financial sector supervision and regulation thus exceeding the boundaries of one state.

KEY WORDS

agency theory, the financial sector, banking industry, financial and economic crisis, regulation

JEL classification: G30

INTRODUCTION

The current globalizing environment is significantly affected by the impact of the economic and financial crisis that currently exists in Europe in terms of the debt crisis. The current crisis was affected especially by the release of business conditions in the international context, such as trade liberalization, deregulation of markets, but also by the important phenomenon of recent decades – the significant development of information and communication technologies. The business environment is characterized by the growing influence of transnational corporations, many of which operate in the financial markets. The effort to achieve a reasonable profit as well as the increasing competition in domestic as well as in foreign markets is increasingly forcing companies to draw the attention to the economies of scale and to the search for new competitive advantages. In the financial sector, globalization reflects the emergence of financial conglomerates, doing business in at least two financial industry sectors.

Our contribution focuses on the analysis of the application of the agency theory - in the financial business practice in context of the ongoing financial and economic crisis. The goal of the financial institution, represented by management, is to achieve profit and client satisfaction. Increasingly important, however, becomes a long-term relationship with the client of the bank, ideally during all stages of its life-cycle. Client's interest lies in satisfying the demand for financial services in obtaining reliable products at favorable quality, price and other conditions. As it is evident from the a.m. statements, the management objectives as well as the client objectives are somewhat contradictory to each other. Based on the above-mentioned objectives there is a complex of relationships. The expression of their context, conditionality and their impact on the success of the objectives of financial institutions is subject to our research and the focus of our contribution. In examining this issue, we rely on a theoretical basis, based on the new institutional economics, the theory of firm, which are specified in the theory known as agency theory or the problem of principal - agent.

OBJECTIVE AND METHODS

The aim of our paper is to identify situations in which agency theory is applied in economic practice, particularly in terms of the banking sector in Slovakia during the current crisis. Our research focuses on defining the essential aspects of the theory identifying the roles of actors in financial operations in the context of the specific terms of the economic practice. It also takes into account the role of state that it plays in the business of banking sector. The paper also aims to illustrate some specific actions, taken by regulator, to stabilize the conditions in terms of the impacts the financial and economic crisis to the financial sector. Our goal was to evaluate all these aspects and by applying the method of the analysis, synthesis and comparison, induction and deduction to clarify the role of the state as a regulator for possible further development of the a.m. theory.

RESULTS

Agency theory-basic assumptions

Agency theory prescribes alignment and other mechanisms as possible solutions for specific problem that organizations commonly face, i.e. the increased agency costs from asymmetric information and lack of goal congruence between a firm's principals and agents. According to Nyberg A.J. et al., the theory suggests that there is potential for "managerial mischief" when the interests of firms' owners and managers diverge; one possible solution to this "agency problem" is that firms align owner and agent interests through agents' equity ownership and the structure of their compensation. The author states, that the appropriate measure of financial alignment is the degree to which a CEO's economic interests covary with those of the owners. According to scholarly research, performance is a function of ability and motivation and opportunity. As per the author, agency theory tends to ignore ability, but CEOs' abilities obviously do vary and circumstances can constrain decision choices, limit information, present uncertainties, so it is difficult to prescribe in advance which decisions an executive should make. Based on his research, Nyberg A.J. et al. argues that, properly used financial alignment through compensation and stock ownership does not relieve corporate boards of monitoring responsibilities; instead, it alters the nature of the monitoring that is required.(1) According to Lan, L. L. and Heracleous, L., the principles of the agency theory - control and motivation based on own interests, are currently not sufficient to explain the collaborative behavior management systems as well as the business operation environment in mature market economies as well as to explain the complexity of the real world. The behavioral assumptions on that agency theory is based are not sufficient. According to those authors, in order to fill these gaps, researchers are looking for more effective methods - eg, possible variables to be selected to evaluate the independence of the board of directors, agent's equity participation in the company, as well as effective control of firms in the market environment. They are looking for the context, within these new aspects can be implemented into the economic practice as well as they are searching for new principles to examine the basic problems of corporate governance. Lan, L. L. and Heracleous, L. propose to address these shortcomings of the principal-agent theory by redefining the role of principal owner (investor) to the company, because the company itself acts in legal relations as a separate legal entity, entering into a number of relationships with stakeholders. The success of the company depends on its focus to meet the expectations of stakeholders. Furthermore, the authors argue that the board of directors acts rather in favour of the interests of stakeholders than of the owners, and its role is rather in the position of an authorized person as in a position of an agent charged by the owners. As per the a.m. researchers, the board of directors must be credible to all stakeholders, which implies, that it can not be charged by a clean agent role. This expose the role of the board of directors to some opportunism. It is shown, that the success of the company is closely linked with the success of stakeholders, which is also

reflected in a company's financial results. Lan, L. L. and Heracleous, L., propose to extend the investigation of deficiencies of the agency theory in terms of the institutional theory, based on a theory of contractual relations. The authors note that the institutional environment contains a variety of heterogeneous elements and the relationships between regulatory, normative and cultural-cognitive pillars, which can create conflicts between themselves. Another factor, according to Lan, L. L. and Heracleous, L., that influences the nature and character of the company, is the theory of transaction costs. The company must take into account the competing interests of stakeholders, such as eg interfering in the social dimension of individual property rights etc. In this context, companies must consider not only the individual transactions, but also to put in their decisions into account the respect of the impact of their decisions.(2)

Agency theory and its reflection in the business practices of the financial sector

The agency theory is based on a description of the economic actions such as the contractual relationship between two or more operators. According to this theory, the principal delegates the disposal of the fulfillment of specific tasks entrusted to agent. Agent does not act only in relation to the attainment of the goals of the principal, but he also acts in relation to achieve its own goals. The division of tasks in principal-agent relationship and the resulting role is not always clear, but is dependent on some specific situations (e.g. customer as creditor in deposit business acts as the principal and the bank employee, or manager as the agent). Similarly, the interests of manager are conditioned by his own motivation (aims and objectives) as well as by the financial and non-financial incentives reflected in the conditions specified in a management contract agreed between him and the owner (owner representative) of the financial institution. The owner's goal is to achieve a reasonable profit and further success of the financial institutions with regard to alternative investment opportunities and as well as with regard to risk (i.e. to achieve a reasonable level of return on equity - ROE and dividend payments). In connection with the service provided, the uncertainty (as a result of asymmetric distribution of information) for the customer can decrease particularly by the staff qualification and experience, as well as by the willingness to care and service the customer. This is noticeable by the client during the interview before closing the contract, or subsequent after the conclusion of the contract, during its administration. There are some risk for the client in the role of principal, especially in the agent information advantage (e. g. in case of the above-mentioned deposit products), which can be misused by the agent on its own behalf. The advantage for the agent may be in having information about the status and trends of the business environment development (e.g. development of national economy, capital markets, the future of the euro...). On the other hand, as reported by S. Ziegler and M. Sohl, agent-principal relationship is changing and evolving, and it may also happen, that the client makes use of free advice in the bank, but the actual contract, as a result of the counseling interview, may be concluded with the less expensive financial service provider (clients - so-called "free rider" –the transition to a competitor - e.g. the internet bank) (3, p.133). Applying this theory to the subject of our research, it makes us easier to clarify what types of principal-agent relationships can arise in the businesses of financial institutions. These factors significantly affect the creation, modification and implementation of marketing strategies of financial institutions. S. Ziegler and M. Sohl refer to the inadequacy of this theory, in terms, that a contract cannot cover all factors that may arise in the business relationship with clients. As measures against potential hazards by the agent (covert agent characteristics - inappropriate selection of the agent, moral hazard, fraudulent intent of the agent) and its opportunistic behavior, the authors propose to collect information about the agent (screening), the surveillance of an agent (monitoring), the convergence of interest and principal agent in the form of incentives and sanctions (the convergence of interests) and to reduce the

information deficit by the principal (signaling). Measures for reducing the information deficit as well as for preventing opportunistic behavior are however associated with additional costs (agency costs). These costs consist of the costs of monitoring agent by the principal, guarantee costs of the agent as well as of the residual loss. (4, p.63)

The impact of the financial and economic crisis on the application of the agency theory in business practice of financial sector

In the financial sector, can take also the state the partial role of "principal" over the major financial institutions because of their national economic significance. In regulating the sector, the state intervenes in the agent's businesses by the determination of financial markets legislation, by the licensing policy, by the integrated financial market supervision, by demanding various statistics and reporting, as well as by state supervision over the selection of directors and supervisory boards, in assessing professional and moral criteria on those positions. In exchange for this control, (as a form of interference with free market rules, often associated with additional costs without no reflection in returns) is, in our view, an evidence for example the deposit protection act, the investment guarantee fund, or in providing various financial injections, such as capital investment of the state in the major financial institutions to reduce uncertainty and to increase confidence of clients of financial institutions. All these steps are favoring regulated financial institutions on the market with premium conditions, as there is a direct link between the increase of confidence and the growth of returns in the financial sector. In this case, we can consider the cost to remediate the banks (i.e. the strengthening of capital by state in form of capital investment in financial institutions) as a part of "agency costs", where the state is seen as a principal and the shareholder (owner) as agent. A concrete manifestation of such interventions is the massive state support to individual banks in the EU, as well as in identifying 29 banks at the G20 meeting¹, which must be " saved at any price ", because of their global importance.

Regulator as principal

The impact of the crisis significantly impacted on the development of economic situation in Slovakia and on the economies of its major international partners. The banking crisis is reflected in reducing the ability of businesses and households to repay loans. In the banking area, the Government adopted several measures to counter the impacts of the crisis. The most important of them included an amendment to the Deposit Protection Act in 2008, in providing to depositors the unlimited guarantee. Unlimited guarantee was not implemented by all EU countries. In order to increase competitiveness in deposit products, the guarantee of deposits under the conditions prevailing in Slovakia joined also some branches of foreign banks doing business in this country. Unlimited guarantee of deposits met with success, the primary objective, relating to the stabilization of the situation and to gain the confidence of the population "to healthy banks" was filled. (5) This step contributed significantly, along with the decision of the changeover from the Slovak koruna to the euro, to the increase in deposits in the banking sector as of the end of 2008. In 2009, the Act no. 276/2009 on measures to mitigate the effects of the global financial crisis on the banking sector was adopted in

¹ The G20 Summit in November 2011 set out a list of 29 systemically important financial institutions. The collapse of these banks would threaten the entire global financial system. These banks need to meet more stringent requirements on capital requirements and create a plan for disposal without the help of taxpayers if they find themselves in troubles. G20 agreed to increase capital adequacy requirements for these banks to the year 2016. The Financial Stability Board (FSB), an international body to oversee banks, stated that banks will have to create by the end of the 2011 the analysis of "living will" (the term is used for documents showing the human desire not to be artificially kept alive in case of a fatal disease). This list of world's systemically important financial institutions, called G-SIFI, should be reviewed annually in November.

Slovakia. This law allowed certain limiting of shareholders' rights in exchange for the capital injection of the state, for the purpose of remediation due to the ongoing financial crisis and its impact. The Slovak Republic did not need to apply this law in either bank. (6) Slovakia belongs under nine countries in the EU, without the need of financial help to the financial industry during the crisis. The National Bank of Slovakia (NBS), as a regulator of the financial market, took measures to reduce the premium payment to bank managers in relation to the impact of the crisis. Another measure adopted by the Slovak government as well as by the Slovak Banking Association was a program of assistance to clients of banks, unable to repay a housing loan due to economic crisis. Together with the Slovak Consolidation Bank, this program was joined by 11 commercial banks in the SR. Slovak Banking Association signed a memorandum of cooperation with the Slovak Ministry of Finance, Slovak Guarantee and Development Bank and with the Export-Import Bank of Slovakia, to support the business environment during the financial crisis. Memorandum stipulated the basic framework of state institutions guarantees for lending to SMEs. According to this memorandum, state-owned financial institutions have to provide bank guarantees for loans to small and medium-sized businesses, communities, property owners to housing reconstruction. Memorandum of Cooperation was concluded for a limited period until the end of 2010 (5).

CONCLUSION

Based on the above mentioned findings, we can say, that despite the liberal market, there are industries in the national economy, that are of particular importance for the state that are contributing to the stabilization of the terms of the economic environment. So is undoubtedly the financial services sector, which comprises on the trust and on social and psychological aspects associated with the essence of the financial services - money. We can say, that on the one hand contributed globalization to the release of business conditions, but on the other hand it brought the growing complexity and increasing uncertainty. Its product is also the present crisis. To avoid the negative impacts of the financial crisis, in order to stabilize the conditions, the necessary input from the position of state controller, to establish security and rebuild confidence was needed, which as we can say, based on our research, has been successful in the Slovak Republic. The role of state in supervising banks business is essential, especially in determining the prudential terms of financial institutions, but also in actively entering into the exercise of ownership rights with certain limitations, during crisis. In this cases the state acts in the role of principal. While the role of regulators at the national level is relatively clear, it still raises the issue of transnational regulation of financial institutions, which still, despite the fact that since the beginning of the crisis slowly passed five years, is still not in place.

The contribution is treated as part of the project VEGA 1/1185/12: Changes in consumer trends conditional to impact of the financial-economic (social) crisis, reflected by modifications in the marketing programs of business entities in order to maintain their competitiveness in international markets (with application to the conditions EU with an emphasis on SR).

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THE EFFECTS OF DOMESTIC AND FOREIGN ENTERPRISES' FINANCIAL ACTIVITY IN HOST COUNTRY ECONOMY – COMPARATIVE ANALYSIS

Magdalena Jasiniak

ABSTRACT

The main purpose of this article is to compare the financial effects of foreign and domestic enterprises' activity in the host country economy including domestic enterprises producing only for the internal market and domestic enterprises producing on both the domestic market and foreign markets. As a result of the researches carried out by the author of this article: a survey and a comparative analysis of the enterprises' financial data it appeared that Polish enterprises producing both for the internal market and external markets are able to compete successfully with foreign firms on the domestic scene.

KEYWORDS

the effects of financial activity, financial analysis, foreign enterprises' activity

JEL classification: G32

INTRODUCTION

Foreign investors have been present in the Polish economy since the mid-1970s the 19th century. Nowadays enterprises with participation of foreign capital are an integral part of the Polish economy and market relations. Moreover the activity of foreign enterprises in the host country economy is the main subject of many scientific studies in Polish literature.

The main purpose of this article is to compare the effects of financial activity of enterprises owned by foreign investors, domestic enterprises producing only for the internal market and domestic enterprises producing both for the internal market and external markets in host country economy.

In Poland, studies on the activity of foreign enterprises, carried out at the microeconomic level are very rarely. There are also not many comparative studies on domestic enterprises and the enterprises with participation of foreign capital, particularly in the financial sphere. Such comparisons are sometimes only a part of a broader analysis. In the foreign literature studies in this sphere are carried out on a relatively advanced level. The comparative analysis are often carried out among the foreign enterprises in the host country economy, the domestic enterprises producing only for the internal market and the domestic enterprises producing for both - the internal and external markets, however, rarely from the financial perspective.

M. Grasserii indicates, inter alia, that the foreign enterprises have higher productivity and profitability of sales than domestic ones. Foreign enterprises are also more indebted than domestic enterprises producing for both - internal market and external markets.¹ D. Castellani and A. Zanfei confirm that foreign enterprises achieve better effects of their activity than domestic enterprises. However, these differences are rendered down when the comparisons are made between the foreign enterprises and domestic enterprises that operate in international scale. It appeared that domestic enterprises producing both for internal and external markets are more productive and innovative than foreign enterprises in the host

¹ M. Grasserii, *Domestic Multinationals and Foreign – Owned Firms in Italy: Evidence from Quantile Regression*, The European Journal of Comparative Economics, vol.7,n.1, 2010, s.61-86

country.² Blakeley's report indicates that foreign enterprises in relation to domestic ones are characterized by higher return of assets and higher return of capital. Foreign enterprises have also higher productivity than domestic ones, although the productivity of domestic enterprises producing for both internal and external markets is similar to the level of foreign enterprises' productivity.³

As well as the authors cited above, the authors of Polish studies (among others. M. Jaworek, W. Karaszewski, J. Rózański) point out that foreign enterprises use more advanced solutions in organizational and innovative spheres, more advanced than those applicable in the host country (assuming that the level of development of the home country economy is higher than the level of development of the host country economy), that may have a significant impact on strengthening their market position in relation to domestic enterprises and has an influence in achieving relatively high financial results.

METHODOLOGY OF THE RESEARCH

The research was carried out in 2011. The survey questionnaire was made among 100 randomly selected enterprises with 100% domestic capital (0,05 % of total population) and 100 randomly selected enterprises with 100% foreign capital (38,5% of total population), operating in the industrial processing section in the region of Lodz. The obtained return of a survey questionnaires was 118, including: 42 questionnaire from foreign enterprises and 76 from domestic ones. Among domestic enterprises were selected:

- domestic enterprises producing only for internal market (47 enterprises)
- domestic enterprises producing both – for internal and external markets (29 enterprises)

The next stage of the research was gathering the financial data of surveyed enterprises for the year 2010 and comparative analysis of selected financial indicators. The structure of enterprises was similar in terms of size, measured in number of employees⁴. In this stage domestic enterprises were also selected into two groups, those producing only for internal market and those producing for both – internal and external markets.

CHARACTERISTICS OF FOREIGN AND DOMESTIC ENTERPRISES FINANCIAL ACTIVITY – RESEARCH SURVEY

During the research enterprises were asked about the evaluation of their financial condition on the basis of chosen financial indicators, common for this kind of analysis: return of sales, general debt and current liquidity. The level of return of sales indicator in surveyed enterprises is presented in table 1.

Table 1. Return of sales indicator in domestic and foreign enterprises

Type of enterprises	Return of sales			Total
	high	medium	low	
foreign	28,6%	52,4%	19,1%	100,0%

² D.Castellani, A.Zanfei, *Internationalization, innovation and productivity: how do firms differs in Italy?*, the World Economy, n.30 (2007), s.156-176.

³ N.Blakeley, *Why do foreign – owned firms perform better than New Zeland – owned firms?*, The Treasury, Kaitohutohu Kaupapa Rawa 2009, T2009/2747s. 4-6.

⁴ Level of employment:

- up to 9 – microenterprises
- from 10 to 49 small enterprises
- from 50 to 249 medium enterprises
- more than 250 big enterprises

domestic producing only for internal market	21,3%	55,3%	23,4%	100,0%
domestic producing both for internal and external markets	25,0%	46,4%	28,6%	100,0%

Source: own elaboration

Among the surveyed enterprises the highest level of return of sales indicator achieve foreign enterprises - 28,6% of foreign enterprises in total. In the case of the domestic enterprises who achieve high return of sales, there is a higher share of enterprises producing for both internal and external markets (25% of the enterprises) than domestic enterprises producing only for the internal market-21,3% of the enterprises. Therefore, domestic enterprises are able to achieve the level of return of sales indicator close to foreign enterprises while they expand their activities on external markets.

Table 2 presents the structure of surveyed enterprises in terms of general debt level.

Table 2. The level of general debt of foreign and domestic enterprises

Type of enterprises	General dept			Total
	high	medium	low	
foreign	0,0%	35,7%	64,3%	100,0%
domestic producing only for internal market	2,1%	36,2%	61,7%	100,0%
domestic producing both for internal and external markets	10,7%	53,6%	35,7%	100,0%

Source: own elaboration

Domestic enterprises producing only for the internal market as well as foreign enterprises are characterized by a rather low level of indebtedness (61.7% and 64.3% indications). None of the foreign enterprises evaluate their level of indebtedness as high while among domestic enterprises producing only for internal market there are only 2.1% with high general debt. The level of general debt of domestic enterprises producing both for internal and external markets is greater in relation to other enterprises. A 64.3% of these enterprises are characterized by medium and high level of indebtedness. Probably the entry of domestic enterprises on external markets has been connected with the necessity of increasing the risk of the activity by the acquisition of additional (foreign) capital. However, the level of return of sales ratio of these domestic enterprises was relatively high, so a greater level of debt in those enterprises probably does not constitute a threat for their further activity.

The share of foreign capital in the financing enterprises' activity has a direct impact on the level of their current liquidity. The characteristic of the surveyed enterprises in terms of ability to pay off current liabilities is presented in table 3.

Table 3. The current liquidity of the domestic and foreign enterprises

Type of enterprises	Current liquidity			Total
	high	medium	low	
foreign	50,0%	50,0%	0,00%	100,0%
domestic producing only for internal market	38,3%	53,2%	8,5%	100,0%
domestic producing both for internal and external markets	17,9%	60,7%	21,4%	100,0%

Source: own elaboration

The characteristics of surveyed enterprises in relation to their current liquidity is clearly differentiated, although largely shows the relationship that occur between the level of general debt of the enterprises and the capability to pay off current liabilities. Among the foreign enterprises preserving a low level of debt, every second foreign enterprise is characterized by high level of current liquidity. Also, the relatively high level of current liquidity is characteristic for domestic enterprises producing only for the domestic market -

among these enterprises 38,3% is characterized by high level of current liquidity. Foreign enterprises as well as domestic ones producing only for internal market achieve also relatively low level of general debt. Domestic enterprises producing both for the internal and external markets have the lowest level of current liquidity. Among this group of enterprises there is 21,4% enterprises that are characterized by low current liquidity ratio. At the same time, the level of general debt of these enterprises was the highest.

The results of survey about the financial condition of enterprises in the region of Lodz indicate that:

- domestic enterprises producing for the internal market and foreign markets are similar to the foreign enterprises in terms of sales profitability, despite a higher level of debt and lower level of current liquidity in relation to foreign enterprises,
- domestic enterprises producing only for internal market achieve low level of indebtedness and rather high level of current liquidity – similar to foreign enterprises but their sales profitability is lower in relation to foreign enterprises.

These findings are essential for further comparative analysis, based on more detailed data, contained in the financial statements of surveyed enterprises.

CHARACTERISTICS OF FOREIGN AND DOMESTIC ENTERPRISES FINANCIAL ACTIVITY – FINANCIAL DATA COMPARATIVE ANALYSIS

The results of comparative analysis based on financial data of the surveyed enterprises are not always compatible with the results of the survey carried out in the same group of enterprises, especially in the case of foreign enterprises. Detailed data includes table 4.

Tabela 4. Chosen financial indicators of foreign and domestic enterprises

Ratios	Type of enterprises		
	foreign	domestic producing only for internal market	domestic producing both for internal and external markets
ROS	4,4%	-0,2%	8,0%
current liquidity	1,93	1,63	1,59
general debt	52,8%	43,4%	60,3%

Source: own elaboration

The analysis of enterprises' financial data presents that domestic enterprises producing both for the domestic and foreign markets can achieve the highest level of sales profitability - 8,0%-almost twice higher than foreign enterprises for that the value of this indicator is 4,4%. In contrast, domestic enterprises, producing only for the internal market are characterized by the lowest level of sales ratio (-0.2%). Meanwhile, the survey and the analysis of literature indicate that the foreign enterprises generally are characterized by the highest level of profitability of sales. However it may be confirmed that domestic enterprises producing only for the internal market are characterized by the low profitability of sales.

In the case of comparative analysis of the current liquidity ratio the relations between type of enterprises and the level of current liquidity are similar to those observed in the survey. Foreign enterprises are characterized by the highest level of current liquidity ratio, while the domestic enterprises producing for both - domestic and foreign markets achieve the lowest level of current liquidity ratio (the value of current liquidity ratios respectively 1,93 and 1.59). The average value of current liquidity ratio for domestic enterprises producing only

for the internal market is 1,63. However, it should be noted that the average values in the range 1,5-2,0 are recognized in the literature of the subject as the most optimal values.⁵

The comparative analysis of the enterprises' general indebtedness partially confirms the conclusions of the survey carried out among the same group of enterprises. Actually the level of debt of the domestic enterprises producing both for internal and external markets is the highest among the surveyed enterprises (value of the ratio - 60.3%), however, the domestic enterprises producing only for the internal market are characterized by lowest (even in relation to foreign enterprises) value of this ratio - 43,4%. Meanwhile, in the literature it is considered that foreign enterprises are more willing to carry out the activity at higher level of risk and to realize less safe policy of debt (sometimes even at very low financial liquidity) in relation to domestic enterprises.

CONCLUSIONS

The presented results of the survey and comparative analysis of financial data among the randomly selected group of foreign and domestic enterprises in the region of Lodz tend to reach a slightly different conclusions from those presented in the literature. At first, according to the literature, foreign enterprises more frequently than the domestic ones are realize more aggressive policy of debt. Foreign enterprises generally achieve high level of general debt even at risky level of current liquidity ratios. It is also considered that the foreign enterprises achieve better effects of their activity than domestic enterprises. Meanwhile, on the basis of the carried out analysis, it can be noted that domestic enterprises producing both for the internal and foreign markets are ready to take the risks associated with a relatively high share of foreign capital in financing their activity and does not lose the ability to regulate the current liabilities. The high proportion of foreign capital in the financing the enterprises' activity (even connected with a temporary reduction of the enterprises' ability to pay off the current liabilities) can bring positive effects as a result of the use of financial leverage. If the enterprise is supported by additional (foreign) capital used for conducting investments, that profitability is higher than the cost of capital needed for their realization, it may increase its profits. Profits from the investment activity may be designed for paying off the liabilities and it secure from losing enterprise's liquidity.

The development of domestic enterprises activity on the foreign markets probably had a positive influence on increasing profits from sales. As a consequence domestic enterprises achieve higher level of sales profitability than foreign enterprises in host country economy. It may be assumed that polish enterprises producing for both internal and external markets are able to compete with foreign investors in host country economy. However it would be useful , to conduct more extensive research in this area.

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⁵ Depending on the source and the author as an optimal value of the current liquidity ratio is considered 1.5 – 2. Very often the most unfavorable situation is considered when the current liquidity ratio of the enterprise is below 1 (in some studies less than 1.2) or above 3 (in some studies more than 2.5).

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DISPOSITION EFFECT: DO HUNGARIAN INVESTORS KEEP THEIR MISTAKES?

István Joó, Mihály Ormos

ANNOTATION

In our paper, we examine disposition effect known from behavioral finance, according to investors kept their losing positions too long and close their winning positions too early. Analyzing individual transactions of Hungarian higher education students in 2009 and 2010 – based on realized and non-realized gains and losses – we came to conclusion that investors participating in the researches were inclined to disposition. Findings of our paper didn't represent fully the general Hungarian investors, although our sample represents well the population interested in capital markets and participating in higher education.

JEL classification: G12; G14

KEY WORDS

disposition effect, behavioral finance, market efficiency

INTRODUCTION

Our paper focuses on the disposition effect, which derives from a quite difficultly researchable field of behavioral finance, since here we examine individual investment decisions. Disposition effect first described by Shefrin and Statman (1985), where they show that investors close their winning positions too fast, while hold their losing positions too long. Bases of the hypothesis are prospect theory, mental accounting, fear of regret and lack of self-control.

In prospect theory Kahneman and Tversky (1979) explain that in winning situations (range) people avoid risk (their utility function is concave), while in losing situations they prefer to take risk (their utility function is convex). According to this theory, in risky situations we are preoccupied with the changes in our property instead of measuring the utility of the available wealth and our actions are dominated by the aims of avoiding losses. This means that we are afraid to close our losing positions (at least until we see a little shed of hope that prices would turn around), while in winning situations we are inclined to grab the first opportunity to sell our assets.

In order to define the inflexion point of the "S"-shaped utility curve described by the prospect theory, Thaler (1984) created the definition of mental accounting. According to this theory, investor opens a new "mental account" in each and every buy, which he handles as separate accounts irrespective of each other. Thus, both for his losing and winning positions, he uses separate accounts and accordingly, he is prone to apply separate strategies, which along with the utility of prospect theory explains the inflexion point at the value zero (reference point).

First Odean (1998) completes the measurement of disposition effect explicitly, he empirically verifies truthfulness of the hypothesis by using real trading data accessed from 10 000 investors accounts. His findings demonstrates that individual investors keep up their losing positions too long, while they do the opposite in winning situations. Later, Shapira and Venezia (2001) and also Feng and Seasholes (2005) elaborate on the methodology of Odean (1998) and they justify the relevance of the phenomena as well.

DATA

We examined two distinct periods from 16th March 2009 to 17th April 2009 and from 8th February 2010 to 30th April 2010. Our research based on trading results of 130 Hungarian university students. We used data (assignment data, gender of clients, university/college of

clients, clients balances at end of research period) provided by Erste Investment Plc. (who was conducting the stock market games), and additionally from trading data gathered from the database of Budapest Stock Exchange (daily minimum and maximum of stocks, its opening and closing prices), furthermore from questionnaires filled out by the participants. In order to avoid distortion and bias we corrected trading data with dividends. Additionally, we excluded sales data of existing investors portfolios before examined periods, as we have no information on the exact buying price.

Table 1 summarizes the basic trading results and habits of participants. As a part of the comparative studies described in our paper works with a greater amount of data (such as Odean (1998) 10 000 investors, Weber and Welfens (2007) 3000 investors). So our study is mostly comparable with the sample of 125 investors of Boebel - Taylor (2000) from New Zealand. Analysis on a bigger sample is hindered by difficultly acquirable trading data, but these two “stock market games” using real money provided us with an opportunity to examine inclination of Hungarian higher education students to disposition. 13,08% of the total participants (130 in both of the games) were female, who closed an average of 16 deals. While being less active, female investors were generally more successful than male participants (-1,1% compared to -5,28%).

Participating investors placed a total of 4868 orders (closed, modified, withdrawn, expired), from which 2808 were completed (an average of 22 transactions per person). In order to measure yield earned during the examined period we performed 163 artificial closings using the closing prices of April. During the game of 2009, the investor closing most transactions reached an amount of 201, while in 2010 180 transactions.

Higher education students traded in total amount of 504,1 million HUF with a transaction fee of 0,86 million HUF, and they suffered a total loss of 3,16 million HUF (24 thousand per investor on average), without costs they suffered a total loss of 2,30 million HUF (17 thousand on average). Students closed the year of 2009-2010 (in aggregate) with a security account balance of 33;4 million HUF, which contained 265 thousand HUF per account. The largest closing portfolio in 2009 was 1,8 million HUF and 2,9 million HUF in 2010.

The surprising result, which presents itself by looking at the obtained yields is worth noting: on average, the students closed the years of 2009-2010 (in aggregate) with a loss of 4,69%, while in the examined 2009-2010 period BUX index (Hungarian stock index) increased by 24,5%, which can be considered as a benchmark of the present analysis. It is important to bear in mind that in the examined period, in year 2009, only one investor was able to surpass benchmark index with a yield of 42,63%, while in 2010 none of participating students were able to do so (highest yield: 18,08%).

In the two examined periods, the index characterizing the Hungarian Stock Exchange, BUX, increased 27,75% (year 2009) and 21,19% (year 2010). Consequently, we kept this in mind when evaluating our results.

AIM AND METHODOLOGY

We tested the disposition effect with Odean’s (1998) PGR and PLR ratio. In our study we examined the portfolio of investors on every day when they sell a stock and we divided their positions into four possible categories depending on the sell and buy price. In case of sold stocks, sell price was compared to the original average buy prices and so we categorized stocks into winning (realized gain – RG) or losing (realized loss – RL) groups.

We ranked each and every other stock which was in our investors portfolio into unrealized gain (paper gain – PG) or unrealized loss (paper loss – PL) based on the average buy price and the given days closing price.

Table 1 Results and trading habits of participants

	March 16-April 17, 2009	Febr. 8- April 30, 2010	2009- 2010
Number of investors	42	88	130
Percentage of female investors	19,05%	10,23%	13,08%
Total no. of transactions (closed, expired, modified, withdrew)	2 074	2 794	4 868
Total closed transactions	1 110	1 698	2 808
Forced closed transactions	64	99	163
Total turnover (thousand HUF)	178 413	325 695	504 108
Total trading costs (thousand HUF)	416	445	861
Trading results	-905	-2 255	-3 159
Trading results without costs	-489	-1 810	-2 299
Average total turnover (thousand HUF)	4 352	3 701	3 908
Average total trading costs (thousand HUF)	10	5	7
Average trading results	-22	-26	-24
Average trading results without costs	-12	-21	-17
Mean closing balance (thousand HUF)	136	321	265
Total closing balance (thousand HUF)	5 159	28 283	33 442
Average position taken	26	19	22
Return of market proxy for the period (BUX)	27,75%	21,19%	24,47%
Average return	-3,02%	-5,45%	-4,69%
Average return of females	4,62%	-6,20%	-1,10%
Average return of males	-5,06%	-5,36%	-5,28%
Average position taken of females	14	17	16
Average position taken of males	29	20	23

Under realized or unrealized gain we understand the cases, when the given trading days minimum and maximum price was above the average buy price (in the first case the sell happened and the second the stock was kept). Accordingly, we categorized stocks into realized or unrealized loss, if the given trading days minimum and maximum price was below the average buy price (and the share was sold or kept).

After ranking stock positions into RG, RL, PG, PL categories we examined disposition effect on accumulated level:

$$PGR = \frac{RG}{RG + PG} \quad (1)$$

$$PLR = \frac{RL}{RL + PL} \quad (2)$$

When the proportion of gains realized (PGR) and the proportion of losses realized (PLR) are equal, then there is no disposition. However, the value of PGR is significantly higher than the value of PLR we rather realize winning stocks fast and hold losing stocks too long. In other words: in this case the investors are less intent on realizing their losses, thus the disposition effect (DE) is typical of their behavior.

In our study we used several conditions defining PGR and PLR values. Similarly to Odean (1998), in cases the average buy price was between the daily minimum and maximum, we disregarded these positions and didn't calculate with them, since the daily data was not at our disposal, thus it was impossible to rank the kept positions as winning or losing. Furthermore, we also disregarded one-element portfolios, when the client remained without stocks after the selling transaction.

We only took stock positions into consideration (leveraged positions were excluded). Reason for this decision was on the one hand that possible compulsory liquidation of deadlines and

certificates would distort our findings, on the other hand in examined period there was a significant amount of certificate expiration, which also result in artificial closings on individual accounts. In case of non-leveraged share portfolios, we didn't have to consider these artificial closing conditions.

The disadvantage of Odean's (1998) method is that it only considers the day of sells and buys; consequently, movements during the holding days doesn't matter. It poses a further problem that analyzing on individual level we would mechanically get wrong result during the regression analysis that the more shares we keep in our portfolio, the less inclined we are to disposition effect. However, this would only be the natural concomitance of PGR-PLR. We got same result if trade often, then difference between PGR-PLR would indicate a growing, PGR/PLR quotient would indicate a declining disposition. Thus, considering the above, existence of disposition effect is only worth analyzing at aggregate level.

RESULTS

Our PGR,PLR analysis shows, that Hungarian investors inclined to disposition in 2009 and also in 2010. In 2009 51.9% of the winning positions were closed while in losing positions this percentage was only 38.7%. Consequently, investors sold their winning positions 13,3% more frequently. These findings show the presence of disposition effect on Hungarian capital market. In case of 2010 these values were 63.6% (PGR) and 48.8% (PLR). Our PGR, PLR values are close to results of Australian and Chinese researches.

According to PGR, PLR values disposition effect ($DE=PGR-PLR$) in years 2009-2010 (in aggregate) is statistically significant at 1% level, while in case of 2009 and 2010 values the significance level is 5% as we can see in Table 2.

Based on all this we can claim that, similarly to results of international researches, the phenomenon of keeping losses too long and realizing gains quickly is demonstrable in Hungarian investors behavior. On a sidenote, we'd like to mention that basis of the effect derives from different heuristic distortions and framework dependences, so fact that individuals exhibit similar patterns of behavior regardless of nationality and market meets our expectations. PGR/PLR ratio, which is used to measure disposition effect, was 1,33 for our aggregate 2009-2010 period, which is slightly lower than Odean's (1998) 1,51 and Chen et al 's (2007) 1,67. However, research regarding New Zealand, which is most similar to ours in its sample size, opposite with ours showed no significant disposition. Consequently, based on our analysis Hungarian investors are less inclined to disposition, but the effect is still significantly present. It is also worth noting that ratios of 2009 and 2010 are not significantly different, so despite the fact that market conditions were completely different in these two periods, behavior of investors seems identical. Regarding the findings it is important to emphasize that equity markets rose both in 2009 and 2010, so we had no opportunity to analyze the effect on a falling market.

CONCLUSION

In our paper we demonstrated that, similarly to investors of other countries, Hungarian higher education students inclined to disposition in both sample periods (2009 and 2010). In light of these results we can claim that Hungarian students behavior during the stock market rise of 2009 – 2010 strongly corresponds to descriptions found in scientific literature. We have to note, that the circle of investors involved in our research don't represent the hole Hungarian investor population as the participants are relatively young in age with little deviation, their financial knowledge is higher than average while their assets are lower, but these parameters expectedly don't change the results: according to the literature this bias affect all group of investors.

Table 2 PGR,PLR values of Hungarian investors in international context

	Hungary		USA	China	Australia	Germany	New Zealand	Taiwan	
	2009	2010	2009-2010	Odean (1998)	Chen et al. (2007)	Brown et al. 2006	Weber-Welfens (2007)	Boebel-Taylor (2000)	Shu et al. (2005)
Number of investors	42	88	130	10 000	46 969	-	3000	125	53 680
Realized winner	108	96	204	13 883				414	2 625 540
Realized loser	46	39	85	11 930				383	1 985 382
Paper winner	100	55	155	79 656				3166	4 951 077
Paper loser	73	41	114	110 348				3100	12 084
PGR	0,519	0,636	0,568	0,148	0,519	0,510	0,300	0,116	0,347
PLR	0,387	0,488	0,427	0,098	0,310	0,230	0,200	0,110	0,141
Disposition (DE, PGR-PLR)	0,133 **	0,148 **	0,141 ***	0,050 ***	0,209 ***	0,280 ***	0,090 ***	0,006	0,205 ***
PGR/PLR	1,343	1,303	1,330	1,510	1,674	2,217	1,500	1,055	2,461
SE	0,0565	0,0682	0,0437	0,0014				0,0075	0,0002
t statistics	2,35	2,17	3,23	34,74	82,60	58,03		0,75	1046,9

* 10%; ** 5%; *** 1% level of significance

Decisions of investors selling a stock were analyzed according to Odean's (1998) method. On the day of selling transaction the investors' portfolios were divided into categories according to whether they were with realized gains or losses or paper gains or losses. After this segmentation we calculated proportion of gains realized (PGR) and proportion of losses realized (PLR), the difference describes disposition (DE=PGR-PLR). The differences proved to be statistically significant based on results of t statistics check conducted, so the analyzed investors' inclination to disposition is provable. We set up several conditions at the analysis of PGR and PLR values. If the average sale price was between the daily minimum and maximum, these positions were excluded. Portfolios consisting of only one element were also excluded if after the sale and purchase of the given capital market instrument the investor remained without any other capital market instrument. Finally, similarly to Odean (1998), we only took share positions into account (excluding leveraged share positions as well).

Knowing the findings of present research, we aim to extend this study to a wider group of investors, which would come with a several year long sampling if possible. In this case, beside rising markets, we could analyze bear markets as well. Furthermore, with the segmentation of investors, we could analyze this effect on Hungarian market in correlation with inclination to disposition, investment yield, experience, education, sex and other investor characteristics.

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CLAIM PAID POSITION IN RANK OF ALTERNATIVE SOURCE OF FUNDING

František Kalouda

ANNOTATION

Paper discusses the evaluation of the claim paid as a source of financing of business activities. It notes the current situation in which claim paid is in the literature of mainstream theory of corporate finance as a source of financing practically absent.

The paper analyzes the key factors in the characteristics of the sources of funding sources used and assess this resources by simple statistical method (frequency test). It compares the selected sources of funding to the claim paid as well as to the volume (size of source).

Results supports the view that there is not reason to ignore the claim paid as a source of financing of business activities.

KEY WORDS

Claim paid, parameters, comparison.

JEL classification: G22, G32

INTRODUCTION

The status of claim paid as a source of funding in mainstream domestic corporate finance theory is still some ambivalence.

On the one hand, the theory commonly recognizes insurance as one of legitimate protection against the risk, **especially in cases of fatal risks** that may affect the continuity of business activity fundamentally (natural disasters). The role of claim paid is a threshold matter, clear and unquestionable in principle. On the other hand is claim paid so far not accepted as a standard, or an alternative source of financing.

AIM AND METHODOLOGY

The fundamental aim of this paper is to contribute to the inclusion of claim paid between sources of financing business activities and **especially in connection with the generally problematic financing company in the extreme situation (natural disaster or other insurable risks)**.

The decisive contribution of the instrumentation methodology consists of literature review and comparison. They are also used in routine analytical and synthetic procedures. The statistical methods used is a simple test frequency. With regard to the data base contribution for the current state of affairs is question to discussion the original level of representativeness of the analyzed foreign sources.

Source citations in Fig 1 was chosen because of the need to evidence the results of searches.

RESULTS

At the level of sub-goals in this paper is primarily on the definition of parameters and requirements which meet the funding source.

Parameters of the generalized sources of funding

The first result of this paper is the frequency test. It provides information about how often the given characteristics of the sources studied so far appears. Information is presented in Fig. 1.

Parameters of sources are divided into groups within which the score is determined in descending order of frequency of their occurrence in the studied resources.

Fig. 1 Parameters of the generalized sources of funding (frequency test).

GROUP

*parametr of resource
resource*

more characteristic feature

Size / Availability / Feasibility (frequency 10x)

„easier access“

(HRDÝ, M. a kol., 2008,p. 99)

uncertainly disposable (available)

(SVITÁKOVÁ a kol., 2011, p. 7)

uncertainty in principle (from donors and government)

unavailable for start-ups

(SVITÁKOVÁ a kol., 2011,p. 10)

property

(DLUHOŠOVÁ, 2006, pp. 49, 52)

(SYNEK, (2000, p. 115)

structure (own and foreign), availability requirement in terms of the capital (basic capital)

conditional application

(DLUHOŠOVÁ, 2006, p.52)

conditional compliance "obligations under the law"

narrowness

(SVITÁKOVÁ a kol., 2011, p. 7)

limited amount of funding (from donors and government)

sufficient amount of

(KISLINGEROVÁ, 2004, p. 285)

Size/amount of the source

(SYNEK, 2000, p. 114)

„ have just as much capital it needs.“

realistic sources

(SYNEK, 2000, p. 115)

actual amount, not “the sum of the balance sheet”

Manageability (frequency 5x)

pružnost („flexibility“)

(DARMODARAN, 2001, p. 563)

preferred parameter of the source of financing

manageability of resource („control“)

(DARMODARAN, 2001, p. 563)

preferred parameter of the source of financing

long maturity

(VALACH, 2003, p. 82)

high flexibility

(VALACH, 2003, p. 82)

riziko použití zdroje

(VALACH, 2003, p. 82)

Stability(frequency 5x)

sustainability

(SVITÁKOVÁ a kol., 2011, str. 7)

source must be able to reproduce

usability at a profit

(SVITÁKOVÁ a kol., 2011, str. 7)

this source is not otherwise available (microfinancing)

stability in time

(KISLINGEROVÁ, 2004, p. 507)

stability small and great, source permanent and temporary

time aspect

(SYNEK, 2000, p. 115)

short-time and long-standing

(DLUHOŠOVÁ, 2006, p.53)

Price (frequency 4x)

low interes rates

(KISLINGEROVÁ, 2004, pp. 520-521)

low fees

(KISLINGEROVÁ, 2004, pp. 520-521)

minimum cost

(VALACH, 2003, p. 82)

price of the source

(DLUHOŠOVÁ, 2006, p.104)

profitability in relation to activities funded

Creation (frequency 3x)

way to create

SYNEK (2000, p. 115) the law (e.g)
 DLUHOŠOVÁ (2006, p.52)

Fig. 1 Parameters of the generalized sources of funding (frequency test) - continue

transparency
 KISLINGEROVÁ (2004, pp. 366-367) in connection with the leasing opaque
Function (frequency 3x)
 function of source
 SYNEK (2000, p. 115) specific (if possible)
 influence on the failure of a company
 VALACH (2003, p. 82)
 influence on the control on a firm
 VALACH (2003, p. 82)
Yet Unquoted(frequency 2x)
 legality
 conformity with good morals
Source: see the quotations inside Fig. 1

Quantification of selected sources of funding

Input data indicates Fig. 2. In the second step, the claim shall be compared with selected now standardized sources of funding in terms of quantity (some alternative resources and IPO).

Fig. 2 Quantification of selected sources of funding (billion Kč) – input data

source of financing	period (year)			
	2004	2005	2006	2007
2008				
claim paid (nonlife)	35,4	34,3	38,4	36,7
39,2				
leasing incl. credits	138,8	154,5	169,4	180,1
174,2				
factoring	41,1	86,8	110,4	135,1
141,9				
IPO	1,8	0,0	2,8	2,2
4,7				
TOTAL	365,9	443,5	503,0	568,5
601,9				

Source: Statistická ročenka ČR 2004, 2005, 2006, 2007, 2008, 2009; MELUZÍN, T.-ZINECKER, M. 2009. IPO, prvotní veřejná nabídka akcií jako zdroj financování rozvoje podniku. Computer Press, 2009. Vydání první. 188 stran. ISBN 978-80-251-2620-2, str. 173. <http://www.pppcentrum.cz>; <http://www.asociaceppp.cz>; www.cap.cz; www.cnb.cz; www.clfa.cz; autor's calculations

Note: IPO volumes are in source listed in the Euro. Conversion is performed at CZK in all cases using CNB exchange rate of the last working day of the year.

Horizontal and vertical analysis of the processed input data presents Fig. 3.

Fig. 3 Quantification sources of funding (billion Kč) - horizontal and vertical analysis

Source of financing 2008	period (year)							
	2004		2005		2006		2007	
claim paid 39,2 10,9% (nonlife)	35,4	16,3%	34,3	12,4%	38,4	12,0%	36,7	10,4%
	100%		96,9%		108,5%		103,7%	
leasing 174,2 48,4%	138,8	64,0%	154,5	56,1%	169,4	52,7%	180,1	50,8%
incl. credits 125,5%	100%		111,3%		122,1%		129,8%	
factoring 141,9 39,4%	41,1	18,9%	86,8	31,5%	110,4	34,4%	135,1	38,23%
	100%		211,2%		268,6%		328,7%	
345,3%								
IPO 1,3%	1,8	0,8%	0,0	0,0%	2,8	0,9%	2,2	0,6%
	100%		0,0%		155,6%		122,2%	
261,1%								
TOTAL 360,1 100%	217,1	100%	275,6	100%	321,0	100%	354,1	100%
	100%		127,0%		147,9%		163,1%	
165,8%								

Source: Statistická ročenka ČR 2004, 2005, 2006, 2007, 2008, 2009; MELUZÍN, T.- ZINECKER, M. (2009); <http://www.pppcentrum.cz>; <http://www.asociaceppp.cz>; www.cap.cz; www.cnb.cz; www.clfa.cz; author's calculations

Note: IPO volumes are listed originally in Euro. Conversion is performed at CZK in all cases using CNB exchange rate of the last working day of the year.

DISCUSSION

Parameters of sources of funding

Frequency test (in Fig. 1) showed that the quantitative aspect is in evaluation the importance of funding sources significant criterion. Under the current state of knowledge can even be seen as the decisive criterion.

The debate is still the aggregation partial or individual characteristics into groups.

Quantification of the selected sources of funding

The quantitative assessment should be considered in a broader context. One of them is undoubtedly the fact that the absolute amount of claims paid will always be (at least to some extent) depend on the externalities that the insurance industry's control. A classic example of these influences are natural disasters.

Probably the most interesting result from the application of quantitative evaluation is that the IPO is completely negligible as a source. The contrast between the frequency of this source in the literature and its totally negligible size could hardly not be greater.

CONCLUSION

In this paper we analyzed the data lead to the clear conclusion that there is no parameter or the description of standard sources of funding that would prevent claim paid considered as a source in the same category.

The first result of this paper is conclusion that neither the absence specific characteristics of claim paid in standardized financial resources (available only in precisely defined situations, etc.) can not be an obstacle to the inclusion of the indemnification set of corporate finance. One of these unique characteristics, however, favors the claim paid almost completely - virtually unconditional availability of this resource in case of accession of claims addressing the risk of gambling situations.

The inclusion of claim paid between the standard considered sources of funding also supports the quantitative aspect (see Fig. 3). It can perhaps discuss whether or not it is appropriate to include claim paid to the category of alternative sources.

The paper was created with the support of the Endowment Fund for Support Education Insurance, Prague within the project "Claim paid as a source of financing in the extreme situation (the insured event)."

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THE BANKING SECTOR UNDER THE CONDITIONS OF THE CRISIS

Mária Klimiková, Martin Vovk

ANNOTATION

Long-term imbalance of the largest economies, which is crossing sustainable limits, global overbalance in global markets and ideas that internal self-regulatory devices of banking system are sufficient, led to outbreak of financial crisis, which has had global character. The aim of the paper is to analyze the impact of crisis on banking sector and pointing out on the influence of banking sector to creation of the financial crisis.

KEY WORDS

Financial crisis, the banking sector, impacts of crisis, contributions, mortgage, credit, account receivable, profitability of banking sector.

JEL classification: G21

INTRODUCTION

The present deepening economic crisis, which according to the experts has been the worst since the times of the world economic crisis in the period between the two world wars has had an impact on the financial markets all over the world. The impulse for the rise of the recent crisis was the crisis of the real estate market in the USA, which resulted from granting the risk mortgages to the inhabitants with lowers value of financial standing.

AIM AND METHODOLOGY

The aim of the paper is to explain the task of commercial banks at arising of the financial crisis, point at the new, already implemented as well as prepared measures of regulatory organs for prevention of crisis and analyze the development of banking sector in Slovakia in recent years.

The subject matter of this problem were searched reasons of the rise of the crisis in the USA, its transition to Europe and other parts of the world. We have also concentrated on the measures to mitigate the crisis impacts in the USA and Europe, especially on the task of the regulatory organs being prepared. One part of the research was also the development of banking sector in Slovakia in recent years (due to the limitation of the size of the paper we are giving survey of this development for the last 3 years.

RESULTS

1. Current Financial Crisis

1.1 The Share of the Banks on the Rise of the Financial Crisis

Granting credits to risk clients evokes the question why, when granting credits, the banks were so benevolent and granted financial means to the clients with high possibility of rise of bad debts. The approach of the banks is connected with the principle of their attitude to credits, where their attitude “originate and keep” in the eighties was changed to the attitude “originate and distribute” in the nineties. In the first case the banks recorded the granted credits in the balance account of the bank as accounts receivable, in their approach “originate

and distribute”, banks sold the accounts receivable on credits (securitization). This way the banks had sufficient cash to be able to continue investing. In spite of attractiveness of these products, in this phase the sharp increase in the amount of granted credits was not yet seen, because the rating agencies estimated such credits as highly risky, thus being too risky for most investors.¹

A radical change came only after the innovations on the financial markets introducing the so called innovative financial instruments (MBS – Mortgage-Backed Securities) and ABS (Assets-Backed Securities) functioning as bonds. In addition to MBS and ABS their modifications e. g. CDO (Collateralized Debt Obligation) as well as CDS (Collateralized Default Swap) were created. On the basis of the above, the securitization caused on one hand an enormous expansion on the secondary market, on the other hand it made the risk be shared by more subjects. The securitization enabled banks to get rid of the risk which was further shared by individual investors who were buying financial products generated from risk credits. The above analysis shows that on one hand the banks were creating risky products as they could sell them further, on the other hand the investors were buying those products not understanding their principle. The third subject were the rating agencies, which were the most criticized for originating the crisis.

To be able to make such risky deals, commercial banks created the so called shadow banks out of the bank regulation system, which cannot be directly prevented by the present regulation. At the same time instead of accepting a more strict legislation there were attempts to abate the conditions for financial services and companies, i. e. liberalization and deregulation, one of the key events in this sphere was cancellation the Glass-Steagall Act in the year 1999.

1.2 Excessive Expansion

In addition to the influence of the above factors, many problems of the European banks (besides the present writing off the Greek debts) were caused by the banks themselves. In the period before the crisis, the European banks were developing their business more quickly than the overseas banks (especially in Asia and the USA). Granting credits of much higher amount than the deposits means the necessity of higher reliance on the loans, which at the same time makes them more vulnerable. The banks with higher Loan/Deposit Ratio have a higher need or refinancing. The ratio of loans and deposits in the USA is 72%, in Japan 99.5%, in China 66.6%, in the European banks it is as much as 115.5%.

Thanks to the above mentioned development trends, the balances of the banks were growing at enormous speed. Thus the new entities of private capital reached the room for their originating, such as hedge funds or private equity companies, which were using mainly resources for their risky financial operations. These operations were in great extent financed by so called carry trades, i. e. lending cheap Japanese yen at zero interest rate and their further investment in other currency destinations.

Increasing interest rates by FED after the year 2004 supported these tendencies. The growing interest rates in the USA were attracting the resources from other countries as well. Due to this the countries with large balance of trade excess, such as e.g. oil exporting countries were investing a lot. But these resources were not used productively to invent new technologies, expand production or to do other activities creating added value. All the money was used by American households to buy houses, big automobiles and to live luxurious lives on credit. Thus, the bubble was not created only on the real estate market but there was an enormous credit bubble. Other important factors of starting financial crisis were the liquidity crisis

¹ <http://hnonline.sk/ekonomika>

(which was directly connected with the loss of trust) and the activity of rating agencies, which we are not going to deal with due to the limitation of the paper extent.

2. The Impact of the World Financial Crisis on the Banking Sector in Slovakia

2.1 The Factors Activating the Impacts of the Crisis in the Slovak Republic

Penetration of the world crisis in the Slovak banking and business environment depends on the factors which multiply it - supporting factors as well as the factors which slow it down – reducing factors. The crisis is penetrating in different forms – channels, where there are supporting and reducing factors acting against each other.²

The reduction of the value of assets in the foreign financial markets where the financial crisis was reflected mainly by decrease of profitability (pension funds, share funds, unit-linked products), the fall of liquidity in the foreign liquidity market (influence on the increase of price of the resources of finance), the problems in real economy, the decline of liquidity of financial instruments market, which the banks use to hedge their market risks can be considered to be the channels of expanding the crisis in Slovakia.³

2.2 Profitability of the Banking Sector in Slovakia

The impact of the present crisis has not been so hard in the banking sector in Slovakia mainly thanks to a very cautious credit policy of the commercial banks due to which the banks are granting fewer credits than needed by the business sector. It is shown by the Loan to Deposit Ratio coefficient, which in Slovakia is of about 85%. The good situation in the banking sector in our country is also reflected in the volume of profits reached by the banks, which is growing especially due to the growth of net interest incomes.

According to the data of the National Bank of Slovakia, the banking sector profit of the year 2010 increased by 101.4% to 503.82 mil Euro. The year 2010 was a revival of the Slovak financial sector, growth of profitability and improving the total financial position. (In the year 2009 the profit of the banks decreased by 50.8% to 250.1 mil Euro.)

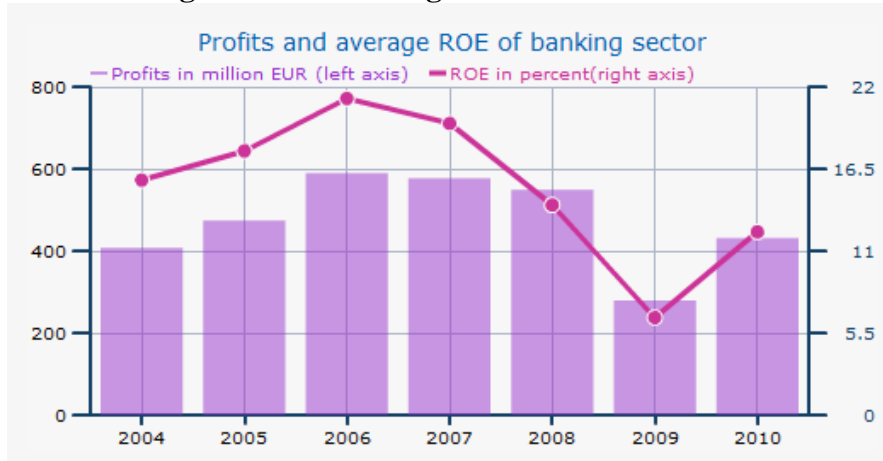
In the year 2011 the net profit of the banking sector increased by 34% to 674 mil. Euro, but an important part of the profit was represented by one-off incomes. After deducting them, the net profit of the sector of the last year was similar to the one of the year 2010 (503 mil. Euro). Net interest yields for the last 12 months reached a year-to-year increase of 7% to 1.8 mld Euro. The growth of net yields on fees and commissions was at the level of 5% (0.461 mld Euro). Towards the end of the year 2011 there was an important increase caused by one-off (other) net yields, which reached the value of 173 mil Euro. In the year 2011 the banks granted historically the highest number of new mortgages (more than 3.8 mld Euro). Towards the end of December 2011, the volume of all credits reached the value of 36.4 mld Euro (towards the end of the year 2010 it was 33mld Euro). There was a year-to-year slight decrease of bad debts from 6.2% to 5.96%. The net profit of the banking sector of the first 3 months of the year 2012 fell by almost one fifth to 142 mil. Euro. It was caused mainly by increase of provisions, resulting from devaluation of credits, as well as from newly introduced banking deliveries. The main income of the banks and the net interest yield increased only very slightly (3%), in spite of an enormous increase (17%) of the bank costs on deposits. The second most important source of income, net yields, were at the same level as in the previous year. In comparison with the last year, there was a decrease of running profit by 4%, being the first decrease since the year 2009. One of the reasons is also introduction of the bank delivery.

² Kováč, M., Kováčová, E.: Vplyv finančnej krízy na inovácie, SjF TU v Košiciach, Ústav technológií a manažmentu, 2008, strana 5.

³ ŠRAMKO, I.: Výhľad hospodárskeho vývoja a dopad finančnej krízy na Slovensko, Národná banka Slovenska, 2008.

For the first 3 months the banks delivered more than 22 mil Euro to the account of financial assets. A total year-to-year increase of balance account was 5%, on the assets side due to the loans granted to inhabitants and on the liabilities side due to the retail deposits. In the previous period the banks were increasing their own capital needed for the credit granting growth. Due to the retained profit of the previous year the equity of the banking sector was increased by 16%.

Fig. 1: Profits and average ROE of banking sector in Slovakia



Source: <http://www.sbaonline.sk/en/banking-sector/statistics/>

3. The Measures of the ECB to Mitigate the Impacts of the Crisis and Prevention of Crises

The world financial and debt crises have given rise to the regulatory measures to prevent the rise of new crises.⁴ The reform of regulation and supervision of the financial sector in the USA contains legislative suggestions of regulation of financial market, forming the Dodd-Frank Act and rise of new institutions on the basis of this act. The main reforms following the Dodd-Frank Act are aimed at capital requirements and size of liquidity and give limits to the size of banks and remunerations in the banking sector.⁵

At the same time there is a reform of regulation and supervision of the financial sector in the EU. It consists of the Larosier's reform of regulation – the regulation of rating agencies, then the parallel banking system, the securitization products and remedy of derivative market, forming of consistent uniform regulations functioning in the whole EU. At the same time European supervising of the financial market has been introduced (ESRB, ESFS, EBA and others).

CONCLUSION

At present there are changes in the strategic priorities of the banking sector. The prior orientation of the management of banks is not only oriented at their profitability, but mainly at bank's liquidity and its capital adequacy. Banks must get oriented at the capital adequacy growth by asset selling and capital rise. There is liquidity surplus of the banks in Slovakia, but it is mostly a short-term one. The value of 10 year resources has rapidly increased, what is reflected in the approach of banks to granting credits to business sphere and making the granted credits more expensive. The profitability of banking sector in Slovakia is influenced

⁴ Zdroj: SITA, REUTERS.

⁵ PAVLÁT, V., KUBÍČEK, A.: Regulace a dohled nad finančními trhy, str. 91

by passing the act on special contributions of selected financial institutions., If we are to evaluate the expectations in the development of profitability, in the near future the banks in Slovakia will have to concentrate on implementation of new regulatory and legislative rules as well as to accept new taxes and contributions, that is the development of profitability may be adverse.

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AUDIT RISK IN THE CONTEXT OF THE AUDIT PROFESSION

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ANNOTATION

The economic life is closely associated with the audit profession that is accompanied by audit risks. These risks are usually determined by business risks. All accounting units are subject to the business risks while carrying out their business activities. The accounting unit management is responsible for identifying potential risks and responding appropriately. The audit profession might eliminate these risks. The auditor is focused on the risks which may affect the financial statements due to the fact that not all risks concern a preparation of financial statements. The auditor obtains sufficient and appropriate evidence in order to acquire a reasonable assurance whether the financial statements give a true and fair view in all material respects in accordance with a valid financial reporting framework. The audit risk is when the auditor expresses an inappropriate opinion on the financial statements. Therefore, it is necessary to analyze the audit profession together with the audit risks relating to an auditor auditing the financial statements in accordance with ethical principles.

KEY WORDS

audit risk, audit profession, business risk, ethics of auditor

JEL classification: M42

INTRODUCTION

There is more and more attention paid to the audit profession nowadays. A role, range as well as scope of audit are emphasized constantly because the audit is likely to be considered as a tool to achieve a financial stability as well as an efficient and effective tool in fighting a corruption in the economic environment.

A risk is an integral component of each and every business activity. There are the business risks with successful accounting units, too. A task of the accounting unit management is to identify potential risks and to respond appropriately.

The audit profession may be considered as a factor in eliminating business risks as well. However, the auditor can not pay attention to all risks but only to those risks affecting the financial statements. The auditor assesses the risks in account balances in order to detect material misstatements in accounting or while preparing the financial statements.

AIM AND METHODOLOGY

The article objective of "Audit Risk in the Context of the Audit Profession" is to clarify the audit risk and to highlight the importance of the audit profession which has taken an important place in the economic life of the Slovak Republic after more than twenty years of its existence. The audit profession has gradually established itself as a separate profession dealing with the risks affecting the financial statements. The current economic situation has a significant impact on the work of auditors. On the one hand, increased risks in business brings an increase of the audit risks, too. On the other hand, there is a reduction of contract prices for audit and assurance services and an increased need for an insurance against risks.

Partial objectives were set in order to achieve the article objective such as a definition and analysis of the audit profession as a prevention tool in economic life, an analysis of ethical principles kept by auditor when auditing the financial statements, an analysis of audit risk which is associated with a contract risk and a definition of auditor's report containing auditor's opinion on the audited financial statements based on the conclusions coming from an analysis of the obtained audit evidence.

The method of analysis was applied when preparing the article in which the audit risk was analysed as a part of the audit profession. The auditor is obliged to plan and perform the audit to reduce the audit risk to an acceptably low level, which is in accordance with the predetermined audit objectives.

We also highlighted the ethical principles necessary for the auditor auditing financial statements. We found that the independence of auditor is an essential ethical principle in relation to the audited financial information, to those who prepare and use this information.

Eventually, we concluded to a need of the audit profession in a financial crisis by the method of deduction. The auditor reveals potential risks of accounting units and increases a credibility of information presented in financial statements.

RESULTS

The audit profession as an important element of prevention in the economic life

The audit is a process of obtaining and evaluating evidence regarding informations about various activities and events by an auditor. The objective is to assess a consistency of the obtained informations with the predetrmined criterias and to advise the detected results to interested parties.

The audit is performed by auditors in accordance with a valid legal legislation. The auditors verify if the financial statements are in all material respects in accordance with a valid financial reporting framework.

The financial statements are an object of the audit examination. The financial statements directly connects accounting with auditing. An accounting unit is obligatory to keep accounts from the date of its registration in the Commerical Register until the date of its cessation. The accounting unit quantifies its business activities by keeping accounts resulting in the preparation of financial statements at the end of the accounting period by the accounting unit management. All consolidated financial statements as well as selected individual financial statements are compulsory to be audited.

Illegal tax evasions, frauds or failures to pay compulsory payments to Social or Health insurance companies is less likely in audited accounting units.¹ The audit profession is bound to be considered as an important factor in eliminating business risks accompanying the business activities of all accounting units but also as a tool in ensuring a protection of ethical business activities.

¹ <http://www.skau.sk/data/Auditorska%20profesia%20a%20hospodarska%20kriza%20v%20SR%20%20-%20clanok%20%2021%2002%202012.pdf>Článok (12/03/2012).

Ethics of Auditor

The auditor is an important element of transparency in accounting units that is obliged to act in accordance with ethical principles whose violation could be affected by disciplinary. The auditor, therefore, has to avoid any ethical conflicts respecting the ethical principles in her/his own interest.

A characteristic feature of the audit profession is an independence that the auditor is required to maintain. The independence means an expression of the auditor's opinion on the audited financial statements without any commands or effects of other persons. The independence enables to the auditor to provide an impartial and unequivocal conclusion which is necessary for a well performed audit. The independence with an objectivity represents fundamental pillars of the audit profession.

The independence is required not only for performing audit, but also for other services regarding future financial statements. The independence is an important attribute which has become a basis of many laws in many countries. The independence is defined in the Ethical Code of Auditors of SKAU, but also in the Act No. 540/2007 Coll. on Auditors, Audit and Audit Oversight.

Audit based on risks

The audit process represents a risk for the auditor. The risk undoubtedly increases due to the current economic crisis entailing business risks, too. The auditor performing a risk-based audit shall acquire a reasonable assurance that the financial statements shall not contain material misstatements caused by a fraud or error. The reasonable assurance is high but not absolute level of assurance considering the existence of natural limits of the audit.

The audit objective is to enable to the auditor to express an opinion whether the financial statements are in all material respects prepared in accordance with a valid financial reporting framework. In order to meet the audit objective, it is necessary for an auditor to plan and perform the audit to reduce the audit risk to an acceptably low level. The auditor performs procedures in order to obtain sufficient and appropriate evidence constituting a basis when formulating an audit opinion which is an important part of the auditor's report.

The audit risk is a risk that the financial statements contain material misstatements and/or a risk that the material misstatements will remain undetected. The risk of the material misstatements existence in financial statements is a combination of inherent and control risk. The risk of not detecting material misstatements is a detection risk. The auditor performs the procedures focused on an assessment of the risks of material misstatements and reducing a detection risk.

The inherent risk represents a predisposition of claims to misstatements that may be significant individually or together with other misstatements while no appropriate controls. The inherent risk relates not only on a level of financial statements as a whole but also on a level claims.

The control risk is a risk that the implemented system of internal control of accounting unit will not prevent, reveal or correct in time misstatements which may be significant either individually or together with other misstatements. The accounting unit is supposed to identify and assess the risks accompanying the business and other risks (e. i. fraud) and to respond by implementing a system of internal control.

The control risk will always occur due to natural limitations of the system of internal control. Therefore, the auditor has to understand the internal control of accounting unit and to perform the procedures in order to assess risks of material misstatements on the level of claims.

A fraud risk, which means intentional acting of management to gain advantages unfairly or illegally, is a part of the inherent or control risk. There are two major types of intentional misstatements. That is a misstatement resulting from a dishonest financial reporting or a misstatement resulting from a misappropriation of assets.

The detection risk is the fact that an error or a misstatement may remain undetected. It usually arises by an inefficient or incorrect implementation of the audit procedures in practice. The detection risk exists independent from the inherent or control risk as the auditors are allowed to decide for audit procedures and change them individually. The detection risk is supposed to be in an inverse relationship with the inherent and control risk. The greater the inherent or control risk, the less acceptance rate of the detection risk. The detection risk can not be reduced to zero because the auditor can not test all transactions from a particular category, account balances or the information reported.

The auditor's interest is in the material misstatements of the financial statements as a whole. The auditor considers the risk of material misstatements on a level of financial statements as a whole as well as on a level of transactions, account balances, values reported and related claims.

The auditor shall have a deep understanding of the accounting unit, its environment when auditing and performing the following procedures of risk assessment: analytical procedures, obtaining information from employees, an observation, a review.

The auditor, while assessing the risks according to a professional judgment, determines which risks require a specific attention, such as significant risks often related to significant non-routine transactions and matters require a judgment. There is an inverse relationship between the significance and risk which means the higher level of significance, the lower audit risk which could be accepted.

Independent Auditor's Report

The auditor comes to a conclusion representing a basis to formulate an audit opinion on the audited financial statements on the ground of the sufficient and appropriate evidence obtained when auditing.

The auditor's opinion is the most important part of the auditor's report representing a tool of communication between the auditor and clients. It is a declaration of an opinion of independent person based on cogent evidence.

The auditor's report provides information on the audit subject, audit responsibility, management responsibility as well as auditor's opinion on the audited financial statements. The independent auditor expresses to the shareholders and creditors, by a formulation of her/his opinion on the financial statements in auditor's report, that the information presented in financial statements are true and fair in all material respects.

CONCLUSION

The audit profession can be considered as an emerging discipline in the Slovak Republic compared with many countries. Its roots go back to the 19th century. However, its origin is much older. The first findings of the activity appeared thousands of years ago.

It has become a major independent profession as a result of historical development. It faces national and international demands from the public, clients, creditors, banks or other parties. It has gradually adapted to the current requirements of the business environment.

The audit profession holds an important place in the economic life of the Slovak Republic at present. The audit profession may be defined as an important element of prevention in the economic environment but also as a tool in eliminating business risks that every accounting unit faces when carrying out its business activities. Therefore, it is necessary to emphasize the

importance and necessity of the audit profession as an option of the risk elimination accompanying the business activities of all accounting units.

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BANKS AND CASH MANAGEMENT

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ANNOTATION

One of the major components of banking, which has its own historical traditions, is primarily a commercial bank - the financing of large firms and the problems that are associated with it. It involves a two areas, both our own bank marketing, creation of new banking products and their further use, while the satisfaction of bank customers.

In particular, the large bank clients are crucial - their meaning is not, I'll just their size, but also many other clients who are strings attached, be it retail as well as well as corporate clientele.

One of the ways to attract and retain customers is especially large Cash Management – which is an important part of business management, municipalities. For banks, it is an opportunity to get his client to offer more products designed for comprehensive management of financial flows. It may not be a new product, but it is crucial to their composition and offer bank clients.

KEY WORDS

Bank Cash Management Cash Pooling Cash Collection

JEL classification: G390

INTRODUCTION

In order to detect approach of banks in the Czech Republic companies were surveyed with the following result. 27 questionnaires were sent to banks in the Czech Republic. Were excluded from the research building societies and banks, whose target group is mainly retail clients.

In order to get enough relevant information, was implemented at two banks that failed another survey, this time a personal way, so as to gather a sufficient number of correspondents, whose answers can be evaluated.

The survey aimed to obtain data for analysis based on the following groups of questions:

- How the banking sector approaches Cash Management;
- About what clients are interested;
- What bank products to include Cash Management;
- Preview of the banking sector, the advantages in terms of Cash Management Bank and the client;
- What about the banking sector clients interested in the case of Cash Pooling;
- What form of Cash Pooling is on offer to their customers;
- Preview the profitability of the banking sector in terms of pooling cash and bank client.

AIM AND METHODOLOGY

In his paper aims to deal with especially highly sophisticated new products and the relationship marketing and development in relation to the new banking products. Their use is aimed in principle only to legal persons.

As a basic method of scientific inquiry primarily consider the methodology of pragmatism that is in my view the most appropriate methodology for investigating phenomena in the financial sector.

Yet consider, in my view to proceed to examine from the perspective of other scientific methodology especially "New positivism" and "Critical rationalism".

In particular, consider the methodology of pragmatism for the area of scientific inquiry for the best. This approach is influenced by my own particular experience in banking and non-banking sector. Crucial to the investigation and determination of objectives, in banking, which is primarily will benefit from the new banking services.

Cash Management issue is current and its application contributes to cost savings in the business sector.

RESULTS

All of the surveyed banks that responded to the questionnaire have in their Cash Management menu and only one of them has failed in its bid Cash Pooling. What has, however, deserves more attention is the issue of offers for individual client segments.

Cash Management

The vast majority of banks offer the business sector, municipalities and Cash Management in principle, regardless of the size of the client. Only about half the number of banks offering Cash Management to selected clients. This approach is particularly affected certain risk-free Cash Management, unless its part of the Cash Pooling. Yet only a certain share offers to selected clients indicates the impact of segmentation by banks that are trying this risk-free for clients to choose the product so that it may not continue to offer significant and cost for their clients the most valuable part of the Cash Pooling.

Cash Pooling

Here the situation is completely different. Regardless of the size and number of client accounts, banks offer Cash Pooling selected clients and especially those which are of interest - the interest to keep the client even if there is a reduction of proceeds.

1 CASH MANAGEMENT STRUCTURE

The biggest offer individual products included in the Cash Management are focused on basic banking products liability and balance-neutral, such as current accounts, both in CZK and foreign currency payments.

Virtually all banks have in their offer Cash Pooling, as part of the Cash Management. Cash Pooling may in certain cases, risk-free transactions, but not without interest, less shares in the offering:

- Foreign exchange transactions, operational and investment loans. Lower rates are influenced by their risk - these are essentially the products associated with the risk in their provision.
- Credit cards are also offered as part of the Cash Management fewer respondents.

It is a product that as part of the Cash Management is designed primarily for the management client.

- It is surprising low utilization of the possibilities offered by cross-selling¹, because employee accounts offering less than half of the respondents. The employee accounts both banks extend the number of clients and also have a neutral impact on the overall balance of the bank where the funds are only transferred between client accounts in the bank.
- Cash Collection offers the vast majority of respondents, even if it does not in service centers, service centers cash because they are basically secured form of service centers.

¹ Cross-selling, when as part of a sales strategy to sell the product, are also offered other products that the primary product may not be directly related.

Fig.2 Survey in banks – Structure of Cash Management

<i>Question</i>	<i>Consent in the Questionnaires</i>	<i>Consent personal meetings</i>	<i>Total responses consistently</i>
What can you offer as part of the Cash Management			
The management of current accounts in CZK and payments local, cross border and foreign	9	2	11
The management of current accounts in foreign currencies and cross border and foreign payments	9	2	11
Cash transactions in domestic currency and foreign currencies	7	2	9
Treasury operations - term deposits, savings accounts and savings deposits	8	2	10
Foreign Exchange Transactions	5	2	7
Operational credits	5	2	7
Investment loans	4	1	5
Cash Pooling	8	2	10
Debit Card Payment	5	1	6
Credit Card Payment	4	1	5
The management of employee accounts	2	2	4
Cash Collection (especially for business companies)	5	2	7
Using of service centers	0	0	0

Source: Own research results in banks

2 CASH POOLING

They have in their offer almost all banks, and given the rules that apply for Cash Pooling is advantageous for them to provide Real Cash Pooling. The difference is between the number of offers on real or fictitious Cash Pooling, as well as offers to local, multinational and multicurrency accounts, is not so significant, indicating that banks are prepared to offer cash pooling according to client needs.

Significant lower supply of credit and no compensation offer cash pooling, which banks consider from your perspective as less advantageous.

Fig.3 Survey in banks – Offers of Cash Pooling

<i>Question</i>	<i>Consent in the Questionnaires</i>	<i>Consent personal meetings</i>	<i>Total responses consistently</i>
Real (basic characteristic of the transfer of account balances, account for the main group to the end of the day, positive balances are used to cover any deficits in other accounts within the group and thus leads to savings in external funding)	8	2	10
Fictive (as opposed to real cash pooling funds to transfer does not, but there is only a mathematical combination of balances on individual accounts so that account balances remain unaffected)	6	2	8
Local (all accounts involving only one currency in that particular business entity with the bank, including accounts of subordinate units)	6	1	7

Multinational (involving all the accounts of a business entity with the bank, together with the inclusion of accounts of subsidiaries and affiliates of banks, regardless of the state in which it operates)	6	2	8
One currency (involving all accounts in one currency of a particular business entity with the bank. It is also the inclusion of sub-account units)	6	2	8
Multi currency (involving all accounts in the particular business entity with the bank, including accounts of subordinate units)	5	2	7
Credit (credit reduces the load debit balances on accounts with balances are included in the accounts and the credit is reduced credit lines and credit exposure associated with a lower interest credit drawn)	2	1	3
Compensation (to reduce the risk to the client; balances on credit and debit accounts are not offset, but the credit balances are used as collateral pumped Debit reduces the risk to the client, which is not reduced drawdown loan and related interest, but the compensation is provided for reducing credit risk)	0	0	0

Source: Own research results in banks

3 ADVANTAGES AND DISADVANTAGES OF MANAGEMENT CASH AND CASH POOLING

Fig.4 Survey in banks – Advantages and disadvantages of Management Cash and Cash Pooling

<i>Question</i>	<i>Consent in the Questionnaires</i>	<i>Consent personal meetings</i>	<i>Total responses consistently</i>
Advantages and disadvantages of Management Cash			
Benefits of Cash Management for the bank outweigh the disadvantages (particularly in relation to costs)	7	2	9
Benefits of Cash Management Bank for the client outweigh the disadvantages (particularly in relation to costs)	9	2	11
Cash Management is disadvantageous to the bank	0	0	0
Cash Management is disadvantageous to the client	0	0	0
Advantages and disadvantages of Cash Pooling			
Benefits of Cash Pooling for the bank outweigh the disadvantages (particularly in relation to costs)	2	1	3
Benefits of Cash Pooling Bank for the client outweigh the disadvantages (particularly in relation to costs))	6	2	8
Cash Pooling is disadvantageous to the bank	2	1	1
Cash Pooling is disadvantageous to the client	0	0	0
Fees for managing cross-border (foreign) Cash pooling is significantly lower than the revenues it	1	2	3

Cash Pooling imaginary, in our view we consider it better than real	2	1	3
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Source: Own research results in banks

4 APPROACH TO CASH MANAGEMENT

Replies banks only confirm the Cash Management disadvantageous to the bank, but it is necessary to assess the overall benefit of the client's bank and its use in bank acquisitions and selected clients and clients in which the bank has an interest. The best demonstration is in following SWOT analyses.

Fig. 5 SWOT Analysis of Cash Management - Banking Sector

„S“ Strengths	Offer new sophisticated product. Certain fee for Cash Management. Extended offer passive, the bank risk-free products. Penetration into other business segments that require sophisticated services.
„W“ Weakness	Decrease (outflow) interest income from lending. Request intra bank highly sophisticated information system. Increased pressure on the qualifications of the staff to work with clients.
„O“ Opportunities	Getting new clients, mainly from the "blue chips", for which they are mainly system primarily intended Cash Management. Improving market position. Empowering the bank to make payments. The increase in other clients who are interested in using the speed, and lower fees in payments with major clients of the bank.
„T“ Threats	Loss of interest income in the short term may adversely affect the financial results and associated reorientation of the bank. Relatively easy possibility of developing a similar system by other banks – banking services have considerable disadvantage easy contouring.

Source: Own research and analyses

Fig. 6 SWOT Analysis of Cash Management – Business Sector

„S“ Strengths	Reducing the cost of liquidity. Better use of financial flows. Saving s in financial costs. Centralization of transactional processes.
„W“ Weakness	Increase links with the bank. Administrative complexity in the application of unfavorable tax laws.
„O“ Opportunities	Possibility to use the acquired free financial resources. Better control of intra-holding and financial flows. Moving demanding financial activities the bank. Outsourcing in activities which better ensures the bank, especially Service centers. Use of Cash Collection for commercial organizations.
„T“ Threats	Possible limitations own controls over financial flows in favor of the bank. Excessive confidence in the work of the bank, which may be reflected in the inadvisability of products offered by the Bank. Move the operating funds to the parent organization.

Source: Own research and analyses

CONCLUSION

Banks in the Czech Republic are on their site offers the Cash Management and Cash Pooling incorporated in various ways from the failure to complete the description of these services, only that is to provide comprehensive descriptions of the products offered. Access to individual banks primarily affects their marketing strategy in relation to clients.

Only highlight existing and potential clients on special products and the main form of communication and client is guided through a bank (Relation Ship Manager) consultants, who also initiated discussions with the client and offers him a suitable product (Tailoring - sewing products-made).

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APPLICATION OF OPERATIONS RESEARCH METHOD TO SOLVE INCREASE IN UNEMPLOYMENT

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ANNOTATION

Even today, it is clear that the Czech Republic has failed to cope with effects of a financial crisis that broke out in 2011. Surely would be nice to say that this crisis is similar to that which we went through in 2008, which would be much easier as well as its subsequent solution, where it would be possible to use past experience. However, this global crisis, compared to the current one, spread from the bottom upwards. Politicians around a world are therefore not able to effectively stimulate an economy or deal with subsequent problems. This has resulted in a gradual loss of confidence both in financial and business sphere but also in households, which were touched mainly by a development of a labour market. As a result, household consumption and firms investment has declined and spun a spiral leading to ever higher unemployment and slower economic growth. This paper offers a view to solve the problem of increase in unemployment in the Czech Republic with the aim of optimizing from a perspective of state government spending. For this, will be used a model of a jobseeker at the age of 26-35 years with a gross wage in the amount of 8,000 CZK.

KEY WORDS

Unemployment, Jobseeker, State, Multi-Criteria Analysis Model of Variants.

JEL classification: C36, C13, C52

INTRODUCTION

Unemployment is one of the main macroeconomic problems during the lingering economic crisis which does not relate only to the economically weaker countries, but also covers developed countries. The increase of the unemployment in the developed countries was not only the result of natural development, but one of the main causes could be built-in stabilizers of the government fiscal policy. In the countries that do not use their human resources enough, occurs not only to losses of gross product, but also decreases the economic efficiency and increasing social tensions. Although the most of us do not realize it, we come across with the problems as the multi-criteria decision making in everyday life very often. But in fact need not to be only problems decision-making that have society-wide impacts (e.g. a selection procedure advertised by the state institution). Frequently this type of a task, without realizing it, we use for example in a travel agency, to ensure our holiday, when choosing a computer for a home use, to select a banking institute to save our money and others for a man more or less important decisions. Therefore, we decided to apply this method of the operations research to solve the problem of the unemployment in the Czech Republic.

AIM AND METHODOLOGY

The aim of this paper is to provide a view to solve the problem of the unemployment in the Czech Republic in order to optimize government expenditures from the perspective of the state. For this will be used a model's jobseeker at the age of 26-35 years with a gross wage of 8,000 CZK, to which will be applied to a multi-criteria decision making method.

Multi-Criteria Decision Making Methods

Tasks of the multi-criteria decision making methods solve problems, when the optimal decision has to convenient more than one criterion, where the entered criteria may have quantitative and qualitative nature and they can also be maximization and minimization, and also can be conflict to each other. In the event that the set of variants is given by the final list of variants, we are talking about multi-criteria analysis model of variants. But if the set of possible variants is specified by the conditions that have to be accomplished in the selection of the optimal variant, it is the model of the multi-criteria programming. For solving the problem outlined by us (see section Mathematical Solution of the Problem of the Unemployment Increase) was selected just the first approach (is known the final list of the variants of the problem solving), which is the multi-criteria analysis model of variants.

Multi-Criteria Analysis Model of Variants

In models of multi-criteria analysis (or evaluation) of variants is given the final set of m variants that are evaluated according to n criteria. (Brožová, Houška, Šubrt, 2009, p. 4) The task is to find the variant which is according to all evaluation criteria generally rated the best (i.e. optimal or compromised variant), or arrange given variants from the best to the worst or eliminate variants which are inefficient. If the evaluation of the variants for selected criteria is quantified, data of this mathematical model can be organized into a criterial matrix. It may look like this:

$$Y = \begin{matrix} & f_1 & f_2 & \dots & f_n \\ \begin{matrix} a_1 \\ a_2 \\ \vdots \\ a_m \end{matrix} & \begin{bmatrix} y_{11} & y_{12} & \dots & y_{1n} \\ y_{21} & y_{22} & \dots & y_{2n} \\ \dots & \dots & \dots & \dots \\ y_{m1} & y_{m2} & \dots & y_{mn} \end{bmatrix} \end{matrix} \quad (1)$$

In this criterial matrix $Y = (y_{ij})$ is the element y_{ij} evaluation of the i -th variant according to the j -th criterion. Columns (f_1 to f_n) are consistent with the criteria and lines (a_1 to a_m) with the evaluated variants. (Brožová, Houška, Šubrt, 2009) The diagram of the criterial matrix shows that it includes the evaluation of all variants by all selected criteria and elements of the matrix need not to be only numbers. During the analyzing of the tasks of the multi-criteria evaluation of variants the decision making subject may choose the following (basic) objectives: a) selection of the one variant designated as a compromise no matter which variant will be evaluated as the second or next in order, b) complete ordering of the set of variants from the "best" to the "worst", c) distribution of the set of variants on the "good" and "bad".

Mathematical Solution of the Problem of the Unemployment Increase

In the following part of the paper will be mathematically formulated and then solved the problem of the increase of the unemployment in the Czech Republic (mainly due to the global economic crisis) in order to optimize government expenditures from the perspective of the state. To achieve the defined aim (or problem solving) was chosen the model jobseeker at the age of 26 to 35 years who lives alone, is childless, registered at the Employment Office and his gross wage is 8,000 CZK.¹ To solve problem outlined by us we have to determine particular variants of the solution (will be marked with the letter V), where each variant represents one of several possible ways to achieve the defined aim. It will also be necessary to determine criteria to which will be subordinated the selection of the best possible variant of the solution (will be marked with the letter C) and subsequently to obtain relevant results and to come to the aim, we have to calculate the weight of individual criteria. Although this step is

¹ During the analysis (or calculations) of the situation it was necessary proceed from the situation in which the jobseeker has been employed before his registration at Employment Office, i.e. it was proceed from the wage of the person in the time when he was employed.

one of the starting steps for analysis of the multi-criteria analysis model of variants, the gaining of the weight in the numerical form is often very problematic. Therefore, to determine the weights we use one of the methods for estimating weights of criteria, which is the scoring method. A precondition of the scoring method is the ability to express the importance of each criterion by a specific number of points within a predetermined scoring scale, e.g. as 1 to 10, while the more important the criterion is, the more points it is assigned to. If the score of the i -th criterion is marked with symbol p_i , then can be the estimation of the criteria obtained by the following equation (Jablonský, 2002):

$$v_i = \frac{p_i}{\sum_{i=1}^n p_i} \quad (2)$$

Based on these preconditions, we chose to the solution of the problem the following variants (see below) which will be considered according to the selected criteria, to which will be placed the weights on the basis of calculations. Consequently, according to calculations, variants will be examined at the selected type of jobseeker (on the basis of his gross wage), and in view of the state will be selected the most favourable variant (according to the jobseeker). With the respect of the studied problem scope, it is solved only in terms of utility of the individual variants.

Recognition and Development of Individual Variants of the Solution

This part of the paper is focused on the short and accurate description of the possible variants of the solution of the problem defined above thus, to achieve the set aim.

Variant 1 (**V₁**) is based on the precondition that the jobseeker has been employed before a registration at the Employment Office. The nature of this variant is that the jobseeker is entitled to unemployment benefits and social benefits (which here include state social benefits and benefits in the material poverty). Furthermore there is a jobseeker, per who the state pays state health insurance (i.e. this is the non-monetary income). The payment of all these benefits is not dependent on the public assistance.

Variant 2 (**V₂**) is based on the precondition that the jobseeker has been employed before the registration at the Employment Office. The nature of this variant is that the jobseeker is entitled to unemployment benefits. Furthermore there is a jobseeker, per who the state pays state health insurance (i.e. this is the non-monetary income). The payment of all these benefits is not dependent on the public assistance. The difference compared to the previous variant is the fact that the jobseeker can not receive social benefits.

Variant 3 (**V₃**) is based on the precondition that the jobseeker has been employed before the registration at the Employment Office. The nature of this variant is that state pays health insurance for the jobseeker (i.e. this is the non-monetary income). The payment of the health insurance for the jobseeker is not dependent on the public assistance. In this case, the jobseeker receives only non-monetary income in the form of the health insurance, which is paid by the state. But he is not entitled to unemployment or social benefits.

Variant 4 (**V₄**) is based on the precondition that the jobseeker has been employed before the registration at the Employment Office. The nature of this variant is that jobseeker is not entitled to any government benefits (i.e., the jobseeker is not entitled to the payment of unemployment or social benefits) and the state does not pay the health insurance for him. Unlike previous variants the jobseeker is not entitled to unemployment and social benefits, but even the non-monetary income in the form of health insurance.

Variant 5 (**V₅**) is based on the precondition that the jobseeker before the registration at the Employment Office has been employed. The nature of this variant is that the jobseeker is entitled to unemployment and social benefits (which here include state social benefits and benefits in the material poverty). Furthermore, the state pays the health insurance for the jobseeker (i.e. this is the non-monetary income), and the payment of all of these benefits is entitled to the public assistance of the third month of the registration at the Employment

Office. This variant is similar to variant V_1 , but with the difference in conditional payment of these benefits.

Determination of Criteria and Their Weights

Based on the previous preconditions for the state was established the following criteria which are deciding for selected problem solving. These criteria are: C_1 - expenditures on the state policy, C_2 - unemployment rate,² C_3 - level of the welfare state, C_4 - unrests, C_5 - necessity of the legislative changes, C_6 - stop the growth of the informal economy, C_7 - public-service work. To determine the weights of individual criteria it was used scoring method, where the importance of each criterion was expressed by the number of points within the scoring scale from 1 to 5 which was specified by us. How more significant the criterion was (in terms of state), the more points was assigned to it. Subsequently, to determine the weights of criteria there were used relation 2 and the resulting weights (v_i) were rounded to 2 decimal places.

Fig. 1 Criteria Evaluation and Their Weights in Terms of the State

Criterion	Number of points = p_i	Weight = v_i
C_1 - expenditures on the state policy	3	0,11
C_2 - unemployment rate	5	0,18
C_3 - level of the welfare state	4	0,14
C_4 - unrests	5	0,18
C_5 - necessity of the legislative changes	3	0,11
C_6 - stop the growth of the informal economy	5	0,18
C_7 - public-service work	3	0,11
In total	28	1

Source: Own processing

Evaluation of the Utility of the Individual Variants of the Solution

In the following part of the paper there are the individual variants evaluated in terms of the utility. These variants are in more detail specified and arranged in the matrices. The first is the matrix of absolute utilities, where the criteria of the given variants are expressed numerically in natural units of measurement, or verbal description.

Fig. 2 Matrix of the Absolute Utilities in Terms of the State

C \ V	MU	V_1	V_2	V_3	V_4	V_5
C_1	CZK	45 391	23 195	3 615	0	45 391
C_2	-	mild increase	lower decrease	higher decrease	higher decrease	lower decrease
C_3	-	higher	lower	lower	lower	higher
C_4	Y/N	N	Y	Y	Y	Y
C_5	-	none	lower	lower	strong	lower
C_6	-	no	no	no	no	yes
C_7	Y/N	N	N	N	N	Y

Source: Own processing

Note: MU = Measure Unit. Y/N = Yes/No

The next step is to transfer values (verbal expression) listed in the matrix of the absolute utilities of using a 100 point scale for comparable units in order to work with them. The best

² Expenditures on the state policy are the sum of expenditures in the first 5 months, providing support, health insurance and social benefits. The exception is a variant V_4 , where the costs to the state policy are zero.

variant under each criterion is assigned a value of 100 and then the others are recalculated to this best variant.

Fig. 3 Matrix of the Simple Utilities in Terms of the State

C \ V	V ₁	V ₂	V ₃	V ₄	V ₅
C ₁	0	49	92	100	0
C ₂	15	65	80	100	65
C ₃	75	25	25	25	75
C ₄	100	0	0	0	0
C ₅	100	50	50	25	75
C ₆	25	25	25	25	100
C ₇	0	0	0	0	100

Source: Own processing

The final step in the evaluation of the utility of the variants is to create a matrix of weighted utilities, which has, in addition to an ideal variant, shows the final result and it is the recalculation of the values of the matrix of simple utilities with the help of the weights, which we found by using the scoring method.

Fig. 4 Matrix of the Weighted Utilities in Terms of the State

C \ V	Weight	V ₁	V ₂	V ₃	V ₄	V ₅	M
C ₁	0,11	0	5,39	10,12	11	0	11
C ₂	0,18	2,7	11,7	14,4	18	11,7	18
C ₃	0,14	10,5	3,5	3,5	3,5	10,5	14
C ₄	0,18	18	0	0	0	0	18
C ₅	0,11	11	5,5	5,5	2,75	8,25	11
C ₆	0,18	4,5	4,5	4,5	4,5	18	18
C ₇	0,11	0	0	0	0	11	11
∑ = U	-	46,7	30,59	38,02	39,75	59,45	100

Source: Own processing

Note: U = Utility

Now if we consider the utility of individual variants from the perspectives of the state at the jobseeker referred to in the last, fourth, table (or matrix of the weighted utilities), we come here to the following conclusions, namely that from the term of the state the best variant is the variant V₅, with the utility of 59.45 %.

RESULTS

With the respect to the fact that the task of the multi-criteria analysis model of variants is to find the variant, which according to all the decision criteria is evaluated as the best (i.e. optimal variant), or line up the individual variants from the best to the worst and also allow the state in terms of the selected jobseeker on the basis of his gross wage, to choose the best variant, these variants, that have come from the evaluation as the best, may be ranked (based on utility) as follows. The first in the order was placed the variant V₅ with the utility of 59.45 %, the second the variant V₁ with the utility of 46.7 %, the third the variant V₄ with utility of 39.75 %, the fourth the variant V₃ with the utility of 38.02 % and as "the worst" was evaluated the variant V₂ with utility of 30.59 %.

CONCLUSION

Based on the above mentioned total evaluation of all variants in terms of the utility, we can conclude following conclusions. At the selected jobseeker in terms of the state it was evaluated as the best the variant V_5 , which is based on the precondition that the jobseeker has been employed before the registration at the Employment Office. The nature of this variant is that the jobseeker is entitled to unemployment and social benefits and also on non-monetary income in the form of health insurance that the state pays for him. The payment of these benefits is dependent on the public assistance from the third month of the registration at the Employment Office. The worst was at the selected jobseeker in terms of the state the variant V_2 , which is based on the precondition that the jobseeker has been employed before the registration at the Employment Office and the nature of the variant is that the jobseeker is entitled to unemployment benefits and non-monetary income in the form of the health insurance, which state pays for him, with the unconditional payment of such benefits to public assistance. If the state operated only with utility of the variants, chose with the most probability variants described above, based on information listed in Fig. 4. On the other side, it would be very interesting to consider an important quantity, which is the risk endangering the implementation of the individual variants that would certainly very influenced the state to choose the best (or optimal) variant. The final decision would depend only on what attitude to this factor takes the state. It would also be useful to explore this problem from the perspective of a citizen of the Czech Republic, where the aim would be to optimize his income from the state budget and from the perspective of employers with focusing on his labour costs.

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CHANGES IN REPORTING OF GOODWILL IN MERGERS & ACQUISITIONS

Zuzana Křížová, Eva Hýblová

ANNOTATION

Recent growth of the service sector and of the information technology- related business, along with the dramatic increase in the number and size of mergers and acquisitions, has made accounting for intangible assets very significant, especially in the field of reporting of goodwill. Comparative analysis is focused on the differences between IFRS, US GAAP accounting procedures and Czech accounting legislation. Main areas of analysis and synthesis are the identification of methods for goodwill recognition and reporting. The result is to recommend more broadly voluntary disclosure in the reported financial statements of companies.

KEY WORDS

Accounting standards, disclosure of intangibles, goodwill, intangible assets, mergers and acquisitions, reporting

JEL classification: M41

INTRODUCTION

The relatively recent growth of the service sector and of the information technology- related business, along with the dramatic increase in the number and size of international mergers and acquisitions, has made accounting for intangible assets (IA) very significant (Lev, 2001)

According to Kang (2011) are few comprehensive guidelines for corporations in either International Financial Reporting Standards (IFRS) or in United States Generally Accepted Accounting Principles (US GAAP) on how to report IA, other than for purchased goodwill and some development costs, in company financial statements. There is in the accountancy of intangibles sometimes-large difference between accounting rules and guidelines implemented in different parts of the world.

Although accounting rules of different countries are converging, differences still remain also with regard to the treatment of intangibles. The most important progress made in the last years is that the intangible assets to be accounted for have been described extensively together with procedures for their impairment and amortisation. In order to calculate or value reliably a monetary value for particular intangibles different methods and procedures are followed. Another major obstacle is formed by the **fuzzy character of goodwill** (Seetharanam et al., 2006), which is often described as an amount of money paid in excess of the goods acquired. Given that goodwill is usually a significant part of the total purchase price and often the largest component, it is right that stakeholders should be told what it represents but two doubts remain as to whether accounting standards go far enough. Is a qualitative description, along the lines required in the revised standards, adequate for stakeholders' needs? And secondly, what happens if companies fail even to comply with this simple disclosure requirement? This article analyses in more depth what can be done in analysing goodwill.

AIM AND METHODOLOGY

Goodwill as a important part of intangible assets has been more and more interesting not only for researchers but mainly for company managers and owners. This article deals with differences in accounting treatments and reporting in financial statements pursuant to the IFRS in comparison to the US GAAP and the Czech accounting legislation. The review also lists current trends, terms and definitions used in dealing with term goodwill in publications on intangible assets and mergers and acquisitions.

Our results are going to be a part of a research project of the Grant Agency of the Czech Republic no. P403/11/0447 entitled "The Analysis of Taxation and Accounting Practices during Mergers". The aim of the project is to analyse accounting and taxation practices during mergers, identify the differences in procedures, and to evaluate their influence on the reported situation concerning equities and capital of the participating companies and investments of partners. This article is based on analysis and comparisons of relevant literature resources, mainly articles and conference papers, but also legislative acts and monographs.

RESULTS

Zanoni (2009) is providing a precise and accurate definition of goodwill, which allows to differentiate between goodwill emerging from a business combination recognized by standards and internally generated goodwill. From a theoretical perspective, the going-concern goodwill is the present value of abnormal earnings flows expected by the firm.

Accounting treatment of goodwill

According to Reporting Goodwill Internationally (2008) the recent issue of revised accounting standards for business combinations under US GAAP (SFAS14R) and IFRS (IFRS3R) has been a significant step down the road to convergence. One of the most interesting changes has been the adoption by the Financial Accounting Standards Board, in the US, of the IFRS requirement for acquiring companies to disclose and explain the nature of the goodwill arising from the purchase price allocation.

SFAS141R will require acquirers to **disclose "a qualitative description of the factors that make up the goodwill recognized.** It goes on to suggest that these might include expected synergies and intangible assets that do not qualify for separate recognition. The new US GAAP requirement remains noticeably weaker than the **IFRS3** equivalent which is for **"a description of the factors that contributed to a cost that results in the recognition of goodwill, a description of each intangible asset that was not recognised separately from goodwill and an explanation of why the intangible asset's fair value could not be measured reliably or a description of the nature of the excess recognised in profit or loss."**

In the Czech Republic application of the International Financial Reporting Standards is compulsory for all accounting units issuing securities registered on the regulated securities markets of the EU Member States. The intangible asset area is settled in the Czech accounting legislation in **Standard no 013 Long-Term Intangible and Tangible Assets** (Křížová, 2008).

This standard contains definition and pricing of long-term intangible and tangible assets, depreciation principles, procedure of account recognition on acquisition, technical valuation and asset write off. Like the other standards the Czech Accounting Standard no 013 is governed by Act no 563/1991 Coll., on Accounting, and Decree no 500/2002 Coll., executing some provisions of the Accounting Act. The standard contains the list of assets defined as long-term intangible assets. These include establishment costs, intangible results of research and development, software, rights of determinable value and goodwill. The condition for

classification as long-term intangible asset is usable life of more than one year and the asset value higher than the valuation limit determined by the accounting unit. This class also includes other long-term intangible assets, long-term intangible work in progress, and advances provided for this type of assets. According to Czech accounting legislation in Standard no 013 **goodwill is a positive or negative difference between the valuation of the entity**, or its part in the sense of the Commercial Code, acquired by purchase, deposit or asset and liability appreciation in the context of company transformation, except for change of legal status of the company, and the sum of the individually revaluated asset items reduced by taken over liabilities.

Defining goodwill broadly

According to Zanoni (2009) six components of goodwill emerging from a business combination are identified. Similar to other, this author breaks **down the goodwill emerging from a business combination in overpayment, synergies between the target and the acquiring firm, reevaluation, newly identified intangible assets, and internally generated goodwill.**

One of the reasons often given to why goodwill has not been described is that it cannot be done or is too difficult. The following are examples of what goodwill is comprised of and how to place a value on it and describe it. There are unlikely to be intangible assets which do not meet the recognition criteria stipulated in FASB 141 and IFRS 3. However, if there are such assets they should be allocated to goodwill. The standards require them to be disclosed and reasons given why they have not been valued. The standards prohibit the valuation of workforce as an identifiable intangible asset, therefore if one has any value it should be included within goodwill.

Table 1. Reasons mentioned in purchase price allocated to goodwill

Justification of goodwill	Frequency mentioned
Rights-related reasons	-
Technology related reasons	9
Customer-related reasons	20
Contract-related reasons	2
Cost-savings-related reasons	21
Expertise-related reasons	24
Other reasons	13

Source: Boekestein, B. (2009) p. 394

The value of a business is often greater than the sum of the individual components. This value increase is quantifiable and should be allocated to goodwill and described. Of course the reverse is true as well. Our research has seen no such analysis describing such underlying value attributed to goodwill.

The application of the breakdown approaches using the example of a business combination between two Italian banks (Unicredit and Capitalia) presents Zanoni (2009): **Real goodwill, terminal goodwill, current and growth goodwill, businesses goodwill, as well as positional and system goodwill** are identified.

DISCUSSION

One of the reasons often given to why goodwill has not been described is that it cannot be done or is too difficult. This is not the case. The following are examples of what goodwill is comprised of and how to place a value on it and describe it. There are unlikely to be

intangible assets which do not meet the recognition criteria stipulated in FASB 141 and IFRS 3 (R). However, if there are such assets they should be allocated to goodwill. The standards require them to be disclosed and reasons given why they have not been valued. The standards prohibit the valuation of workforce as an identifiable intangible asset, therefore if one has any value it should be included within goodwill.

Economy of scale creates significant cost synergies when businesses combine. This can be rigorously quantified and is often a key motivation for the acquisition (Sedláček et al., 2011). For example, a saving of annual head office costs might be quantified at £5m a year, equating to a capital value of £50m. Unit costs can also be greatly reduced through increased purchasing power, creating further cost synergies.

According to Goodwill Reporting Internationally cross-selling opportunities create sales synergies which can be quantified. For example, Aviva's acquisition of the RAC enabled Aviva to sell RAC services to its existing customers as well as being able to sell Aviva's products and services to RAC's existing customers. The portfolio effect can also be created where two powerful portfolios combine, facilitating an increase in overall sales because of their combined attraction.

Examples of goodwill qualitative descriptions

In its 2006 annual report Mittal Steel Company discloses details of the acquisition of Arcelor for €9 billion, of which €6 billion was allocated to goodwill. In addition Mittal completed two earlier acquisitions in 2005 for a total of €8 billion, including €1 billion of goodwill. One note covers all three acquisitions and states that "Goodwill recorded in connection with the above acquisitions is primarily attributable to the assembled workforces of the acquired businesses and the synergies expected to arise after the Company's acquisition of those businesses. (3) Granted these acquired businesses are similar, as they are all steel producers, but is a generic disclosure that does little more than repeat the wording in IFRS3 really adequate to explain to stakeholders what €7 billion was spent on?"

It is depressing how many large companies decide that the present, decidedly unchallenging, requirements of IFRS3 for disclosure of the components of goodwill are all too much, and choose to remain silent, with the acquiescence of their auditors. For example, Goodwill Reporting Internationally states, that the acquisition of Allied Domecq by Pernod Ricard in July 2005 cost around €15 billion of which €3 billion was allocated to goodwill.

There are numerous other examples of a complete disregard of the requirement to disclose the components of goodwill. Alcatel allocated €8 billion to goodwill on the acquisition of Lucent in April 2006. In the year to September 2007, Siemens completed two major acquisitions at a combined cost of €7 billion, of which close to €5 billion was allocated to goodwill.

It may be too much to hope that an arcane accounting disclosure requirement might protect stakeholders from poor company managements but stronger disclosure requirements and a requirement to quantify, at least in broad terms, and have audited, the components of goodwill would bring improvements in information for stakeholders to assess for themselves significant business investments.

CONCLUSION

The following conclusion can be drawn from this study: discussions about the role and reliability of information of the basic financial accounting statements continue to be evoked by bankruptcies of large companies or by the ongoing global financial crisis.

Questions are often asked what causes the profound differences between the accounting and the market value of companies. Analyses and research results in this area often speak about very different ways of human capital management, differences in customer relationships, use

of information technologies, employee knowledge or specific corporate organisational cultures.

Due to the shift in the way investors and other stakeholders consider emerging economies and their companies, most of the international attention is now on a select group of high-flying and top-performing emerging market companies (Smith et al., 2003). It may be naïve to assert that total transparency regarding IA would automatically enhance the quality of corporate information being distributed to external stakeholders.

Quantification and qualitative descriptions of goodwill brings may be a discipline to the acquisition process and management, knowing that their estimates would be subject to audit scrutiny, might be dissuaded from repeating some of the excesses of the past. Such a process would be effective even if the quantification of the components of goodwill did not have to be disclosed in the annual report itself.

Acknowledgements

The paper contains results of project of Grant Agency CR No. 403/11/0447 The Analysis of Taxation and Accounting Procedures during Mergers. The project solution, which will be conducted in 2011–2013, was entrusted to the team of the Department of Finance, Faculty of Economics and Administration, Masaryk University in Brno.

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TAX PROGRESSION AS AN INSTRUMENT OF INCOME REDISTRIBUTION

Katarzyna Lewkowicz-Grzegorzczak

ABSTRACT

Empirical studies confirm that progressive personal income tax can become an important instrument of income redistribution. The purpose of this paper is to demonstrate how income redistribution criteria can influence the structure of income tax. After examining the nature of and reasons for the redistribution of income, the author provides analysis of the Polish personal income tax system.

KEY WORDS

personal income tax, progression, redistribution

JEL classification: D31, H23, H24

INTRODUCTION

Progressive income tax is an important tool for income redistribution. It is also commonly used to mitigate income inequality. By pursuing a system of progressive taxation, the state can diminish the purchasing power of the rich, and, at the same time, increase the purchasing power of those whose incomes are relatively low¹. Progressive income tax has an embedded mechanism to differentiate tax burdens, as it imposes heavier levies on wealthier citizens. Nevertheless, effective tax progression does not depend only on the number and magnitude of tax rates or the level of tax scale thresholds, but also on other elements of tax structure – particularly tax reliefs. Personal income tax reliefs usually have the opposite effect, i.e. they reduce tax progression. This happens when well-off taxpayers are more likely to benefit from various tax credits, theoretically available to all².

AIM AND METHODOLOGY

This paper pays special attention to the way in which actual redistribution of income is determined by the structural elements of income tax. The present study uses as its object the Polish personal income tax system. The analysis was prepared on the basis of statistical data on personal income tax obtained from the Polish Ministry of Finance. To analyse the data, which are provided in a tabulated form, the author uses a comparative method.

Income redistribution – advantages and drawbacks

Redistribution of income is the process during which income structure is altered to benefit some people at the expense of others³. It is a secondary distribution of income within society, encompassing cash flows transferred between the market participants and state or self-government budgets⁴. According to J. Ostaszewski, secondary distribution is only possible when the primary one has already taken place, and when the resultant disproportions seem to

¹ Dziemianowicz (2007), p. 36.

² Małecka-Ziemińska (2006), p. 8.

³ Stiglitz (2004), p. 41.

⁴ Radziukiewicz (2011), p. 14.

require certain corrections⁵. The process of redistribution involves the levying of various income and property taxes (or tariffs), as the source of state revenue. This money is subsequently used to support citizens who do not have any labour income (e.g. the unemployed, pensioners), or to finance free public goods (e.g. health service, defence, education, the judiciary and public administration)⁶. As can be seen, redistribution mainly occurs through taxes and social transfers.

The literature on the subject provides a variety of arguments in favour of and against redistribution. R. Bugaj, for instance, distinguishes four principal reasons for income redistribution⁷. First, excessive income inequality is ethically objectionable. Second, for the sake of equality of opportunity – which is conducive for economic growth – it is necessary to decrease income disparities created by the market. Third, policies that reduce inequality can help prevent social conflicts and stimulate social capital accumulation. Fourth, a more even distribution of income is desirable because it increases demand, both globally, as well as in specific sectors of the economy⁸.

There are three main counterarguments against income redistribution⁹. First of all, there is the ethical approach holds that any social inequalities and economic disparities resulting from free market should be acknowledged as natural. Secondly, there is a necessity to preserve large income ‘gaps’ because their existence provides a strong stimulus for individual economic activities. Thirdly, considerable differences in income levels strengthen the propensity to save.

Income redistribution is present in all modern public finance systems, although to varying extents¹⁰. Higher income earners pay higher taxes, thus subsidising state budget to a greater degree than low earners. Tax revenues are then made available to society in the form of subsidies for various goods and services (public and social), or as state benefits for those in need. It certainly is not the purpose of redistribution to achieve total equalisation of income; it is rather used in order to avoid extreme or unjustified disparities. Neither is redistribution supposed to become a ‘punishment’ for the rich, although some taxpayers from the highest income brackets may perceive it as such. Therefore, the distribution of income in society is

⁵ Redistribution of income earned as a result of primary distribution occurs at various levels of the financial chain. For example, savings accumulated in households find their way into the banking system, where they are used to create secondary income in the form of credit. In property insurance, premiums paid by the insured from their primary incomes become a source of secondary income, i.e. compensation for sustained damage paid to the insured parties. Under the social security system, contributions obtained from the primary income generated by earners and employers are converted into secondary income as social benefits granted to eligible individuals. However, the largest part of redistribution is realised by the public finance sector, including the social security system [Ostaszewski (2003), pp. 107-108].

⁶ Radziukiewicz (2011), p. 14.

⁷ Bugaj (2002), p. 150.

Analysis of reasons behind income redistribution from the point of view of economic theory is also undertaken by e.g.: M. J. Radziukiewicz (2011), E. Aksman (2010), E. Małecka-Ziemińska (2006). M. J. Radziukiewicz mentions three causes and aims of redistribution: income inequality, scale of poverty and social norms. E. Aksman offers a different interpretation. For her, the most important factors are: social justice, the boosting of economic efficiency and the political issue of economic interests pursued by certain social groups. According to E. Małecka-Ziemińska, many countries have two motives for the redistribution of budget resources: (i) the fiscal motive, stemming from the obligation to implement public tasks by funding them from guaranteed state revenue, and (ii) the regulatory motive, i.e. the necessity to adjust the incomes of citizens.

⁸ See also [in:] Bugaj (2002), pp. 150-151 [quoted after:] Kotler et al. (1999), p. 373.

⁹ Bugaj (2002), p. 151.

¹⁰ Aksman (2010), p.7.

determined by policies which enhance the incomes of individuals (through social transfers), and, on the other hand, policies which lead to their reduction (through taxes)¹¹.

RESULTS

A progressive personal income tax is widely used as a means towards a more equitable society. Apart from the fiscal function, redistribution is its major *raison d'être*. Moreover, income tax is a personal tax: the particular elements of its structure (e.g. annual tax-free allowance, reliefs and exemptions, the progressive tax scale) allow, at least in theory, for adjustment to the individual situation of each taxpayer. As such, it is common in most of the developed countries.

Progressive personal income tax in Poland

In Poland, personal income tax is levied on a tax base calculated in accordance with a two-tier tax scale, in effect since 1st January 2009¹². For taxation to be just, the established tax rates must take into account what income level is regarded as the minimum necessary to survive. The theory of taxation asserts that income which guarantees minimum livelihood must not be taxed – such a minimum is referred to as ‘personal allowance’ or ‘personal exemption’¹³. This tax-exempt amount is an integral part of the tax scale¹⁴.

Let us analyse the distribution of the tax burden according to income brackets and percentage share of taxpayers who have benefited from tax deductions in the last few years (Fig. 1).

Fig. 1. Personal income tax payers and tax due according to tax rate bands in years 2005-2010

Year	Tax rate bands	Number of taxpayers	Structure of taxpayers (in %)	Tax due (in %)	Deducting taxpayers (in %)
2005	up to 37 024	22 356 919	94.46	57.48	42.78
	37 024-74 048	1 102 502	4.66	20.94	81.19
	above 74 048	208 327	0.88	21.58	79.93
	Total	23 667 748	100	100	44.89
2006	up to 37 024	22 215 807	93.34	56.17	23.62
	37 024-74 048	1 319 557	5.54	21.50	63.30
	above 74 048	266 467	1.12	22.33	75.14
	Total	23 801 831	100	100	26.40
2007	up to 43 405	22 893 583	94.66	59.54	37.65
	43 405-85 528	1 083 448	4.48	20.56	73.95
	above 85 528	208 272	0.86	19.90	73.78
	Total	24 185 303	100	100	39.59
2008	up to 44 490	22 525 382	92.15	52.30	-
	44 490-85 528	1 575 511	6.45	23.19	-
	above 85 528	342 230	1.40	24.51	-
	Total	24 443 123	100	100	-
2009	up to 85 528	24 019 988	98.41	76.97	-
	above 85 528	387 295	1.59	23.03	-
	Total	24 407 283	100	100	-
2010	up to 85 528	24 094 441	98.11	77.32	-
	above 85 528	463 567	1.89	22.68	-
	Total	24 558 008	100	100	-

Source: own analysis on the basis of [*Informacje Ministerstwa Finansów...*].

¹¹ Radziukiewicz (2010), p. 154.

¹² The basic legal act that regulates personal income tax in Poland is the Act of 26th July 1991 (Dz.U. z 2010 r. Nr 51, poz. 307). When the bill on personal income tax was first passed, the tax rates were as follows: 20, 30 and 40 per cent. In 1994, they were raised to 21, 33 and 45 per cent; 1997 brought another amendment: 20, 32 and 44 per cent; whereas the lower tax rates introduced in 1998 (19, 30 and 40 per cent) were in use until 2009.

¹³ Gaudement, Molinier 2000, p.462.

¹⁴ In the case of personal income tax, this means the possibility to reduce one's taxable income by an amount that is deemed as tax-free. In recent years, the tax-free personal allowance has grown considerably: from PLN 2295.79 in 2000 to PLN 3091 in 2010. So the current tax-exempt income rate has remained unchanged for three years now.

The data from the above table show that there is a downward trend to tax progression in Poland. This is so because in 2007 and 2008 the tax thresholds were raised, whereas three tax rates were replaced by two (18 and 32 per cent) on 1st January 2009. In that year, tax progression was reduced for both the taxpayers who had previously been the middle tax rate payers and those who had paid the top tax rate.

It stems from the above data that in 2008, approx. 92.2% of the Polish taxpayers fell within the lowest tax bracket, 6.5% paid the middle tax rate, while 1.4% paid the highest rate of tax.. Thus, tax progression concerned about 8% of the taxpayers. Over 52% of the PIT revenue derived from the first income bracket, 21.19% from the second income bracket, and 24.51% - from the third one. In 2009, the overwhelming majority (98.41%) of taxpayers belonged to the lowest income bracket. Tax progression encompassed merely 1.59% of taxpayers. Whereas in 2010, the share of taxpayers from the first income bracket dropped by 0.30 percentage points, while at the same time the share of taxpayers from the second bracket grew by 0.30 p.p. More than 77% of the personal income tax due revenue was obtained from first-bracket taxpayers, while approx. 23% from the second-bracket group. Following the introduction of the two-tier tax scale, taxpayers who had previously been in the second income bracket, found themselves in the lower bracket with the 18% tax rate, whereas the former top tax rate payers (who paid 40% in 2008), now qualify for the 32% tax rate.

Fig. 1 also contains information on the percentage share of taxpayers who took advantage of tax reliefs in each income group (for years 2005-2007). In 2005 and 2007, more than 40% of the taxpayers used tax deductions. The year 2006 was exceptional in this respect as a sharp drop (to 26.40%) in the share of such taxpayers was then recorded. This was caused, among other things, by changes in tax relief legislation, as well as by the abolition of most tax reliefs in 2004¹⁵. The year 2007 saw another increase (to 40%) in the percentage share of deducting taxpayers. This change can be accounted for by the introduction of a new tax relief, namely the so-called Child Tax Credit¹⁶. It is easily noticeable that nearly twice as many taxpayers from the second and third income brackets took advantage of tax credits than those from the lowest bracket. This is confirmed by the fact that top earners were the main beneficiaries of tax reliefs, which had a major influence on their tax burdens and evidently flattened progression.

CONCLUSION

Tax progression is meant to relieve the tax burden of lower-income earners. And, indeed, it does so in some countries. In Poland, however, although the tax system involves progression, it is the poorest taxpayers who are left to bear the greatest burden of maintaining the state¹⁷.

¹⁵ Before 2006, personal income tax payers were entitled to so-called Home Renovation Tax Credit, which was abolished in that year. Still, those taxpayers who had not managed to deduct the full amount of that tax relief were allowed to deduct it in the following years, including the 2006 tax return. While in force, that tax credit played an important role.

¹⁶ Since 2008 it has been possible to deduct a prescribed sum of money from tax due for each child (own or fostered); this deduction is known as pro-family tax credit. [Art. 27 f ustawy z dnia 26 lipca 1991 r. o podatku dochodowym od osób fizycznych ...op. cit.]. Tax returns for years 2007, 2008, 2009 and 2010 showed that this deduction was utilised by, respectively, 3.97 million (16.43% of all taxpayers), 4.2 million (17.21%), 4.3 million (17.77%) and 4.3 million (17.52%) of persons who had obtained taxable income in given tax year. In 2010, the total amount deducted in accordance with this provision reached PLN 5.68 billion, i.e. 11.45% of tax due, after the deduction of health insurance premiums. Average child credit deduction was PLN 904.

¹⁷ Surveys conducted in years 2006-2009 show that Poles prefer the progressive tax system. Flat-rate tax is far less popular. A vast majority of respondents wanted low-income earners to pay lower taxes, while higher earners to pay higher taxes than was the case in Poland [K. Lewkowicz-Grzegorzczak (2011), pp. 166-168].

In the years 2005-2008, on average, over 93% of the Polish taxpayers were subject to flat taxation, since they fell within the first income bracket. This means that, regardless of their income, they were all eligible for the lowest tax rate. Consequently, tax progression applied, in average terms, to just 7% of all the taxpayers from the second and third income brackets. The new tax rates (18% and 32%), which were introduced in 2009 caused a further flattening of tax progression: in the years 2009 and 2010 it concerned a mere 2% of taxpayers. As many as 98% of all taxpayers found themselves below the first threshold of the tax scale. H. Kuzińska expressed the belief that even that rudimentary progression was likely to be abolished and replaced with a flat-rate tax. She was afraid that the Poles would soon endorse an unjust tax system, where official statistics did not cause popular discontent or heated debates as to tax rates and tax reliefs¹⁸.

Studies demonstrate that tax progression is also affected by tax reliefs, joint taxation of spouses and single parent tax credits. It should be emphasised that only those taxpayers whose income is sufficiently high can take advantage of tax reliefs. Lower income earners are not able to utilise tax credits in full. This is usually the case in the lowest earning groups, and can lead to hostile attitudes towards the entire system of taxation. The poorest families do not have the opportunity to fully benefit from the tax credit system. This remains largely the privilege of the better-off, in spite of the fact that tax reliefs and tax progression should rather improve the welfare of financially underprivileged families (by easing the tax burden of low earners) and reduce income disparities.

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INVESTIGATION OF THE WEEKEND EFFECT ON THE PRAGUE STOCK EXCHANGE

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ANNOTATION

Since the 1980's numerous studies based on historical data have shown that stock returns depend on the day of the week. So called weekend effect suggests that stock returns on Mondays are often significantly lower than those of the immediately preceding Fridays. In this proceeding we will apply the analysis of the weekend effect on the Prague Stock Exchange. We argue that the stock return on PSE (represented with PX Index), measured as closing to closing prices, should depend on the day of the week. In general, we assumed that the returns on Mondays should be lower and the returns on Fridays should be higher and also Monday return is significantly lower than the non-Monday return.

KEY WORDS

EMT, weekend effect, close to close, PSE

JEL classification: G1, G10, G14

INTRODUCTION

For many years there are disputes between investors and academics about the importance of the past history of security price changes to prediction concerning of the future development in stock prices. On the one hand there is a lot of chart theories, on the other hand there is the theory of random walks. Chart theoretic believe that the past behavior of a security's price is rich in information concerning its future behavior. History repeats itself in that patterns of price behavior will tend to recur in the future. [3] By contrast the theory of random walks says that the future path of the price level of a security is no more predictable than the path of a series of cumulative random numbers. The random walk theory is an important implication of the efficient market hypothesis, that is, future changes in stock prices, should for all practical purposes, be unpredictable. [10] The theory says that successive price changes are independent, identically distributed random variables. The series of price changes has no memory, the past cannot be used to predict the future in any way. [3] According the theory of random walks the charting has no real value for investors.

Several studies confirmed that stock market return depends on the day of the week. There exists the evidence that the returns from the close of the last trading day of the week to the Monday close tend to be negative while the returns of the last trading day of the week tend to be positive. [7] This anomaly is very often known as the weekend effect. Weekend effect is the effective market theory anomaly according that stock display significantly lower returns over the period between Friday's close and Monday's close.

AIM AND METHODOLOGY

Lakonishok and Smidt found the evidence of the weekend effect (anomalous behavior) in the Dow Jones Industrial Average from the period from 1897 to 1986. [8] They used 90 years of daily data on DJIA1 to test the existence of seasonal patterns in the rates of return. They find evidence of anomalous returns around the turn of the week, around the turn of the month and

¹ Dow Jones Industrial Average Index

around the turn of the year. The weekend effect says that rates of return on Monday tend to be significantly negative, and rates of return on the last day of week tend to be high. [9] In their study the trading days have changed from six to five because during the examined period Saturday trading was stopped. In general, there was some larger and

statistically significant positive rates of return on the last trading day of the week. They found out that there is a tendency for a higher rate of return on the last trading day of the week, without importance if the last day was Friday or Saturday. Even when Friday was not the last trading day it still has a relative high rate of return. In they study the percentage of positive rates of return was significantly below 50 percent for Monday and significantly above 50 percent for Friday and Saturday. Cross examined the distribution of price changes on the S&P index on Fridays and Mondays. He documented the example of non-random movements in stock prices. He examined the distribution of price on Fridays and Mondays, and the relationship that exists between price changes on those two days. His sample period consisted of the 844 sets of Fridays and following Mondays from January 2, 1953 to December 21, 1970. It those days New York Stock Exchange was opened for both days. Findings are following - although there is an equal probability of an advance or decline on Monday after an advanced Friday, the probability a decline is almost three times as large as the probability of an advance on Monday after a declined Friday. [2] Kamath examined day-of-the-week effects and the weekend effects for 10-years period of the 1980's on six different stock market indicators. On all six indicators, the Monday mean returns were negative and the Friday mean returns were positive. The statistical tests rejected the equality of the each trading day's mean return for all six indicators. The day-of-the-week effect was found to be present during the 1980's on all six stock market indicators. The statistical evidence also supported one explanation of the weekend effect in the study. It was described as the overreaction-correction explanation in which the Monday effect returns tend to systematically offset the proceeding Friday returns, on all six indicators. [7] Jaffe and Westerfield [5] found weekly seasonal effects on the Japanese stock markets. They found that the lowest means return in the Japanese stock market occurred on Tuesday not Monday. In providing international evidence on the weekend effect Jaffe and Westerfield [6] examined similar behavior of stocks markets in UK, Japan, Canada and Australia mad confirmed the lowest mean return for the Japan and Austria on Tuesday. Arsad and Coutts [1] investigated weekend effect in the FT 30 with 14887 daily returns from 1935 to 1994, they found out that although the weekend effect exists for the entire period it does not exist for all of the twelve five year sub-samples.

The purpose of the study was to investigate the presence of weekend effect in stock market return for the time period from January 2002 to May 2010. The study should answer the question if stock return shows different effect on a particular day of trading. We collected data sample of 2083 observations and the final analysis was executed in the data sample of 1669 observations that fitted the predetermined pattern.

Tests are not performed on the daily prices themselves but on the first differences of their natural logarithms. Daily returns are calculated as:

$$R_{t+1} = \log_{p_{t+1}} - \log_{p_t}$$

where p_{t+1} is the price of the security at the end of day $t+1$ and p_t is the price at the end of day t . "Close to close" data does not contain information about the payment of dividends. There are three reasons why used changes in are log prices rather than simple price changes. First, the change in log prices is yield, with continuous compounding, from holding the security for that day. Second, the variability of simple price changes for a given stock in an increasing function of the price level of the stock. And the third, for changes less than $\pm 15\%$ the change

in log price is very close to the percentage price change, and for many purposes it is convenient to look at the data in terms of percentage price changes. [4] We used a specific pattern to precede available data. We assumed that it is not important the exact day in the week but the number of days before that day when the Prague Stock Exchange was closed or opened. Generally, the weekend effect emerge because a stock exchange is closed for two days and investors after a stock exchange re-opening react to new information or event that occurred during these two days. Alternatively, investors can not do anything during both Saturday and Sunday even though they got new information during the weekend. There is where the anomalies exist. Because of this we created the basic pattern 111100111112 (where 0 stands for closed PSE and 1 stands for open PSE and bold numbers represent Friday and Monday) that mirrors one week and all data compiled according this pattern (see Table 1). This process ensured that the Monday in our analysis reflects the situation when the Prague Stock Exchange was closed exactly two days and other days had a propitiate number of days when the stock exchange was opened.

Fig. 1 Pattern according data was proceeded

Mon-Tue	Tue-Wed	Wed-Thu	Thu-Fri	Fri-Mon
100 1 1111	1001 1 111001	10011 1 11001	1111 1 0011	1111 1 0011111

Source: own patter

RESULTS

Information about index PX are summarized in the Fig. 2. Our sample period consists of the set of 1669 data from January 3, 2002 thought May 15, 2010 for which the Prague Stock Exchange (PSE) was opened. Data are divided for each day of the week. It shows that, Wednesday had the lowest mean which is 1108,21 and the highest mean was on Friday (1118,99). The index maximum (1936,9) was achieved on Monday and index minimum (397,6) on Friday.

Fig. 2 Summary statistic for index PX $n = 1669$

Statistic	Mon	Tue	Wed	Thu	Fri
Observations	353	334	334	335	313
Mean	1110,83	1108,44	1108,21	1115,45	1118,99
Standard error	15,53	15,98	19,96	19,94	16,48
Min	399,8	404,4	402,5	405,1	397,6
Max	1936,9	1913,4	1908,3	1925,5	1910,1

Source: authors' calculations

Fig. 3 summaries statistic for returns of index PX. The average return for the entire study period was -0,0001 and the standard deviation of the return was 0,0157. The skewness was 0,6785. Skewness refers to asymmetry of the distribution. The kurtosis was 13 and it is not normal because the difference from 3 was quite high. When the return of each day was analyzed, the findings indicated that Friday (close Thursday to close Friday) had an average return of 0,0003 (the second largest returns) and Monday (close Friday to close Monday) had average return -0,0011 (that reflects the minimum). This sign of the findings were in line with day of the week effect studies. The highest standard deviation was on Friday (close Thursday to close Friday) 0,0171 and the lowest standard deviation was on Tuesday 0,0143.

² Mon, Tue, Wed, Thu, **Fri**, Sat, Sun, **Mon.**, Tue, Wed, Thu, Fri

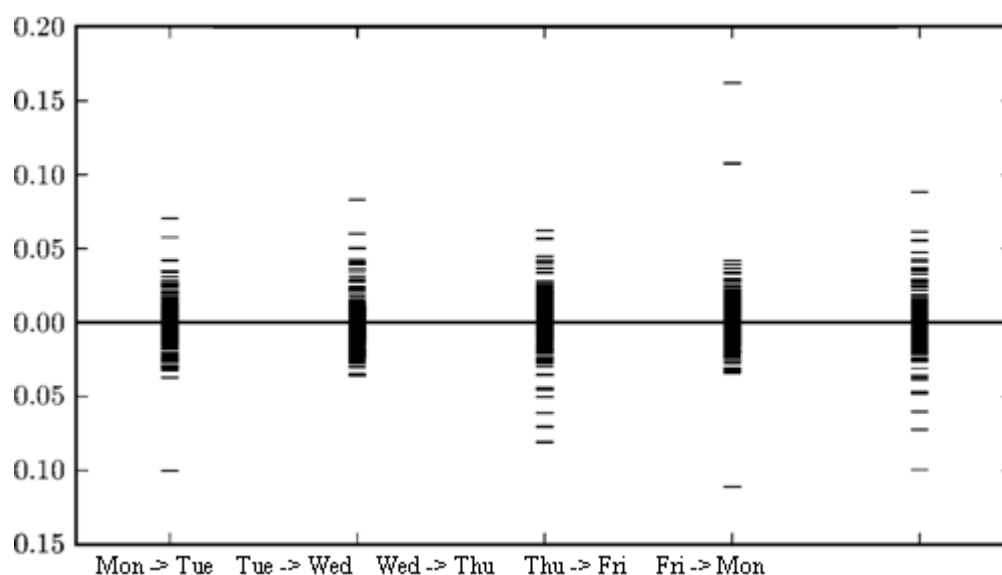
Fig. 3 Summary statistic for returns of PX $n = 1669$

Statistic	All days	Mon-Tue	Tue-Wed	Wed-Thu	Thu-Fri	Fri-Mon
Observations	1996	353	334	334	335	313
Mean	-0,0001	0,0005	0,00003	-0,0006	0,0003	-0,0011
Standard deviation	0,0157	0,0143	0,0149	0,0153	0,0171	0,0171
Skewness	0,6785	-0,4417	1,2133	-0,5061	2,5397	-0,0438
Kurtosis	13	8	4	5	32	8
Min	-0,1109	-0,1003	-0,0358	-0,0808	-0,1109	-0,0995
Max	0,1619	0,0704	0,0829	0,0623	0,1619	0,0885

Source: authors' calculations

Graphical illustration of PX index daily returns is demonstrated in following chart (Figure 4).

Fig. 4 Summarized of daily returns of PX index



Source: authors' graph

Where every bar represents daily return for a particular day during the analyzed period it means 1669 observations. In the chart you can see the minimum return -0,1109 that was achieved on Friday (close Thursday to close Friday) and the maximum return 0,1619 that was achieved on Friday as well. According to visualized data it is unclear to suggest any significant differences between daily returns on Monday and any other days. You can see that data is concentrated in close vicinity of zero, which means the no change of return is of highest probability. We can confirm that the lowest average value of index was on Tuesday (1108,44) not on Monday but the highest value of PX index was achieved on Friday (1118,99).

When we analyzed summary statistic for PX index returns the situation was similar. The lowest average return was achieved on Monday (-0,00111) but the highest average return was achieved on Thursday (0,00058) not on Friday. On the other hand, both the return minimum (-0,1109) and maximum (0,1619) were achieved on Friday. Standard errors have been rounded to one significant place. Because the fact that the standard error is of the same magnitude as the average return itself (see Figure 5) the weekend effect is very unclear, if any.

Fig. 5: PX index $n = 1669$

Statistic	Mon-Tue	Tue-Wed	Wed-Thu	Thu-Fri	Fri-Mon
Average return	0,0005	0,00003	-0,0006	0,0003	-0,0011
Standard error	0,0005	0,0005	0,0006	0,0006	0,0006

Source: Source: author's calculations

CONCLUSION

We are not able to confirm weekend effect on the Prague Stock Exchange. Although, we figured out that the lowest average return was on Monday but the lowest value of index was achieved on Friday not on Monday. There are no other symptoms of weekend effect. There is not the highest average return on Friday but on Tuesday as well as differences between returns on Monday and any other business days are not significant different compare with Monday or Friday. It means that the return of PX index is as much distributed (see Standard error of PX returns) that is difficult to find any pattern.

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THE METHODOLOGY FOR THE RISK DETECTION IN NON-PUBLIC COMPANIES. RUSSIA, NRU HSE

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ANNOTATION

Risk-management and financial management are going to become the main components of corporate economic governance, for all the existing theories of financial management consist both of financial analysis, planning, and the allowance of the implied volatile of further incomes and costs. According to the methodology of a systematic analysis, ERM system must be presented as a multi-level system, which involves all employees in the process of risk management. The process of risk identification is in the focus of implementation ERM system. Classification should be matching the theoretical requirements of organization management and be externally and internally balanced. The providing method of classification drafting allows to develop methodological base for measure risk assessment in order to further integrated and complex enterprise risk management.

KEY WORDS

the requirements for the risk classification, flexible and adaptable classification, business-process risk groups

JEL classification: G32

INTRODUCTION

Risk-management and financial management are going to become the main components of corporate economic governance, for all the existing theories of financial management consist both of financial analysis, planning, and the allowance of the implied volatile of further incomes and costs.

The modern economic environment differs from the economics of the past by the possibilities of identification and assessment of risk and effects of it implementation. In general, it takes an opportunity to minimalize risks, avoid them or to transfer them to the third party of the financial relations.

Modern risk-management is not the temporary process of the corporate risk reduction. It is the complete methodology of taking and managing risks.

The greatest part of solutions in business is related to the losses of the specific resources in sake of further uncertain profits. The core principle in the process of corporate governance is the ability of making choice between the quality of further risk and the amount of the possible profit.

The technology of risk-management is of dual nature.

In the short term, the mechanism of risk-management can help to avoid risks to a group of stakeholders, but in long term perspective it can diminish the value for the shareholders. For example, the transfer costs of the next period will have negative impact to the amount of NOPAT.

Risk-management has a short history. The most recent theory of venture risk-management is the enterprise-wide risk management. The ERM (enterprise-wide risk management) is the system internal control and corporate government. The ERM ought not only to protect company, but also take into account all modern mechanisms of a creation value for

stakeholders. In other words, the ERM is the activity, which targets both to protect company from indefiniteness and suspense, and to create the value for stakeholders.

AIM AND METHODOLOGY

Nowadays, a public company is able to provide information about risks to shareholders and potential investors. That is the requirements of the majority of the stock markets regulators. Such companies have quite well-developed tools of risk assessment and risk management (Fig.1). At the same time, the management of non-public companies are interested in ERM implementation in governance process, for it is the necessary element of internal control. For such companies the methodology of risk management will be directed not only at compliance with external requirements, but at the improvement of the internal control and risk reduction measures such as NOPAT, FCF, company Market Value, Book Value or Carrying Value. The preferences in choosing a financial indicator under risk are demonstrated in fig. 2. The introduction of corporate standards of risk management is a very time-consuming process that does not allow to receive a satisfactory result. The main efforts is made to identify the risk factors related to their activities. This paper looks into the process of identification of risk factors non-public companies.

According to the methodology of a systematic analysis, ERM system must be presented as a multi-level system, which involves all employees in the process of risk management. So, the ERM is the summary of coherent elements integrated in one process in which both CEO's and the staff participate in revealing and managing potential risk factors.

The main goal of ERM is to provide the most effective capital turnover and to increase market value of assets. At the same time, the ERM is the process of detecting, understanding, measuring, monitoring, reporting risk and risk control.

So, the process of risk identification is in the focus of implementation ERM system.

First of all, it is the identification of certain risk sources and further assessment of the results. As a rule, one of the following methods is used for gathering original information. All the common methods are the next:

1. Questionnaire;
2. Analysis:
 - financial statements;
 - current statements;
 - organizational charts;
 - flow maps reflecting company business-process;
3. Inspector visits on industrial premises;
4. Consulting with inner and outside specialists.

The elements of these methods are useful in financial management (ARR, IRR, break-even point, etc.) and most of them are based on accountancy and do not include the expectations and forecasts. They are not oriented at VBM and do not take into consideration the specificity of each particular company. The result of those methods is a compilation of diverse and contradictory risk that cannot often be compared. Types of risk in the list usually are heterogeneous and disparate.

The requirements for the classification creation are based on the existing risk management theories and the result of recent research. The requirements are the following:

- Classification should be value oriented and balanced on the threat sources.
- Classification should be flexible and adaptable and should consists of fixed and adjustable parts.
- Classification should be based on a unified methodology for using in a different situations and cases.
- Classification should be compatible with the basic principles of management.

In our opinion, we can presume business processes, areas of governances and management environment as a threats, thus reduce or increase value sources. The methodology for the detection of business processes is borrowed in BSC theory.

Business processes are grouped in two groups: main and auxiliary and they are of four types: planning, supply, manufacturing and sales, after-sales services.

Auxiliary business processes are determined separately in each case individually for each company.

Marketing, organization, financing, HR-management are the areas of governance.

Environment, stakeholders, shareholders, the social environment and the state refer to management environment.

The basis of classification is a projection of the business processes on the areas of governances and management environment in accordance with proposed dividing.

The ability to define private risks is the flexibility of the classification. Private risks are identified at the intersection of business processes with areas of governances and management environment. Further private risks are arranged into groups and higher level classes. Therefore the mode is being implemented at the level of the individual enterprise with the use of private risks. General view of the classification is presented in the fig 3.

Private risks are the primary risks identified in the projection of the business processes on the areas of governances and management environment. Four groups of risk are formed as a result of the projection. First eleven risk groups (right vertical column in the table) are formed as a projection of areas of governances and management environment on the business processes. That are management and governance risks.

Risk groups formed as the projection of the business processes on the areas of governances and management environment (at the bottom of a table) are business-process risk groups. The consolidation of risks in business processes, areas of governances and management environment are the general enterprise risks (left vertical column in the table). Integral risk is determined by summing-up the all-risk groups, but that kind of risk has the theoretical meaning and does not is not suitable for use in practical purposes.

In order to form a General concept of risk management all of the identified risk factors should be split on the horizon of planning (operational, tactical, strategic). This splitting is necessary for solution of important methodical task: the formation of the spectrum of risks and risk profile.

Spectrum of risks is the static category. Spectrum of risks changes rarely and on under the influence of economic environment. The recommended composition of the spectrum of risk is about five main strategic risks. Spectrum of risk consists of only strategic risks.

Risk profile is more dynamic category and usually changes more often than once a year. Risk profile consists of operational and tactical risks, sometimes includes private risks.

RESULTS

Best practice corporate governance and risk management do not attempt to eliminate risk. Rather, they are designed to help organizations maximize capital turnover whilst, et the same time, transforming uncertainty into risk, which can be identified, assessed and may be measurable. Analysing and the following implementation of the classification all the possible risks lies in the base of ERM for non-public. According to the recent principles of management, earch classification should be matching the theoretical requiments of organization management and be externally and internally balanced. The internal balance of proposed classification is between private and integrate risks, the external - between management environment and risk factors. The dividing on the planning horizons helps to achieve purposeful internal balance. The providing method of classification drafting allows to

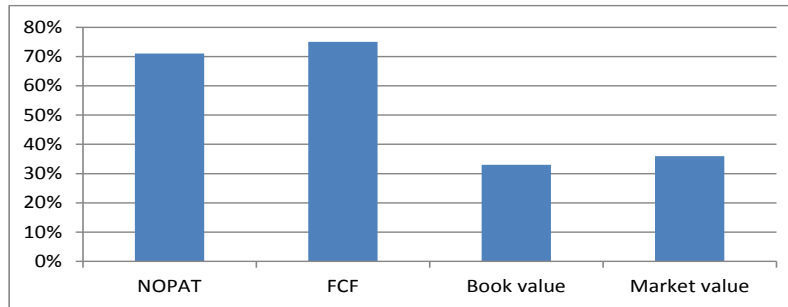
develop methodological base for measure risk assessment in order to further integrated and complex enterprise risk management.

Fig.1 Risk-management Standards

Developer	Overview	Application area
AS/NZS 4360:2004.	Purpose of the standard is the detecting, understanding, measuring, monitoring, reporting risk and risk control. Standard is useful and applicable to various enterprise and private person activities. The standard defines the main requirements to the risk management process and is not specific to a particular industry or economy.	This Standard is recommended, but not obligatory and may be applied to a very wide range of activities, decisions or operations of any public, private or community, enterprise, group or individual.
A Risk Management Standard. FERMA, 2002.	It is an optional requirement and is intended for maintains the system of risk management at any enterprise. Contains a clear sequence of actions and specific recommendations to use a specialist without any additional training	The Standard is for using in corporations or public organizations, for any activity whether short or long term.
COSO ERM - Integrated Framework. , USA, 2004.	It is developed for using in the internal audit process in order to improve the reliability of reporting. The implementation of standard requires the involvement of an external consultant.	The application of Standard is necessary in order to meet the stock market requirements.
Basel II. 2004 Basel III. 2010 Basel Committee on Banking Supervision .	It is designed to enhance the quality of risk management in the banking sector in order to strengthen the financial system as a whole. Is aimed at creating risk sensitive system, is based on quantitative risk assessment. <ul style="list-style-type: none"> • Basel II focused on ‘asset side’ of B/S. Basel III focused mostly on ‘liability side’: definition of capital, liquidity. - Post the Global Financial crisis, focus of regulation on: longer-term/stable liquidity; leverage ratios (RWA framework can’t be arbitrated); higher quality of capital (e.g. equity, CoCos, loss absorbing hybrids); higher quantity of capital. 	The requirements are needed for use in the banking sector to strengthen the resilience of it.
Risk management ISO 31000:2009 ISO/ IEC 31010:2009 Internationa	The most modern, international standards. Provides adaptable to the specific needs risk management. In the standard describes a program of introduction of the system of risk management. The detailed program of risk management is not provided. Enterprises should describe its scheme to support	It can be applied throughout the life of an organization, and to wide range of activities including strategies and decisions, operations, processes, functions, projects, products,

1 organizatio n for standardizat ion	the risk management with the help of architecture risks, strategies and protocols.	services and assets. The International Standard can be applied to any type of risk, whatever in nature, whether have positive or negative consequences.
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Fig. 2 The preferences in choosing a financial indicator under risk



Source: Market Risk Management at Russian Power Companies. – www.kpmg.com

Fig.4 General view of the classification

	The main business processes				Auxiliary business processes	Risk groups
	Planning	Supply	Manufacturing and sales	After-sales services		
Areas of governance						
1. Marketing	R_{mp}	R_{ms}	R_{mms}	R_{mas}	R_{ma}	Marketing risks
2. Organization	R_{op}	R_{os}	R_{oms}	R_{oas}	R_{oa}	Organizational risks
3. IT	R_{ITp}	R_{ITs}	R_{ITms}	R_{ITas}	R_{ITa}	IT risks
4. Financing	R_{fp}	R_{fs}	R_{fms}	R_{fmas}	R_{fma}	Finance risks
5. Innovation	R_{ip}	R_{is}	R_{HRms}	R_{HRas}	R_{HRa}	Innovation risks
6. HR	R_{hrp}	R_{hrs}				Personnel risks
Management environment						
7. Shareholders	R_{shp}	R_{shp}	R_{shms}	R_{shas}	R_{sha}	Shareholder action risks
8. CEO's	$R_{ceo'sp}$	$R_{ceo'ss}$	$R_{ceo'sms}$	$R_{ceo'sas}$	$R_{ceo'sa}$	CEO's action risks
9. State	R_{stp}	R_{sts}	R_{sms}	R_{sas}	R_{sa}	Political risks
10. Social environment	R_{sep}	R_{ses}	R_{sems}	R_{seas}	R_{sea}	Social risks
11. External (outer) environment	R_{eep}	R_{ees}	R_{eems}	R_{eeas}	R_{eea}	External environment risks
	Planning risks	Procurement and logistics	Production and property	Trade-service risks		

		risks	risks			
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CONCLUSION

ERM system is a multi-level system, which involves all employees in the process of risk management. ERM is the summary of coherent elements integrated in one process in which both CEO's and the staff participate in revealing and managing potential risk factors.

The main goal of ERM is to provide the most effective capital turnover and to increase market value of assets. At the same time, the ERM is the process of understanding, measuring, monitoring, reporting risk, and risk control. The requirements for the classification creation are based on the existing risk management theories and the result of recent research. The requirements are the following: classification should be value oriented and balanced on the threat sources; should be flexible and adaptable; should be useful in a different situations and cases and should be compared with the using of based principles of management.

Traditional methods for gathering original information of themselves will only ever be an estimate. Additionally they can be badly parameterised, misused and built on assumptions which can quickly become out of date as markets change direction.

The offered method allows to take into account each of the sources of volatility of non-public company revenues and expenses.

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THE IMPORTANCE OF OFFSHORE FINANCIAL CENTRES IN THE FINANCIAL SYSTEM IN THE TIMES OF CRISIS

Magdalena Markiewicz

ANNOTATION

The goal of the article is to verify the significance of offshore financial centres (OFCs) in terms of destabilization of the international financial system. Statistical data confirm that many multinational corporations hold the headquarters in the countries offering some privileges and most of OFCs offer also low corporate taxes (CIT, VAT). Initiatives designed to strengthen supervisory systems are not effective enough, but the application of uniform methods and standards of monitoring the international system is a hard undertaking.

KEY WORDS

offshore financial centres, multinational corporations, globalisation, offshore banking, tax competition, crisis

JEL classification: F23, G15, H21, H26

INTRODUCTION

The offshore financial centres (OFCs) are the beneficiaries of either the globalisation process and the liberalisation of international capital flows. The determinants of OFCs' success lay also in the field of multinational corporations' expansion and increasing possibilities of moving the parts of entrepreneurial activities outside the home countries. OFCs, before becoming the countries having modern economic systems, were the countries placed in the transit corridors, or they offered shelters for the sailors and travellers. Their economies were dependant on tourism and exchange of goods. Recently their way of functioning is based on services connected with the flows of foreign capital and innovations in banking technology.

AIM AND METHODOLOGY

The aim of the article is to present the increasing importance of offshore financial centres in terms of globalisation in the financial system. The problem of OFCs' popularity started to be imperative again after global financial crisis, when the governments of most countries seek the budget income from corporate an individual taxes to cover the deficit in the public finance, while big multinational corporations locate their headquarters in the countries offering lower tax burden. The detailed analysis was based on tax rates and special privileges offered by offshore financial centres. In the text there were used statistical data from consultancy agencies and statistical departments of government institutions and empirical description of the processes having place in the countries perceived as tax havens.

RESULTS

Statistical data confirm that many multinational corporations hold the headquarters in the countries offering some privileges. In 2011 as many as 1340 regional headquarters in Hong Kong had the parent company located in the other country or territory (315 in the USA, 222 in Japan and 117 in Great Britain). Most of OFCs offered lower corporate taxes (CIT, VAT) than the average in OECD countries. A harmful tax competition might be considered in case of these offshore centres that do not follow the principles of equality of taxation, or execute it

only in relation to foreign entities, applying rates at zero or at significantly lower level than for residents.

Services in OFCs

The most common services offered by OFCs are: offshore banking, offshore insurance services, capital market services, asset management and tax planning.¹ Offshore banking regards especially wide range of foreign exchange market operations. Offshore insurance services are provided to minimize the tax burden and risk management. Capital market operations are considered in the light of issuing shares, bonds or other instruments due to increase in capital or exemption from taxes. Asset management may allow to avoid a decline in the value of domestic currency by individual clients or companies derived from the countries having unstable banking system or volatile political situation. Tax planning bases on minimizing the fiscal burden according to the legal rules and opportunities.

Attractive services offered by OFCs influenced the growing contribution of such countries to global capital flows. The volume asset and liabilities management in OFCs was estimated in 2009 at the level of 5 billion USD, what may be compared to 8 billion USD managed by institutions in the USA, Germany and France.² In the same time the value of assets under the management of OFCs jurisdictions was five times higher than at the beginning of the nineties 20th century. The Cayman Islands themselves had operated the assets of the 1,4 billion USD value, while The British Virgin Islands were home to almost 700 000 offshore companies.³

Globalisation has significantly affected the possibility of using offshore financial centres. From the corporate point of view, especially of international banks and corporations, the thing of great importance is the minimization of the tax burden due to varying tax rates in different parts of the world. With this aim multinational corporations create subsidiaries and internal financial settlement centres, together with establishing their headquarters in OFCs.⁴ An example may be the HSBC bank, registered in Hong Kong and London. Figure 1 shows the number of regional headquarters in Hong Kong by country in which the parent company was located. A regional headquarters is an office that has managerial control over offices in the region (i.e. Hong Kong plus one or more other places) on behalf of its parent company located outside Hong Kong. More than half headquarters are related to the United States, Japan or United Kingdom.

Fig. 1 Number of regional headquarters in Hong Kong by country/territory where the parent company was located

Year	Number of regional headquarters in Hong Kong	Country /Territory of a parent company which has a regional headquarter in Hong Kong														
		United States of America	Japan	United Kingdom	The mainland of China	Germany	France	Netherlands	Singapore	Italy	Switzerland	Australia	Sweden	Taiwan	Korea	Canada
2007	1 246	298	232	124	93	76	56	50	43	27	47	21	20	28	16	14
2008	1 298	311	238	119	95	77	59	50	46	32	53	19	18	26	19	13
2009	1 252	289	224	115	96	74	66	54	43	40	46	22	21	19	18	12
2010	1 285	288	224	113	99	72	62	52	41	43	47	24	26	30	19	15
2011	1 340	315	222	117	97	84	63	54	43	43	39	32	31	22	20	16

¹ D. K. Eiteman, M. H. Moffett, A. I. Stonehill, *Multinational Business Finance*, Pearson Education, 11th Edition, Boston 2006, p. 699-700

² M. Gonzales, A. Schipke, *Bankers on Beach*, „Finance and Development”, June 2011

³ *Places in the Sun*, „The Economist“, Special Report: Offshore Finance, 22 February 2007

⁴ J. Madura, *International Corporate Finance*, South-West Cengage Learning, 10th Edition, 2010, p. 398

Source: Business Expectation Statistics Section, Census and Statistics Department, The Government of the Hong Kong Special Administrative Region, <http://www.censtatd.gov.hk/>, 15.05.2012.

In 2011 there was also observed the countable rise in the number of headquarters from the United States and Germany and Australia and at the same time decline in number of headquarters of the companies from Japan, Switzerland and Taiwan.

Companies over time have become increasingly multinational, and capital can be managed from any place in the world. The liberalisation of rules on foreign exchange restrictions and technological innovation provided quick and inexpensive transfer of funds. Interest in offshore financial centres of the world is hard to define, however, because of the limitations of statistical data collection and banking secrecy. Capital flows can be one of the factors contributing to higher economic growth of offshore centres. These countries also benefit from low tax and high employment level. Institutions using OFCs pay registration fees and license renewal to the government. Nevertheless, the main benefits, from the point of view of OFCs, seem to be the possibility of employing the labour force, the intensification of tourism and the modernization of telecommunications and transport infrastructure. Estimating the future cash flow to be generated by a foreign project requires estimating the taxes that will occur in a particular case. Each country generates tax revenues in a specific way, has a unique tax system and systems of duties and benefits.

Tax competition and tax rates in OFCs

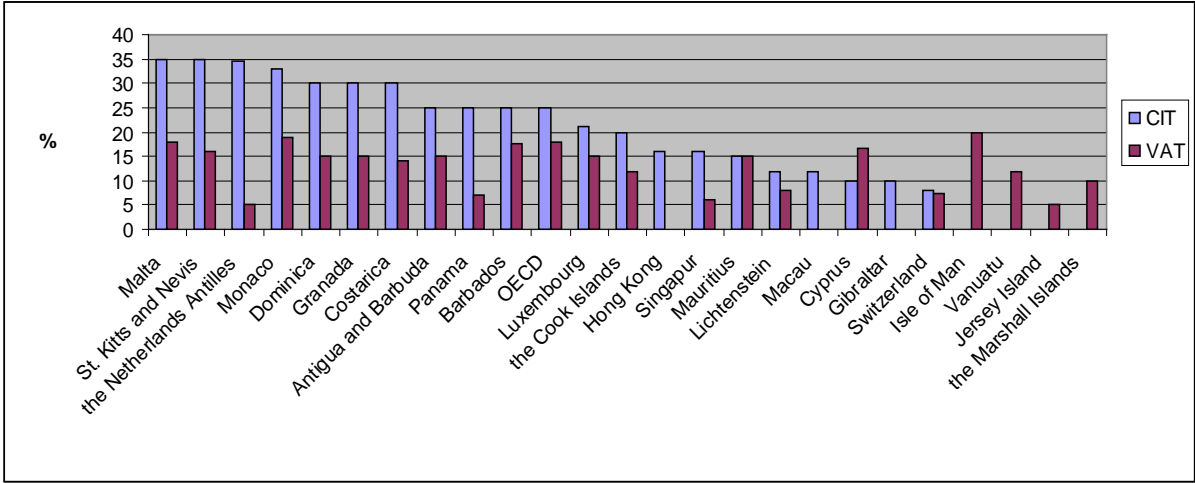
Tax competition is a phenomenon that is directly related to the process of globalisation, especially along the increase of international capital mobility. The liberalisation of capital flows and the decline in transaction costs due to settlement technologies make investors looking for attractive investments in the country and abroad. The countries started to compete with the aim to increase their attractiveness. From a theoretical point of view, the tax reduction may not be the cause of decline in revenue, because along with increased capital inflows increase the tax base. The optimal solution would be an agreement between countries that are not competing against each other in terms of tax rates. This is not feasible with at least two reasons. First, the waiver by the country's sovereignty tax policy is quite controversial. Despite the efforts surrounding the creation of a single European market, they have not yet led to the unification of tax rates in member countries. To achieve optimal results, harmonization and coordination of fiscal policy would have to take place in all countries. If such changes only affect a single country, it would not have prevented other countries to continue applying lower competitive tax rates. The phenomenon of tax competition can only be measured by differences in tax rates between countries. It should be emphasized that the comparison of effective tax rates is difficult, because the available data on nominal rates do not include various types of tax relief and tax incentives and economic structure of the country.

Multinational corporations typically consider therefore corporate income tax, which is a direct tax and some indirect taxes like value added taxes, withholding taxes, personal and excises taxes, provisions, tax treaties concerning avoidance of double taxation, foreign tax credits, intercompany income taxation and taxes on undistributed earnings.⁵ Value added tax is a special type of sales tax, assessed at one or more stages of a production process. For example, in Canada it is levied when production is complete, in the USA when products are retailed, in most European countries it is levied on increment, being a difference between a wholesale and retail price. Withholding taxes are imposed on dividends and interest payments to foreign investors and debt holders. While involving restrictions to long term investment capital, as a result they are frequently modified by bilateral tax treaties.

⁵ J. Madura, *International Corporate Finance*, op. cit., p. 344-348 and S. H. Kim, *Global Corporate Finance*, Blackwell Publishing, Malden-Oxford 2006, p. 499-502

On the Fig. 2 there are shown the rates of corporate income tax (CIT) and value added tax (VAT) in selected offshore financial centres in the world. These rates are compared with the average rate of OECD countries. The figure does not take into account the countries and territories in which the CIT and VAT rates are at zero level. Such countries in 2011 were, among others, Andorra, Anguilla, the Bahamas, Bahrain, Bermuda, the British Virgin Islands, the Cayman Islands, the Maldives, the Turks and Caicos Islands and Nauru. The vast majority of offshore tax rates is lower than average tax rates in highly developed OECD countries.

Fig. 2 The rates of corporate income tax (CIT) and value added tax (VAT) in selected offshore financial centres in the world in 2011



Source: *Paying Taxes 2012, Doing Business, World Bank*, <http://www.doingbusiness.org>; *LowTax.net*, www.lowtax.net; *World TaxRates*, www.taxrates.cc, 11-15.05.2012.

The interesting example are the Netherlands Antilles, where the standard rate of corporation tax is at the level of 30%, increased even to 34,5% by a 15% island surcharge, applying to all types of companies. However, lower tax rates of 2% to 3% apply to offshore companies, as international holding companies, and certain types of onshore companies. Additionally, a tax exempt status can be achieved for selected types of financial activities. Corporations resident in the Netherlands Antilles are subject to corporate income tax on their worldwide income. Corporations, which are not established in the Netherlands Antilles are subject to CIT in so far as they receive Antillean source income (non-resident taxpayers).⁶

The example of no tax country were the Maldives, that did not impose any kind of income tax, corporate tax or property tax. Bank profit tax of 25% was the only direct tax imposed in Maldives and it was charged to all commercial banks. It comprised 2% of the total government revenue. Major indirect taxes in the Maldives were import duty and tourism tax. Import duty was collected from imported goods at varying rates from 5% to 200%. It brought approximately 25% of the government annual revenue from taxation.⁷ Tourist tax was gathered at a flat rate of 8 USD per night per bed, regardless of the tariff rate for the bed, on every night any tourist spent in the Maldives. Tourist tax brought around 15% of the total income derived annually from taxation. Lease and rentals of resorts as well as state owned enterprises are the other sources of the government revenues. Every boat and motor vehicle must have an appropriate license, by paying a license fee to the government. Foreign direct investment in the Maldives had been a key to the conception of a successful tourism industry, which contributed to one-third of the Maldives' GDP. Tax system was one

⁶ World TaxRates, www.taxrates.cc, 15.05.2012

⁷ Ibidem

of the important elements building the positive attitude of international investors towards investing in the Maldives. Apart from the tax rate entrepreneurs take into consideration easiness of paying taxes, what means that the existing tax system is very simple and easy to administer. The countries in which they spend the least amount of time for tax procedures are: the Maldives, the United Arab Emirates, Bahrain, Qatar, the Bahamas, Luxembourg, Oman, Switzerland, Ireland and the Seychelles.⁸

The criticism against OFCs

In recent years, there has been growing recognition of the necessity to develop understanding of the activities of OFCs. Some OFCs have confined a significant component of global financial flows, and their linkages created the perspective for affecting financial stability in many countries. In July 2000, the International Money Fund's Executive Board made an assessment based on extending financial sector activities through a voluntary program of measurement and technical assistance. The aim was to reinforce financial supervision on OFCs, with the intention that international rules and arrangements applying to OFCs may promote closer cooperation with and among supervisors. Therefore the IMF undertakes detailed assessments of the extent to which OFCs meet the standards advocated by the international standards setters, and of any further action required to meet these standards.⁹

Tax competition analysis indicates that it has both positive and negative aspects. Any reduction in tax rates designed to reduce the burden on domestic and foreign investors can be regarded as positive. However, if such action applies only to foreign investors, it is a negative development. A harmful tax competition might be considered, therefore, in case of these offshore centres that do not follow the principles of equality of taxation, and only in relation to foreign entities apply rates at zero or significantly lower than for residents.

In conjunction with the use of many privileges in offshore financial centres and lower tax rates than in developed countries, since the seventies 20th century, specific regulations were designed to prevent the outflow of capital from countries maintaining higher tax rates. For this purpose it was established the international cooperation to counter harmful tax competition. Such organizations like the OECD, the European Union, the Financial Stability Forum or the Financial Action Task Forum¹⁰ defined the list of countries and territories applying harmful tax competition and introduced recommendations for the control of foreign companies and users of tax credits. The tension of international organizations have produced the results. Most of the countries have brought their legislation to international standards, or at least signed agreements with other countries intended for tax information exchange. In the end of 2009, the OECD has removed all the countries from the so-called *black list* associated with the use of harmful tax competition. Nevertheless, in 2010, there were still 17 tax jurisdictions on the list of the countries which have agreed with the OECD regarding the introduction of international standards, but did not keep these contracts.

CONCLUSION

The importance of offshore financial centres at the beginning of their existence was marginal due to low volumes of capital flows. Together with their development, the growing importance of OFCs started to influence destabilizing the international financial system. Both attraction and criticism to OFCs are rising due to several reasons, which are: reducing the tax

⁸ *Paying Taxes 2012*, Doing Business, World Bank, <http://www.doingbusiness.org/>, p. 3

⁹ International Money Fund, <http://www.imf.org/external/NP/ofca/OFCA.aspx>, 20.05.2012

¹⁰ The Financial Action Task Force (on Money Laundering) (FATF) is an intergovernmental organization founded in 1989 on the initiative of the G7 countries. The purpose of the FATF is to develop policies to combat money laundering and terrorism financing. The FATF Secretariat is housed at the headquarters of the OECD.

rates to a level unacceptable for other countries, problems with enforcing tax claims, the generation of threats to international financial stability by the free movement of capital, money laundering and financing terrorist activities. These effects are observed not only in OFCs, but also in onshore financial centres. The arguments for OFCs are that they make efforts to prevent money laundering and to strengthen the supervisory system. Their decisions on taxes does not seek to make infringements of the interests of other countries, but relate to one's own benefits. On the other hand, increasing importance of offshore centres is against the interests of countries, which exhibit strong demand for tax revenues, especially in the times of global crisis and suffer from a large drop in profits due to the transfer prices and profit transfer abroad. The problem becomes if the authorities not only do not have the ability to tax the financial resources that are accumulated in the accounts in OFCs, but are also not entitled to information about the amount of those funds. Offshore centres are very reluctant to introduce changes, in the fear against the loss of earned income. Their counter-arguments are based on the idea that setting the level of tax rates is the independent responsibility of each country, and the facilities used by them comply with applicable laws. Undoubtedly, money laundering is associated with the OFCs and tax havens' operations because of the shortcomings and gaps in banking regulations either as in civil and criminal law in these countries. IMF data confirm that the annual value of the revenue arising from money laundering ranges from 600 to 1800 billion USD.¹¹ OFCs, in order to fight with the negative image, established the Offshore Group of Banking Supervisors, the task of which is checking the implementation of FATF recommendations for these countries.¹² Despite many initiatives designed to eliminate money laundering by the application of uniform methods and standards of operation and monitoring, it is still observed low efficiency of these actions.

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¹¹ International Money Fund, <http://www.imf.org>, 22.05.2012

¹² Financial Action Task Force, <http://www.fatf-gafi.org/>, 25.05.2012

EFFICIENCY OF ACCOUNTS RECEIVABLE MANAGEMENT IN POLISH INSTITUTIONS

Grzegorz Michalski¹

ANNOTATION

Accounts receivable management should contribute to realization of basic financial purpose of an enterprise which is the realization of such strategy which is linked with its owner (or its stake holders) wealth maximization. The enterprise performance and value maximization strategy realization is more effective when it is realized in the most efficiency way. It is also executed with a focus on risk and uncertainty (Gentry 1988, Michalski 2012). This paper presents the consequences that can result from operating risk to determine the level of accounts receivable in the enterprise. The change in the level of accounts receivables in an enterprise increases net working capital level and influence costs of holding and managing accounts receivables. As illustration material is used data collected from 2009 and 2010 financial statements of over 3000 Polish enterprises.

JEL classification: G32, G11, M11, D81, O16, P33, P34

KEY WORDS

efficiency of decisions, accounts receivable management, entrepreneurial finance

INTRODUCTION

The topic of the paper is linked with scientific inquiries in the area of global financial markets and financial systems in the discussion how the post crisis changes influence current accounts receivable management in firms. The general attention of the paper is paid to the European financial and sovereign debt crisis, changing the cost of capital rate for the firm and in the result their decision in the choice the most suitable accounts receivable policy. The impact of the financial crisis in the Polish enterprises makes the accounts receivable management more flexible because the managers rather prefer to be more careful and should use more flexible accounts receivable approach to gain higher level of sale. The main contribution of the paper is to check if the model expected changes, had the place. The empirical data from Polish firms shows STAR/ASSETS relation growth, that inform about more flexible accounts receivable policy choice. Similarly STAR/CA relation growth confirms more flexible accounts receivable policy choice. The same way STAR/EBIT relation growth means more flexible choice in accounts receivable policy. That means the empirical data from Polish firms for 2009-2010 years suggests that for Polish managing teams risk aversion has stronger influence on current assets investment policy than pure economic indicators. The financial aim of the enterprise is maximization of enterprise value. Financial literature contains information about numerous factors that influence enterprise financial efficiency. Among those contributing factors is the extent of the net working capital and the elements shaping it, such as the level of cash tied up in accounts receivable, inventories, the early settlement of accounts payable, and operational cash balances (Michalski 2010). Not all enterprises has to do with all aspects of liquidity decisions or current assets management. Part of them serve their clients only as service

¹ Acknowledgment: the research is financed from the Polish science budget resources in the years 2011–2014 as the research project financed by National Science Centre granted according decision nr DEC-2011/01/B/HS4/04744.

providers with no or almost no inventory cycle presence. Other enterprises use do not produce anything but only redistribute final products, but many of them have full or almost full operating cycle with inventories of raw materials, final products inventories, accounts receivables and cash (Michalski 2009).

AIM AND METHODOLOGY

The paper discuss the level of accounts receivable investment which are the result of trade credit terms. The decision whether to extend the trade credit terms, is a compromise between limiting the risk of allowing for the payment postponement from unreliable purchasers and gaining new customers by way of a more liberal enterprise trade credit policy (Michalski 2007). This decision shapes the level and quality of accounts receivable. Robishek (Robishek 1965, Gentry 1988, Michalski 2008d) discuss risk involved to accounts receivable decisions, which must be accepted by financial institutions pledging of accounts receivable of the enterprise. Smith (Smith 1973, Gentry 1988) predicts and Michalski (Michalski 2008a) shows that portfolio theory may be used to decrease accounts receivable risk. Friedland (Friedland 1966, Gentry 1988) agree with, that current assets could be viewed in portfolio context. Pringle and Cohn (Pringle 1974, Gentry 1988) and later Michalski (Michalski 2012, Michalski 2008c) try to adapt the CAPM theory to working capital elements. Bierman and Hausman (Bierman 1970, Gentry 1988) discuss the granting policy of an enterprise and shows that trade credit policy requires balancing the future sales gains against possible losses. Lewellen, Johnson and Edmister (Lewellen 1972, Lewellen 1973, Gentry 1988) explain how and why traditional devices used for monitoring accounts receivable should be changed by new and better ones. Freitas (Freitas 1973, Gentry 1988, Michalski 2008b) shows relation between liquidity and risk during accounts receivable management. The question discussed in this article concerns the making decisions by enterprises in accounts receivables area.

If holding accounts receivable on a level defined by the enterprise provides greater advantages than negative influence, the enterprise efficiency will grow. Changes in the level of accounts receivable affect the efficiency of the enterprise. To measure the effects that these changes produce, we use the following formula, which is based on the assumption that the enterprise efficiency is the sum of the future free cash flows to the enterprise (*FCF*), discounted by the rate of the cost of capital financing the realization of enterprise performance and value maximization strategy:

$$\Delta V = \sum_{t=1}^n \frac{\Delta FCF_t}{(1 + CoC)^t}, \quad (1)$$

where ΔV = enterprise efficiency increase (measured as enterprise value growth); ΔFCF_t = future free cash flow growth in period t ; and CoC = cost of capital financing the strategy serving here as discount rate.

To estimate changes in accounts receivable levels, we accept discount rate equal to the average weighted cost of capital (CoC). Such changes and their results are strategic and long term in their character, although they refer to accounts receivable and short run area decisions, see: (Maness, Zietlow 1998, pp. 62-63; Michalski 2008c). The basic financial aim of the enterprise is not only the enterprise value creation but as close as possible realization of the performance and value maximization strategy of that enterprise. For assessment of financial decision enterprises, should be used rules claiming that the higher risk should be linked with the higher cost of capital rate used to evaluate the future results of current decision. That is positively connected with the level of efficiency and effectiveness in realization of the enterprise performance and value maximization strategy. Cost of financing accounts

receivables policy is a result of the risk included to the enterprise strategy of financing and/or investment in accounts receivables (Michalski 2008b).

During estimation of the free cash flows, the holding and increasing of accounts receivables ties up money used for financing accounts receivables. If accounts receivables level increases, the enterprise must utilize and tie up more money, and this decreases free cash flows. Production level growth necessitates increased levels of cash, inventories, and accounts receivable. A part of this growth will be covered with current liabilities that automatically grow with the growth of production and sales. The remaining cash requirements (that are noted as net working capital requirements increase: ΔNWC) will require a different form of financing.

Accounts receivables policy decisions changing the terms of trade credit create a new accounts receivable level. Consequently, accounts receivable policy has an influence on enterprise efficiency. This comes as a result of alternative costs of money tied in accounts receivable and general costs associated with managing accounts receivable. Both the first and the second involve modification of future free cash flows and as a consequence the enterprise efficiency changes (Michalski, 2008b).

Case. The enterprise managing team forecasts that its cash revenues without changing current policy will be at the level $CR_0 = 100000 \text{ €}$ According to the same forecast $VC = 40\% \times CR$. Forecasted operating costs of accounts receivable management in the enterprise, $k_{AAR} = 28\%$. Cost of capital rate, $CoC = 14\%$. Without change of accounts receivable policy 40% of the enterprise customers use 1% cash discount paying on the 10th day. The remaining customers pay at the 30th day. Forecasted bad debts losses are 2% of CR . The changes of accounts receivables policy (from 1/10, net 30 to 2/7, net 45) considered by enterprise managing team will result: 60% of enterprise customers use 2% cash discount paying on the 7th day. The remaining customers will pay at the 45th day. Forecasted bad debts losses will grow up to 3% of CR . Forecasted cash revenues after accounts receivable policy change reach $CR_1 = 140000 \text{ €}$ The effects of changes in accounts receivable policy would be felt for seven years. The horizon could be, according to enterprise forecast finite or infinite and depends on information collected by managing team.

Without change of accounts receivables policy, 60% of cash revenues is collected on the 30th day, the rest: 40% will be regulated up to the 10th day, so the ACP_0 is:

$ACP_0 = 0,6 \times 30 + 0,4 \times 10 = 22$ days. The ACP_1 after change is:

$ACP_1 = 0,4 \times 45 + 0,6 \times 7 = 22,2$ days.

That is why expected increase of average level of accounts receivable is:

$\Delta AAR = (22,2 - 22) \times \frac{140000}{360} + 0,4 \times 22,2 \times \frac{100000}{360} = 2544 \text{ €}$ Therefore as a result of trade

credit policy change, the average state of accounts receivable will grow for 2544 €

Then is possible to forecast $\Delta EBIT$:

$(1 - T) \times \Delta EBIT = 40000 \times 0,6 - 28\% \times 2544 - (3\% \times 140000 - 2\% \times 100000) +$
 $- (2\% \times 140000 \times 60\% - 1\% \times 100000 \times 40\%) = 19808 \text{ €} = \Delta NOPAT = FCF_{1..7}$

Next the managing team of the enterprise can estimate change in the enterprise efficiency:

$\Delta V = -2544 + \frac{19808}{0,14} \times \left(1 - \frac{1}{1,14^7}\right) + \frac{2544}{1,14^7} = 83415 \text{ €}$

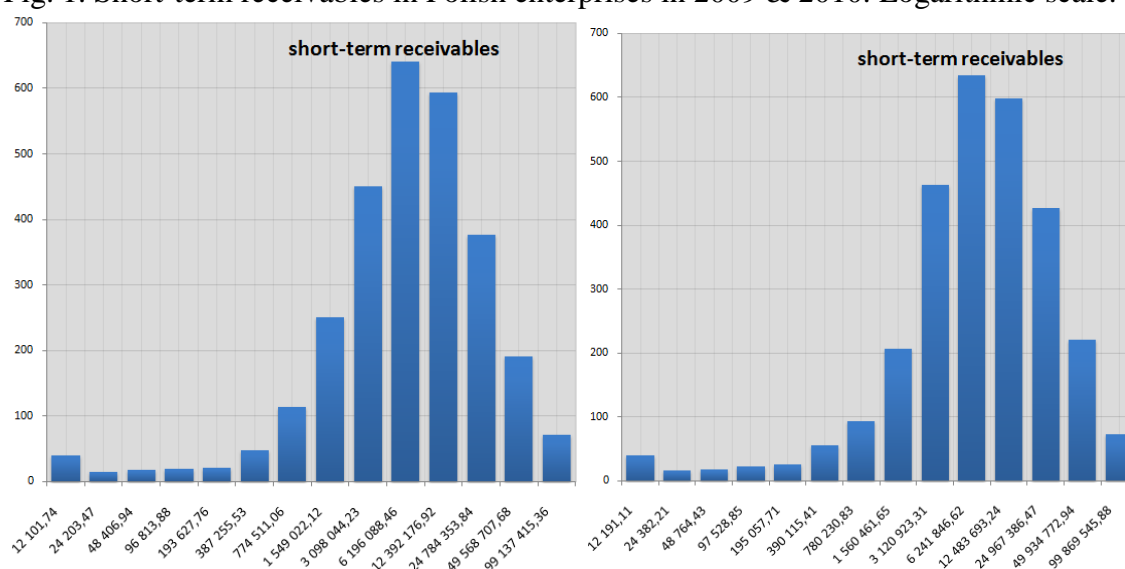
RESULTS

There are possible three ways of managing of accounts receivable. The restrictive policy with as small as possible levels of accounts receivables, the flexible policy with as liberal policy in accounts receivables as needed to activate the cash revenues collection and the moderate accounts receivables policy in the middle.

More restrictive solutions are cheaper thanks to smaller costs of managing accounts receivables but they are also linked with higher level of operational risk. That results with higher cost of capital from financing and smaller efficiency from free cash flows generated by enterprise operations. On the other side, more flexible solutions are linked with lower level of operational risk. That results with lower cost of capital from financing and higher efficiency from free cash flows generated by enterprise operations.

Generally aimed on realization of the performance and value maximization strategy enterprises, should to choose more safe and more flexible accounts receivable policies. In fig. 1. there is data collected for Polish enterprises, for years 2009 and 2010. We can observe the levels of accounts receivables for enterprises which maintain inventories and manage the account receivables (the firms without positive levels of inventories and accounts receivables were excluded).

Fig. 1. Short-term receivables in Polish enterprises in 2009 & 2010. Logarithmic scale.



Source: [MPB]

Table 1. Short-term receivables levels in Polish enterprises in 2009.

2009	EBIT	STAR	LTAR	Assets	STAR / Assets	CA	STAR/CA	STAR / receivables	STAR / EBIT
Size of population	2849	2849	2849	2849	2849	2849	2849	2849	2849
Arithmetic mean	3 292 702	9 589 012	5 674 661	49 395 776,53	19,41%	22 323 618,37	42,95%	62,82%	291,22%
Standard deviation	8 237 739	12 845 123	11 398 657	71 617 824,23	17,94%	27 705 380,40	46,36%	52,98%	155,93%
median	1 535 471	5 041 646	1 903 299	26 326 133	19,15%	13 528 211	37,27%	72,59%	328,35%
winsorized mean	2 082 807	6 196 786	2 786 793	32 720 427	18,94%	15 841 729	39,12%	68,98%	297,52%
Truncated mean	7 464 247	19 513 339	10 397 329	95 510 064	20,43%	46 215 826	42,22%	65,24%	261,42%

Source: [MPB]

Where: EBIT - Earnings before interests and taxes, STAR – short-term accounts receivables, LTAR – long term accounts receivables, CA – current assets.

Table 2. Short-term receivables levels in Polish enterprises in 2010.

2010	EBIT	STAR	LTAR	Assets	STAR / Assets	CA	STAR/CA	STAR / receivables	STAR / EBIT
Size of population	2895	2895	2895	2895	2895	2895	2895	2895	2895
Arithmetic mean	6 128 007	10 200 088	7 459 651	51 622 850,66	19,76%	25 816 933,06	39,51%	57,76%	166,45%
Standard deviation	114 053 220	13 269 409	79 643 984	72 782 931,91	18,23%	114 441 428,67	11,59%	14,28%	11,63%
median	1 561 971	5 513 386	1 991 597	28 374 432	19,43%	14 476 417	38,09%	73,46%	352,98%
winsorized mean	2 108 182	6 807 918	2 924 743	34 426 438	19,78%	17 001 172	40,04%	69,95%	322,93%
Truncated mean	7 791 792	20 849 569	11 126 899	100 489 005	20,75%	48 619 139	42,88%	65,20%	267,58%

Source: [MPB]

CONCLUSIONS

The main contribution of the paper is to check if the accounts receivable management model expected changes had the place. The empirical data from Polish firms shows STAR/ASSETS relation growth, that inform about more flexible accounts receivable policy choice. Similarly STAR/CA relation growth confirms more flexible accounts receivable policy choice. The same way STAR/EBIT relation growth means more flexible choice in accounts receivable policy. That means the empirical data from Polish firms for 2009-2010 years suggests that for Polish managing teams risk aversion has stronger influence on current assets investment policy than pure economic indicators.

Fig. 2. Short-term receivable policy changes in Polish enterprises in 2009 & 2010.

2009	Indicator	Change	2010
0.82	β	↗	0.83
10,00%	CC	↘	9,40%
18.9%	STAR / ASSETS	↗ (5%)*	19,8%
39.1%	STAR / CA	↗ (2.4%)**	40%
298%	STAR / EBIT	↗ (8.4%)***	323%

Source: [MPB]

Where: EBIT - Earnings before interests and taxes, STAR – short-term accounts receivables, CA – current assets.

Accounts receivable management decisions are very complex. On the one hand, too much money is tied up in accounts receivables, because of an extreme liberal policy of giving trade credit. This burdens the enterprise with higher costs of accounts receivable service with additional high alternative costs. Additional costs are further generated by bad debts from risky customers. On the other hand, the more liberal accounts receivable policy could help enlarge inflows from cash revenues. Data used for our calculations comes from over 3000 Polish enterprises and their financial statements. Because not all of them use accounts receivables management in connection to real operational cycle with inventories was used only that of them which have positive levels of accounts receivables. For our information is helpful median and winsorized mean, which show that short term accounts receivable to total assets was in 2009 and 2010 years in Polish enterprises near to 19,4%; the relation short term assets to earnings before interests and taxes was in 2009 and 2010 years near to 264% (truncated mean). That shows that firms generally use rather stable policy in managing accounts receivable.

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STRUCTURED PRODUCTS AND MODERN PORTFOLIO THEORY

Peter Mokrička, Petr Červinek

ANNOTATION

The subjects of this paper are structured products assessed in a portfolio context. The authors are trying to find ways to build a portfolio of financial instruments, which includes structured products. The construction of portfolio should be relatively simple. Therefore, the authors have chosen modern portfolio theory as the first approach. In this paper are demonstrated the possibilities of application of modern portfolio theory methods on the structured products.

KEY WORDS

Structured products, certificate, return, risk, portfolio

JEL classification: G11, G24

INTRODUCTION

Structured products are modern financial instruments, which make investments and investments strategies utilized derivatives (especially options) accessible for retail investors too. These financial products optimize return-risk profile of investors or rather tailor investments to expectation of investor, his investment horizon and his risk inclination. Usually structured products are both in literature and in information brochures of issuers of these instruments presented only in comparison with direct investment in the underlying asset to which the structured product is related. The value derivation of structured product from the value of underlying asset can be considered as one of basic characters of structured products. From a legal standpoint almost all of these instruments (certificates) are debentures of the issuer¹.

One of the basic investment principles is diversification – distribution of risk across more investment classes and investment instruments. Therefore it is important to assess the structured products in the portfolio context too. So we can consider a portfolio including structured products, but also a portfolio which includes only the structured products. The authors are aware of only one source that is considering structured products in a portfolio context. Blümke describes the possible problems of constructing a portfolio that contains structured products.

AIM AND METHODOLOGY

The aim of this paper is the application of modern portfolio theory (Markowitz portfolio theory and the model CAPM) to structured products. In this paper we work with the assumption that an investor buys and sells structured products during the term i.e. investor does not buy on the day of issue and does not sell the product on the due date. Particularly the second of the mentioned assumptions is significant because the value of structured products is derived from their building components, which include the options. At the due date of the product, which is the same due date of contained option, the option would had only intrinsic

¹ Compare SVOBODA, Martin; ROZUMEK, David. *Investiční certifikáty*. Praha: Komise pro cenné papíry. 2005. 48 s. ISBN 8023953176

value. Its value is also affected by the time value of options included during the duration of the product.

In the application part were examined 5 different types of structured products, namely bonus, discount, express, sprint and guarantee certificate. All of the selected products are traded on the quality segment Scoach Premium in Frankfurt, which ensures the highest standards of quality when trading in structured products such as certificates, warrants and reverse convertibles². The data source was the provider of financial information ARIVA.DE AG, which also operates a web application of Scoach platform.

RESULTS

All considered types of products are classified as investment products. That means that these products do not contain leverage. More precisely, financial leverage of these products does not have a symmetrical and unlimited effect in comparison to leverage products such as warrants or knock-out products. In this chosen set is included one product with a full guarantee on invested capital (guarantee certificate), one product without guarantee on invested capital (sprint certificate) and three products with a partial guarantee on invested capital (discount, bonus and express certificate).

Bonus certificate is a structured product that contains a conditioned promise of issuer to pay the investor in advance determined return (so-called bonus return) at maturity if the value of underlying asset has never been at or below of the barrier during the lifetime of the product. In case that the value of the underlying asset is above so called bonus level the investor receives the current value of the underlying asset (taking account of the so-called ratio), i.e. its return potential is unlimited. In case that is achieved the level of barrier at any time during the duration of certificate, the value of certificate copies the development of the value of the underlying asset in rate 1:1 (if leaving dividend income out of account). Any dividend income following from holding of the underlying asset, the investor renounces in favor of the issuer, which one can finance the bonus mechanism from them (buy barrier down-and-out put option).

Discount certificate is a structured product by which is possible to simply say that the investor purchases the underlying asset at a reduced price. Providing of the discount by the issuer and its size determines the premium collected for sold call option, which is a part of this structure. Because of sold call option the investor can reach a return also in case of stagnation or even slight decrease of value of the underlying asset. On the other hand the return potential of this instrument is limited to the level of the cap parameter (which is giving the value of the underlying asset when the investor reaches the maximum possible return) which actually corresponds to the exercise price of the sold call option.

Express certificate is an investment certificate by which is known only a maximum duration of a certificate because the product can become due and payable prematurely. During the term, several deadline dates are set by which is compared the current value of underlying asset with predetermined price level for the underlying asset (usually the value of the underlying assets at issuance of certificate). If the value of the underlying asset on a given deadline date equals or exceeds a predetermined reference value for the underlying asset, the product becomes due and payable prematurely and the investor receives payment of a return specified in the issue conditions. Otherwise, the duration of the certificate goes to the next

² Scoach Europa AG.

relevant deadline date. If the certificate was not settled until the maturity date than at due date is again compared the current value of the underlying asset with the reference value. If the current value of underlying is higher, the investor becomes a return predetermined in the issue conditions (the return usually increases for each deadline day). In case that the actual value of underlying asset is lower than the reference value, but is above the predetermined barrier, the investor is paid all of its invested capital (valid for purchases at issue). In case that the value of underlying is below the barrier at maturity, investor becomes the actual value of underlying asset.

Sprint certificate enables an investor to achieve double appreciation in the underlying asset value growth in a predetermined range at maturity. The purchase of call option allows this double appreciation. This purchase is financed by selling additional call options denominated in the same underlying asset. The sold call options (or more precisely their exercise price) limit return potential of investor. In case that value of the underlying asset goes down investor records the same investment result (loss) as the underlying asset itself.

Guarantee certificate (as the name implies) guarantees investors returning of (all) invested capital at maturity. It is necessary to realize that the guarantee is related only to market risk (not to credit risk). The component which secures a guarantee is mostly a purchased zero bond. Its value on the maturity date corresponds to the value of the underlying asset (value of the certificate) at issue (reflected by the ratio). The difference between the value of a zero bond and its nominal value is then used by issuer to profiling a performance component of the product for which an investor must generally expect lower participation rate of growth in value of the underlying asset (the participation rate is less than 100 %).

Fig.1 Investigated structured products and their underlying

WKN ³	DZ3SLM	BHF0M3	SG1TOG	TB26ZU	GS34GM
Product type	Sprint certificate	Guarantee certificate	Express certificate	Discount certificate	Bonus certificate
Underlying asset	Siemens	BMW	Deutsche Bank	Adidas	RWE

Source: authors

We applied modern portfolio theory methods on the stated investment instruments. We used Elton et al. as the source of the modern portfolio theory methods. We applied mainly the Markowitz approach (known as Mean-Variance Portfolio Theory), the model CAPM a so called Cut-Off Rate.

Although the methods are described in detail by Elton et al., we will state the most crucial parts of the theory.

We used the close prices of the considered investment instruments and of the index DAX⁴ to calculate one-day return on the particular instrument r_i using the following form

$$r_i = \frac{P_t - P_{t-1}}{P_{t-1}},$$

³ Wertpapierkennnummer – German equivalent to the ISIN (International Security Identification Number)

⁴ In some methods is used so called market portfolio. We will use the stock market index DAX as the approximation of the market portfolio.

where P_t is the price of the particular instrument at time t .

We applied all the methods over this data. First we calculated estimation of the mean, estimation of the variance and estimation of the standard deviation for sample of the one-day returns on the investment instruments and the index DAX. Thus we obtained return and risk of particular instrument. The values of the return and risk are as follows in the Figure 2.

Fig.2 Return and risk of return on the investment instruments

	DZ3SLM	BHF0M3	SG1T0G	TB26ZU	GS34GM	DAX
Expected Return \bar{r}_i	-0.00101	0.00042	0.00001	0.00009	-0.00068	-0.00039
Variance σ_i^2	0.00032	0.00048	0.00092	0.00000	0.00076	0.00034
Standard Deviation σ_i (Risk)	0.01786	0.02195	0.03032	0.00208	0.02749	0.01852

Source: authors

We constructed the portfolio with minimal risk that would be located at the efficient frontier. There is one requirement for the construction of such a portfolio. The requirement states that the investor should place all the capital. We can write

$$\sum_{i=1}^n X_i = 1,$$

where X_i is the proportion invested in the asset i .

We solved an optimization problem with a constraint. We solved the problem using so called Lagrange multipliers. The Lagrange function was

$$L(X_1, X_2, \dots, X_n, \lambda_1) = \sigma_p^2 + \lambda_1 \cdot \left(\sum_{i=1}^n X_i - 1 \right),$$

where $\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n X_i \cdot X_j \cdot \sigma_{ij}$ is the portfolio return variance and σ_{ij} is the covariance between the returns on assets i and j .

The solution of this optimization problem is a vector of the proportions invested in the investment instruments. Using these weights we calculated the return on the minimum risk portfolio and the risk of the minimum risk portfolio. We could trace out the efficient frontier by increasing the expected return on the portfolio. This would modify the optimization problem. There will be a second constraint. So the Lagrange function would be of the form

$$L(X_1, X_2, \dots, X_n, \lambda_1, \lambda_2) = \sigma_p^2 + \lambda_1 \cdot \left(\sum_{i=1}^n X_i - 1 \right) + \lambda_2 \cdot \left(\sum_{i=1}^n X_i \cdot \bar{r}_i - \bar{r}_p \right),$$

where \bar{r}_p is the expected return on the portfolio.

A specific portfolio of risky assets that any investor would hold could be identified according to Elton et al. Such a portfolio lies at the tangency point between the efficient frontier and the riskless return⁵. To identify this portfolio one should maximize function

$$\frac{\bar{r}_p - r_f}{\sigma_p},$$

where r_f is the riskless return.

Further we employed the model CAPM in the form

$$r_i = \alpha_i + \beta_i \cdot r_M + \varepsilon_i.$$

We estimated the regression coefficients (α_i and β_i) using the least squares method. The values of the estimated coefficients for all considered investment instruments are presented in the Figure 3.

Fig.3 Estimates of the coefficients of the CAPM

	DZ3SLM	BHF0M3	SG1T0G	TB26ZU	GS34GM
α_i	-0.00068	0.00077	0.00047	0.00012	-0.00023
β_i	0.84661	0.88892	1.17901	0.07828	1.16172

Source: authors

For the case that there exists the constraint that all proportions should be zero or positive (short selling not allowed) we employed the method stated in Chapter 9 by Elton et al. We calculated so called Cut-Off Rate (for the calculation technique of the Cut-Off Rate see Elton et al.). The investment instruments are added to the portfolio as long as

$$\frac{r_i - r_f}{\beta_i} > C_i.$$

The asset's unsystematic risk is necessary for the calculation of every C_i . For the calculation of the unsystematic risk we used the form

$$\sigma_i^2 = \beta_i^2 \cdot \sigma_M^2 + \sigma_{\varepsilon_i}^2$$

Values of the $\sigma_{\varepsilon_i}^2$ are presented in the Figure 4.

Fig.4 Values of the $\sigma_{\varepsilon_i}^2$

DZ3SLM	BHF0M3	SG1T0G	TB26ZU	GS34GM
0.00007	0.00021	0.00044	0.00000	0.00029

Source: authors

⁵ We used the German 12-month T-Bill with the yield 1.75% p.a.

Every portfolio that we constructed is presented in the Figure 5 including expected return on the portfolio and the risk of the expected return on the portfolio.

Fig.5 Constructed portfolios

Portfolio with		minimal risk	min. risk and given return	tangency point	short selling not allowed
Proportion of	DZ3SLM	-0.0399	-0.1350	-0.3478	0.0000
	BHF0M3	-0.0121	0.0380	0.1504	0.2920
	SG1T0G	-0.0143	0.0000	0.0319	0.0000
	TB26ZU	1.0756	1.1106	1.1888	0.7080
	GS34GM	-0.0093	-0.0136	-0.0232	0.0000
return on portfolio		0.00014	0.00026	0.00054	0.00019
risk of the portfolio		0.00162	0.00200	0.00416	0.00729

Source: authors

The minus sign indicates short selling of the particular investment instrument.

CONCLUSION

We showed that it is possible to employ all the main methods of modern portfolio theory when constructing a diversified portfolio of the structured products. We also showed that there is possibility to solve the construction problem even if there is not allowed short selling. There exist other mathematical methods for solving such a constraint – for example Wolfe's method.

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INVESTIGATION OF WEAK-FORM EFFICIENCY IN THE CEE REGION APPLYING VARIANCE RATIO TEST

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ANNOTATION

We test weak form efficiency for the Central and Eastern European stock markets applying variance ratio test. We investigate the price changes of seven CEE markets (Austria, Hungary, Estonia, the Czech Republic, Poland, Romania, Slovakia) for the period 1991-2011. In order to make the results for these markets directly comparable with results for other developed markets, Germany, United Kingdom and the USA were also incorporated. Our results present contrarian pricing behavior in the investigated countries while instead of the mean reverting (negative autocorrelation) pricing process experienced in the US or in the UK we measure positive autocorrelation especially in the early years of the investigated stock exchanges. However we document continuous development in the efficiency of pricing. Our results show that if the prices are recalculated in USD the significance of inefficiency measures are weakening or even vanishing.

JEL classification: G14

KEY WORDS

Market efficiency, CEE countries, Variance ratio test

INTRODUCTION

The simplest and most general definition of Efficient Market Hypothesis (EMH) is that stock prices always fully reflect all available information. Prices are in equilibrium and only new information can move them from this equilibrium; price reactions on new information are instantaneous and correct. In other words, if EMH holds prices are not predictable, since supposing rational well-informed investors who properly anticipate the prices based on their knowledge generate randomly fluctuating prices (Samuelson, 1965).

As the aforementioned definition of EMH is too general to test, different forms can be separated based on the subsets of information that fully reflected in prices. In his review about previous researches done on market efficiency Fama (1970) classified three different forms of market efficiency. Weak form tests investigate whether prices fully reflect past prices or returns. Semi-strong form tests examine how fast prices reflect on public announcements, while strong form tests question whether investors have private information that is not fully reflected in market prices. Later Fama (1991) modified the definitions of the three forms of market efficiency to tests for return predictability, event studies and tests for private information. In the case of semi-strong and strong forms the changes are limited to the titles, while in the case of weak form tests Fama proposed change in the coverage to include tests for forecasting power of other variables than past prices and returns, cross-sectional predictability of returns and investigation of anomalies in return patterns as well.

Since then several papers tested the three forms of market efficiency on different markets and periods using various methods. Fama (1965) provided tests of market efficiency by using serial correlations and runs tests and found that the degree of dependence in daily price changes was not strong enough to increase the expected profits of investors. In his aforementioned article (Fama 1970) the author also reviewed the early tests of market efficiency and the results of weak form tests showed that the evidence for dependence in

successive price changes was statistically significant but not strong enough to reject the hypothesis of efficiency. Later Fama (1991) admitted that controversy about market efficiency is mainly concentrated on the predictability of stock returns, but concluded that new results about predictability, although being more precise suggested the same as early tests.

Poterba and Summers (1987) investigated stock market returns in the US (between 1871 and 1986), 17 other countries (among them Austria, Germany and the UK, for the period 1957-1985) and returns of individual stocks (1926-1985) and found positive serial correlation over short periods and negative correlation over longer intervals applying variance ratio test. They concluded that the random walk hypothesis could be rejected based on the summarized results of the different data sets, while the results from individual data sets didn't support its rejection. Lo and MacKinlay (1988) investigated weekly returns (of US indices, portfolios and individual stocks) between September 1962 and December 1985 using variance ratio test and they rejected the random walk hypothesis but added that the rejection of the random walk model does not necessarily imply the inefficiency of stock-price formation. Most of the tests about return predictability and weak form efficiency concentrated on the US and other developed markets; only some authors investigated the problem in emerging markets as well. Harvey (1994) investigated 20 emerging countries (three European among them: Greece, Portugal and Turkey) in the period from 1976 (or later where data was not applicable) through 1992 and observed low correlations with returns of developed countries and found these markets more predictable than developed ones, which can be caused by the segmentation of these markets from world capital markets.

DATA

We focus on return predictability on the stock exchanges of the Central and Eastern European region, investigating daily closing prices from 02/January/1991 (or from a later date from when data is available) to 30/December/2011 of the indexes of the following stock markets: ATX – Vienna Stock Exchange, Austria; BUX – Budapest Stock Exchange, Hungary; OMX Tallinn (EST) – Tallinn Stock Exchange, Estonia (from 03/June/1996); PX – Prague Stock Exchange, the Czech Republic (from 06/April/1994); RMBET (RM) – Bucharest Stock Exchange, Romania (from 19/September/1997); SAX16 (SAX) – Bratislava Stock Exchange, Slovakia (from 14/September/1993); WIG20 (WIG) – Warsaw Stock Exchange, Poland (from 18/April/1994),

The indexes are calculated based on the prices of the stocks in their baskets denominated in local currencies, in order to get comparable results with the international findings we also calculated the returns in US dollar terms. Beside the aforementioned indexes some others representing developed markets were also incorporated, again in order to make the results for the region more comparable: DAX – Frankfurt Stock Exchange, Germany; FTSE100 (FTSE) - London Stock Exchange, United Kingdom; S&P500 (SP) – United States.

All of the indexes are capitalization weighted, and are total return indices, so returns are calculated assuming dividends paid by the stocks are reinvested. The source of the data is Thomson Reuters Datastream.

Table 1 presents the descriptive statistics of the daily log returns of the indexes for the whole examined period and for two sub periods (1991-2003 and 2004-2011).

The standard deviations of dollar term returns are higher than the returns measured in local currencies in all but one cases (DAX in the first sub period). For the whole investigated period FTSE has the lowest maximum, highest minimum daily return and lowest standard deviation, while the lowest and highest daily returns and highest standard deviation are associated with ESTUSD, SAXUSD and WIGUSD respectively.

Most of the indexes (except SAX and SAXUSD for the whole period, RM, RMUSD, SAX and SAXUSD for the first sub period and EST, ESTUSD for the second sub period) are negatively skewed, so the probability of large decreases in returns is larger than the probability of large increases. The Jarque-Bera statistics and the corresponding probabilities indicate that the null hypothesis of normally distributed daily returns can be rejected for all indexes and periods.

METHODOLOGY

The variance ratio is a special way to test the random walk hypothesis. As Poterba and Summers (1987) compare different random walk tests, they find that variance ratio tests are among the most powerful tests and they are more powerful than Fama and French (1988) regression based procedure. Summers (1986), Poterba and Summers (1987), Cochrane (1988), Fama and French (1988), Lo and MacKinlay (1988), Campbell and Perron (1991) show that unit root tests have low power against alternative hypothesis like stationary process and it is difficult to reject a false null hypothesis of random walk. The variance ratio test is developed by Lo and MacKinlay (1988). Let P_t denote the natural logarithmic equity price series at time t . The hypothesis of pure random walk process with drift \square

$$P_t = \alpha + P_{t-1} + \varepsilon_t,$$

where \square is a white noise process with zero expected ($E(\square)=0$) value and constant variance ($\sigma_\varepsilon^2 = E(\square^2)$). One of the main feature of the Lo and MacKinlay (1988) test that one can apply alternative assumptions on the error term \square like heteroskedasticity, which is common in daily returns and can be observed in our sample as well. Lo and MacKinlay use the fact that in a random walk process the variance of the k th difference would be equal to k times the variance of the first differences i.e. the variance of k -difference of this process is proportional to k :

$$\text{Var}(P_t - P_{t-k}) = k\sigma^2(\varepsilon).$$

Since P_t is a logprice index, $P_t - P_{t-k}$ is the k holding period return. Therefore the null hypothesis of the variance ratio is

$$VR(k) = \frac{1\sigma_k^2}{k\sigma_1^2} = 1.$$

Lo and MacKinlay (1988) test the null under homo- and heteroskedastic circumstances.

RESULTS

We present the variance ratio test result in Table 1. For the whole investigated period in local currency only the German and Poland stock exchange indexes show pure random walk; however if we calculate all the indexes in USD, than only the DAX index show non significant difference form the null hypothesis of random walk. The Anglo-Saxon market, both the US and the British stock indexes presents mean reverting behavior, as their variance ratios are smaller than one, which means that these indexes are negatively autocorrelated for smaller k values. Contrary to the US and UK markets the CEE countries' indexes show variance ratios higher than one in all significant cases both in local currencies and in USD. This result coincides with Urbán and Ormos (2012) analyses on equally weighted portfolios, where they show that contrary to the US market in Hungary the equally weighted portfolios

cannot beat the value weighted portfolios even the strategy generates negative Jensen (1968) alpha. As one of the main reason of the abnormal return of an equally weighted portfolio is the mean reverting behavior if the prices induce positive autocorrelation than the abnormal return disappears.

On the other hand based on the results of the unit root and runs tests it seems to be worthwhile to have a closer look at the time varying behavior of market pricing. We divide the whole sample into two parts: (1) from 1 January 1991 or from the starting date of the specific exchange to 31 December 2003 and (2) from 1 January 2004 to 31 December 2011. In the case of the variance ratio test the standard error of the estimation is decreasing in the function of the length of the time series, this is the reason why we investigate only sub-periods. By this division for the period of 1991-2003 we have a maximum sample size of 3390 observations for those markets for which were operated at that time, and 1638 observations for the Romanian market which opened only in 1997 and we have 2087 observations for the period of 2004-2011 for all markets.

Table 1. Variance ratio test

	Period	ATX		BUX		DAX		EST		FTSE		PX		RM		SAX		SP		WIG	
		VR	p-value	VR	p-value	VR	p-value	VR	p-value	VR	p-value	VR	p-value	VR	p-value	VR	p-value	VR	p-value	VR	p-value
1991 - 2011 or for the whole available period	2	1.084	0.002	1.074	0.016	0.991	0.675	1.194	0.000	0.987	0.571	1.106	0.002	1.169	0.000	1.042	0.250	0.932	0.006	1.037	0.125
	5	1.086	0.156	1.113	0.066	0.945	0.245	1.378	0.000	0.888	0.033	1.159	0.032	1.301	0.000	1.165	0.034	0.847	0.008	1.084	0.102
	10	1.092	0.320	1.143	0.100	0.895	0.152	1.540	0.000	0.809	0.020	1.201	0.072	1.394	0.000	1.478	0.000	0.763	0.008	1.084	0.266
	20	1.192	0.149	1.319	0.009	0.903	0.363	1.916	0.000	0.776	0.061	1.321	0.043	1.579	0.000	1.932	0.000	0.749	0.058	1.121	0.251
	30	1.303	0.063	1.457	0.002	0.909	0.485	2.143	0.000	0.749	0.085	1.434	0.023	1.742	0.000	2.165	0.000	0.729	0.095	1.095	0.456
	50	1.431	0.035	1.543	0.003	0.938	0.706	2.441	0.000	0.720	0.127	1.522	0.026	1.929	0.000	2.491	0.000	0.720	0.175	1.030	0.851
	100	1.690	0.011	1.636	0.007	1.019	0.931	2.803	0.000	0.687	0.197	1.626	0.033	2.274	0.000	2.360	0.000	0.770	0.400	1.001	0.998
	200	1.715	0.040	1.888	0.003	1.147	0.619	3.565	0.000	0.761	0.446	1.902	0.013	2.808	0.000	1.835	0.035	0.915	0.808	1.001	0.998
	300	1.738	0.067	1.989	0.005	1.233	0.503	3.724	0.000	0.821	0.624	1.984	0.018	2.942	0.000	2.009	0.023	1.020	0.961	1.044	0.900
1991 - 2011 or for the whole available period in USD	2	1.075	0.004	1.071	0.011	0.998	0.905	1.168	0.000	0.994	0.814	1.110	0.000	1.149	0.000	1.035	0.266	0.932	0.006	1.053	0.022
	5	1.072	0.223	1.087	0.122	0.945	0.231	1.312	0.000	0.892	0.051	1.142	0.041	1.261	0.000	1.137	0.045	0.847	0.008	1.106	0.031
	10	1.059	0.515	1.089	0.279	0.890	0.126	1.444	0.000	0.795	0.020	1.164	0.123	1.352	0.000	1.418	0.000	0.763	0.008	1.086	0.247
	20	1.122	0.355	1.215	0.067	0.891	0.304	1.740	0.000	0.752	0.056	1.288	0.062	1.576	0.000	1.828	0.000	0.749	0.058	1.153	0.146
	30	1.201	0.213	1.320	0.024	0.881	0.360	1.923	0.000	0.743	0.106	1.396	0.034	1.775	0.000	2.035	0.000	0.729	0.095	1.166	0.193
	50	1.322	0.116	1.378	0.033	0.902	0.552	2.160	0.000	0.769	0.250	1.508	0.028	2.051	0.000	2.321	0.000	0.720	0.175	1.136	0.397
	100	1.582	0.033	1.426	0.067	0.944	0.802	2.463	0.000	0.853	0.579	1.669	0.024	2.505	0.000	2.275	0.000	0.770	0.400	1.116	0.594
	200	1.624	0.079	1.508	0.093	1.015	0.958	3.176	0.000	0.981	0.956	1.847	0.024	3.152	0.000	1.981	0.006	0.915	0.808	1.038	0.97
	300	1.556	0.176	1.422	0.233	0.958	0.903	3.353	0.000	1.001	0.998	1.815	0.060	3.411	0.000	2.188	0.003	1.020	0.961	0.970	0.930
1991 - 2003 or from the start of the exchange	2	1.107	0.000	1.085	0.051	0.986	0.586	1.212	0.000	1.016	0.526	1.131	0.000	1.282	0.000	1.061	0.218	0.988	0.631	1.036	0.276
	5	1.152	0.013	1.179	0.036	0.947	0.355	1.380	0.001	0.931	0.217	1.369	0.000	1.563	0.000	1.206	0.048	0.930	0.205	1.119	0.084
	10	1.197	0.029	1.212	0.077	0.897	0.246	1.500	0.002	0.843	0.071	1.451	0.000	1.707	0.000	1.609	0.000	0.831	0.042	1.140	0.167
	20	1.373	0.002	1.518	0.002	0.923	0.550	1.839	0.000	0.829	0.175	1.641	0.000	1.823	0.000	2.157	0.000	0.823	0.137	1.209	0.133
	30	1.479	0.001	1.695	0.000	0.932	0.666	2.057	0.000	0.806	0.206	1.780	0.000	1.977	0.000	2.443	0.000	0.783	0.134	1.163	0.324
	50	1.489	0.007	1.804	0.001	0.979	0.916	2.362	0.000	0.768	0.234	1.845	0.000	2.116	0.000	2.853	0.000	0.720	0.128	1.090	0.665
	100	1.455	0.060	1.843	0.007	1.105	0.704	2.648	0.000	0.747	0.336	1.769	0.004	2.254	0.000	2.542	0.000	0.734	0.292	1.005	0.886
	200	1.141	0.659	2.139	0.005	1.249	0.502	3.365	0.000	0.779	0.529	2.122	0.002	2.922	0.000	1.487	0.344	0.904	0.781	0.877	0.747
	300	1.150	0.692	2.310	0.005	1.419	0.340	3.526	0.000	0.932	0.871	2.083	0.012	2.830	0.001	1.568	0.323	1.169	0.681	0.896	0.816
1991 - 2003 or from the start of the exchange in USD	2	1.081	0.004	1.074	0.048	0.990	0.676	1.180	0.000	1.026	0.275	1.138	0.000	1.269	0.000	1.045	0.311	0.988	0.631	1.044	0.202
	5	1.079	0.190	1.116	0.118	0.929	0.195	1.315	0.003	0.920	0.124	1.302	0.000	1.527	0.000	1.157	0.097	0.930	0.205	1.128	0.071
	10	1.065	0.460	1.096	0.354	0.866	0.109	1.414	0.008	0.805	0.014	1.359	0.000	1.674	0.000	1.511	0.001	0.831	0.042	1.136	0.187
	20	1.113	0.331	1.313	0.030	0.859	0.240	1.656	0.003	0.768	0.043	1.529	0.000	1.826	0.000	1.981	0.000	0.823	0.137	1.222	0.114
	30	1.116	0.395	1.435	0.012	0.825	0.230	1.816	0.002	0.733	0.055	1.630	0.000	2.019	0.000	2.213	0.000	0.783	0.134	1.190	0.254
	50	1.040	0.811	1.480	0.024	0.819	0.326	2.043	0.001	0.676	0.065	1.672	0.000	2.247	0.000	2.592	0.000	0.720	0.128	1.134	0.516
	100	0.986	0.949	1.411	0.140	0.839	0.525	2.230	0.004	0.636	0.126	1.525	0.043	2.519	0.000	2.374	0.000	0.734	0.292	0.956	0.767
	200	0.887	0.712	1.590	0.105	0.928	0.833	3.004	0.000	0.700	0.350	1.879	0.013	3.672	0.000	1.659	0.168	0.904	0.781	0.706	0.438
	300	0.906	0.797	1.627	0.143	0.923	0.850	3.329	0.000	0.845	0.687	1.922	0.030	4.294	0.000	1.895	0.095	1.169	0.681	0.642	0.424
2004 - 2011	2	1.071	0.078	1.060	0.155	1.001	0.983	1.154	0.000	0.954	0.261	1.090	0.098	1.086	0.041	0.992	0.725	0.880	0.003	1.040	0.133
	5	1.046	0.608	1.020	0.820	0.944	0.494	1.380	0.000	0.839	0.085	1.018	0.877	1.108	0.213	1.055	0.286	0.768	0.019	1.009	0.878
	10	1.030	0.828	1.048	0.702	0.896	0.414	1.651	0.000	0.771	0.118	1.033	0.851	1.166	0.178	1.118	0.136	0.699	0.052	0.972	0.773
	20	1.088	0.663	1.042	0.816	0.878	0.511	2.139	0.000	0.720	0.186	1.110	0.662	1.412	0.017	1.330	0.007	0.679	0.165	0.949	0.725
	30	1.205	0.406	1.128	0.560	0.883	0.606	2.416	0.000	0.692	0.231	1.209	0.489	1.593	0.004	1.437	0.006	0.678	0.256	0.972	0.878
	50	1.414	0.184	1.191	0.486	0.890	0.704	2.765	0.000	0.677	0.319	1.322	0.384	1.836	0.001	1.591	0.004	0.721	0.439	0.944	0.808
	100	1.878	0.032	1.391	0.273	0.929	0.852	3.484	0.000	0.645	0.402	1.566	0.215	2.387	0.000	2.093	0.000	0.809	0.687	1.075	0.812
	200	2.160	0.028	1.690	0.135	1.122	0.804	4.922	0.000	0.809	0.723	1.822	0.140	2.993	0.000	3.208	0.000	0.969	0.959	1.428	0.318
	300	2.253	0.039	1.805	0.135	1.180	0.751	5.708	0.000	0.819	0.771	2.006	0.112	3.408	0.000	3.917	0.000	0.989	0.987	1.619	0.226
2004 - 2011 in USD	2	1.072	0.056	1.068	0.091	1.007	0.833	1.147	0.000	0.970	0.444	1.095	0.038	1.083	0.035	1.014	0.523	0.880	0.003	1.065	0.027
	5	1.069	0.421	1.062	0.461	0.964	0.641	1.313	0.000	0.871	0.151	1.056	0.582	1.113	0.162	1.093	0.062	0.768	0.019	1.080	0.226
	10	1.058	0.660	1.085	0.496	0.920	0.513	1.506	0.000	0.789	0.143	1.060	0.703	1.174	0.140	1.211	0.007	0.699	0.052	1.028	0.792
	20	1.132	0.497	1.132	0.468	0.936	0.723	1.917	0.000	0.743	0.227	1.161	0.480	1.441	0.009	1.500	0.000	0.679	0.165		

errors, unbiased variances with allowing drift for k periods of 2, 5, 10, 20, 30, 50, 100, 200 and 300.

In the first (1991-2003) all the CEE markets show positive autocorrelation but the Poland market. The size of the non-random component in the process is increasing in the function of the investigated number of k periods. It is striking that if we recalculate the prices in USD some of the significant non-unit variance ratios are disappearing and the level of significance is decreasing in all markets but the Czech and Estonian for all periods.

In the case of the later period (2004-2011) the pricing show an improving efficiency. The sign of the autocorrelations are the same, but in most of the markets their significance levels are weakening or totally vanishing. The most striking results for this period compared to the previous one are the cases of the Czech and Hungarian markets, where all the significant positive autocorrelations are vanishing both in local currencies and in USD. The other indexes present smaller transitory component if they are calculated in USD, which underline the fact that most of the investors on these smaller CEE markets are international institutional investors.

CONCLUSION

In this paper we find that the examined Central and Eastern European stock market indexes show continuous development in terms of weak form market efficiency during the past two decades. If we compare the test results for the 1991-2003 and the 2004-2011 periods the non-unit variance ratios disappear or at least their significance levels decrease. It is an interesting fact that variance ratios indicate higher efficiency for the indexes calculated in USD instead of local currencies, and strong positive autocorrelation in local currencies. This effect can be associated by the higher inflation rates in the investigated countries compared to the United States and can be another representation of mild segmented capital markets.

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ANALYSIS OF SKIMMING IN THE CZECH REPUBLIC AND PROTECTION TECHNIQUES AGAINST SKIMMING

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ANNOTATION

The subject of the paper “Analysis of skimming in the Czech Republic and protection techniques against skimming” is an analysis of skimming in the Czech Republic, an identification of warning signs of skimming, a creating of a model of this type of fraud and an identification of the basic recommendations for payment card users to reduce security risks connected with using of payment cards.

KEY WORDS

e-business, e-banking, security, risk, security risks, fraud, skimming, payment card

JEL classification: G020, G210, G290

INTRODUCTION

Skimming is one of basic types of frauds in the e-banking and e-shopping field, with which we can meet in the Czech Republic and all over the world. Except the skimming we can assign so called Lebanon loops, hidden cameras, touch sensors, counterfeit payment cards, phishing, pharming, spoofing, trashing and theft of payment card to the basic types of frauds in the e-banking and e-shopping field. Relatively often particular types of frauds are combined together. In this paper we will analyse skimming. For example, this type of payment card frauds can be connected with a hidden camera or a touch sensor. These combinations of particular types of frauds increase the success probability for a defrauder and possibilities of using obtained information from the payment card by their copying from the magnetic strip. For example, using a hidden camera or touch sensors installed on an ATM enable obtaining user's PIN code by a defrauder. In this case the defrauder has information from user's payment card copied from the magnetic strip on the payment card and also knows the right PIN code for this payment card. In this moment a danger of an abuse of this information by a defrauder, an unauthorized person, is very high. The ground of skimming fraud has been known for a long time and has been described in many scientific and unscientific publications, technical solution possibilities exist and are relatively often used. So is it true that numbers of skimming cases have been decreasing in the last years?

AIM AND METHODOLOGY

The aim of this paper is an analysis of skimming in the Czech Republic, an identification of warning signs of skimming, a creating of a model of this type of fraud and an identification of the basic recommendations for payment card users to reduce security risks connected with using of payment cards. The mentioned aim is reached by using of generally science methods, primarily analysis, description, synthesis, induction, deduction and modeling. Normative and positivist methodologies have been employed to reach the aim.

RESULTS

The ground of skimming fraud is to obtain sensitive information about a payment card when the original data are copied from the magnetic strip on the payment card unknown to the

payment card holder – the authorized person¹. All protective elements are not copied (for example CVC2/CVV2 code), i.e. the abuse of a counterfeit payment card made on the basis of obtained data by copying from a original payment card is not possible in cases, when these protective elements are checked (for example by making cash withdrawals when the second track is checked). But it is not true that today frauds can not use obtained sensitive information. The risk is not zero. Some banks do not check protective elements. In these cases it is possible to make cash withdrawals by counterfeit payment cards.² Also we can not forget that it is possible to abuse obtained sensitive information by transaction when the payment card does not participate physically.

Skimming cases in the Czech Republic

According to the Police of the Czech Republic³ the copying of payment cards is most often by an ATM where defrauders copy data from a magnetic strip of a payment card by a special equipment – a skimmer and then they use them to produce a counterfeit payment card (according to the Police this way is most often) or by sellers when a dishonest shop assistant copies data from a magnetic strip of a payment card before giving it back to the customer. Then the obtained sensitive data can be abused (according to the Police this type of fraud is most often at bars, restaurants, sometimes at petrol stations or at hotels).

Now we can get back to the question: Is it true that numbers of skimming cases have been decreasing in the Czech Republic in the last years? Unfortunately as we can see in the first figure “Skimming in the Czech Republic (2005 – 2012)” numbers of skimming frauds do not have a clear trend, so it is impossible to state that numbers of skimming have been decreasing in this period. It is very important to draw attention to the year 2012. In the first six weeks of this year 46 skimming causes were monitored (for example, in the whole year 2011 74 skimming causes were monitored, in the year 2010 only 50 cases).

A skimmer is installed most often on an ATM. According to the Police of the Czech Republic⁴ a skimmer is installed most often in the area of an input hole for payment cards, when an ATM is modified by an installation of various extensions on these holes, similarly to the Lebanon loop. Another possible way is that a skimmer is installed as a panel on an original part of an ATM. In some described cases a skimmer was installed on an equipment for an insertion of a payment card to access to a bank self-service area⁵. In the case of frauds caused by sellers two basic ways are possible. A skimmer can be installed directly on a payment terminal (for example on an input area for payment cards, similarly to a skimmer on an ATM). On the other hand the skimmer can be a separate equipment and then a dishonest shop assistant makes use of the inattention, ignorance or carelessness of a payment card holder by using the payment card to pay (in these cases it is not possible to exclude that the

¹ According to some definitions the skimming is defined only as copying of sensitive information about the payment card from its magnetic strip, according to some definitions the skimming includes using a hidden camera or touch sensors to obtain the PIN.

² KLUFA, F., SCHOLZ, P., KOZLOVÁ, M.: Cashless payment frauds in the Czech Republic (in Czech). *Czech Consumer Association* [on-line]. [10 January 2012]. WWW: <http://www.konzument.cz/publikace/soubory/pruvodce_spotrebitele/A5_bezhotovostni_podvody.pdf>.

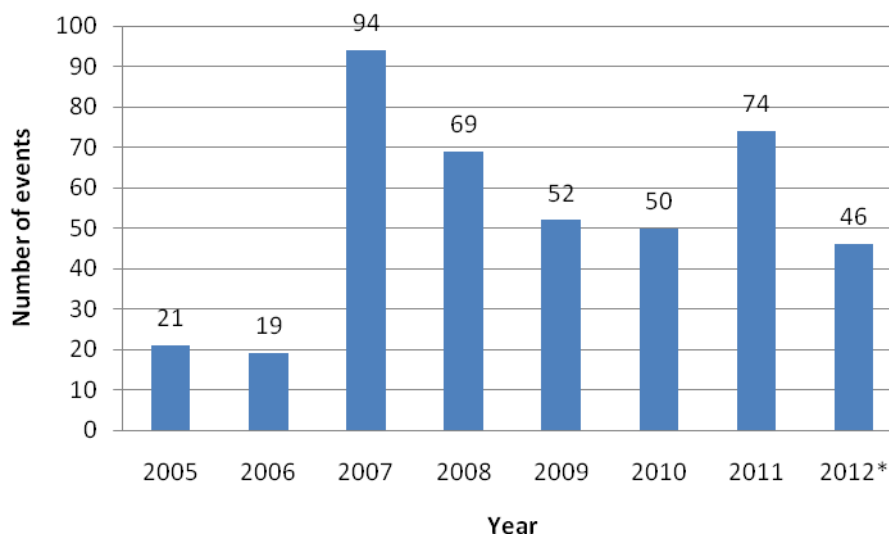
³ POLICE OF THE CZECH REPUBLIC: ÚOOZ SKPV : Skimming (in Czech). *Police of the Czech Republic* [on-line]. [17 January 2012]. WWW: <<http://www.policie.cz/clanek/skimming.aspx>>.

⁴ POLICE OF THE CZECH REPUBLIC: ÚOOZ SKPV : Skimming (in Czech). *Police of the Czech Republic* [on-line]. [17 January 2012]. WWW: <<http://www.policie.cz/clanek/skimming.aspx>>.

⁵ One of real cases of this skimming way is described in KOLINA, J.: False card readers have been installed on bank branches in Prague recently (in Czech). *Lidovky.cz* [on-line]. [17 January 2012]. WWW: <http://www.lidovky.cz/falesne-ctecky-karet-jsou-uz-i-v-praze-primo-na-pobockach-pka-/ln_domov.asp?c=A110201_203656_ln_domov_kim>.

attention of a payment card holder is taken away by a shop assistant or another person). In some cases even a shop assistant can copy data from a payment card without any possibility of supervision by the customer when the payment card is taken out of his sight (a shop assistant can give reasons for this action by a malfunction of an using payment terminal, a necessity of a verification of an authenticity of customer's payment card, a reaching a higher safety). The Association for bank cards confirms this fact⁶. Even the Association describes cases when a shop assistant copied data from customer's payment card instead of making the payment for goods and services. Then the customer is informed that the realization of the payment was not successful (two manipulations with the payment card could be suspicious for the customer).

Fig.1 Skimming in the Czech Republic (2005 – 2012)



* Number of skimming frauds in first six weeks of 2012.

Source: Author according to: POLICE OF THE CZECH REPUBLIC: ÚOOZ SKPV : Skimming (in Czech). Police of the Czech Republic [on-line]. [17 January 2012]. WWW: <<http://www.policie.cz/clanek/skimming.aspx>>; CZECH TELEVISION: Foreigners allegedly installed card readers on ATMs in Prague (in Czech). Czech Television [on-line]. [19 February 2012]. WWW: <<http://www.ceskatelevize.cz/ct24/domaci/164694-cizinci-pry-montovali-v-praze-ctecky-na-bankomaty/>>.

Copying of sensitive data from a payment card is possible in other cases too. Except other, the Association for bank cards describes the case when defrauders impersonate policemen and pretend checking the authenticity of payment cards and meanwhile they copy sensitive information from a magnetic strip of a payment card by miniature skimmers. In these cases defrauders ask payment card holders to tell them PIN code.⁷ So we can note there are many ways for skimming. One of possible ways of this type of fraud is represented in figure 2 “The fraud with a counterfeit payment card with using a skimmer and a hidden camera or touch sensors”.

⁶ BANK CARD ASSOCIATION: Types of frauds : Skimming (in Czech). Bank Card Association [on-line]. [17 January 2012]. WWW: <http://www.bankovnikarty.cz/pages/czech/media_bezpecnost.html#Skimming>.

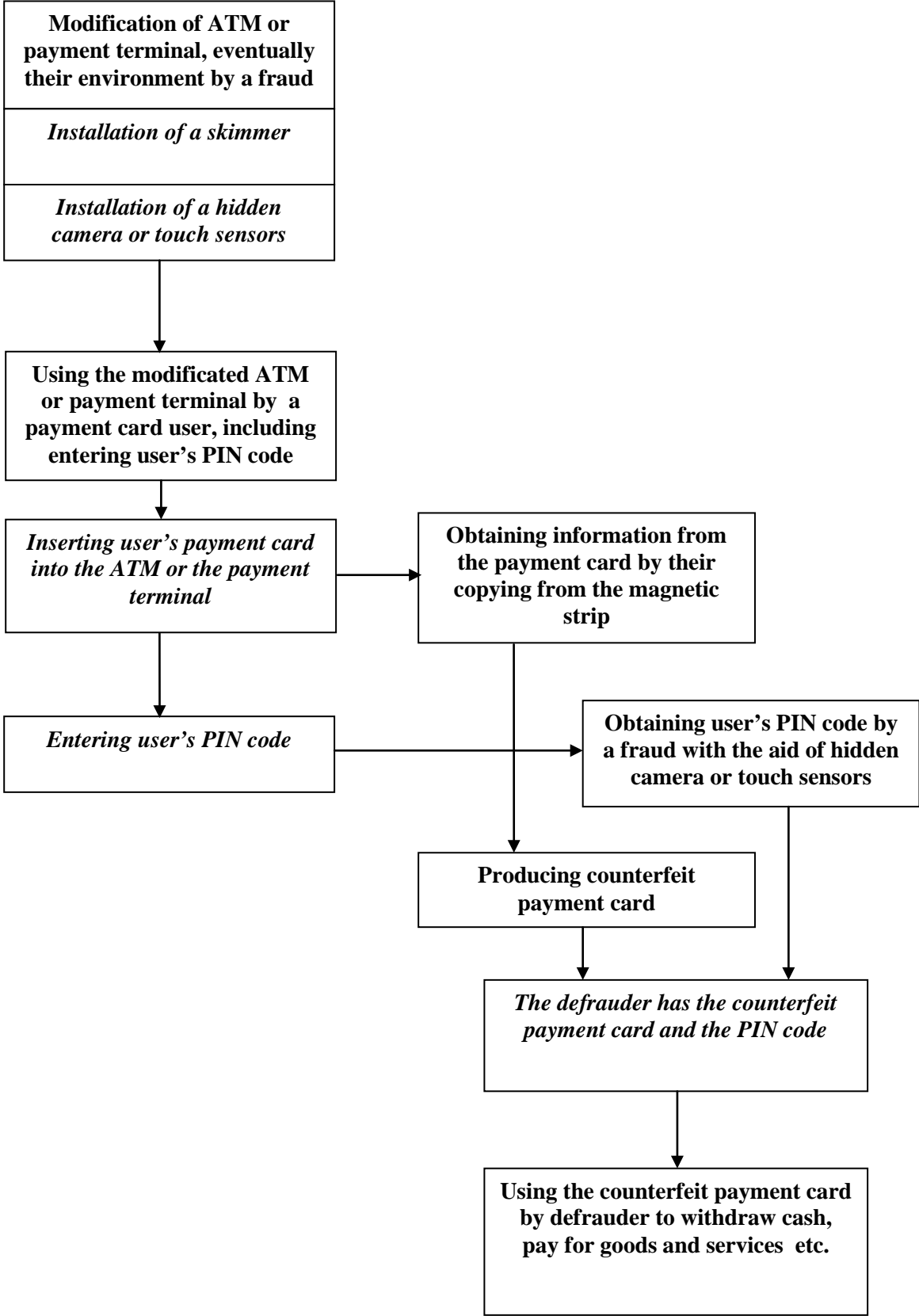
⁷ BANK CARD ASSOCIATION: Types of frauds : Skimming (in Czech). Bank Card Association [on-line]. [17 January 2012]. WWW: <http://www.bankovnikarty.cz/pages/czech/media_bezpecnost.html#Skimming>.

Recommendations to reduce the skimming risk

Recommendations to reduce skimming risk are variable. It is possible to install a special equipment (attachment) on an ATM or on an equipment for an insertion of a payment card to access (bank) self-service area that prevents frauds from installing a skimmer. A special construction of an ATM and an equipment for an insertion of a payment card can contribute to reduce the skimming risk too. Then we can mention installations of anti-copying – anti-skimming equipment and using anti-copying and anti-skimming software in ATMs, monitoring of ATMs, etc.

It seems that recommendations for reducing the skimming risk are intended only for banks, operators of payment systems and terminals. But it is not true. It is necessary to appeal to payment card holders (users) too. They should know basic security rules for using payment cards and observe them. For example, we can mention “keep a payment card safe”, “do not share the PIN code with anyone”, “do not write the PIN code on the payment card”, “do not keep the PIN code near the payment card”, “choose and use a safe, strong PIN code”, “check an ATM, a payment terminal or an equipment for an insertion of a payment card do access to a self-service area and their surroundings” (is this equipment modified or no?, was an additional equipment installed?, is using of payment cards observed by somebody?). When using a payment card, a payment card holder should not be disturbed, should be concentrated and should not allow anybody to distract his attention. If payment card holder has a suspicion, he should interrupt the transaction and contact the bank or police. Interruption of the transaction is right in cases when the personal safety zone is disrupted. When entering a PIN code, a payment card user should blot out the keypad by the opposite hand to prevent a fraud from obtaining his/her PIN code (for example by a hidden camera). A payment card user should be careful when using the payment card at shops to pay for goods and services too. The payment card should not be given to a shop assistant (or other person). If this rule is broken, a payment card user should observe carefully what the person makes with the payment card. When having a suspicion, the transaction should be interrupted and the bank or police contacted. From security point of view it is unacceptable when a payment card holder agrees with using the card without any supervision or tells a shop assistant or another person the PIN code. If a payment card user has more payment cards, it is possible to recommend to divide these payment cards for particular purposes (for example one of cards can be used for enter self-service area).

Fig. 2 The fraud with a counterfeit payment card with using a skimmer and a hidden camera or touch sensors



Source: Author

In connection with skimming we should remind recommendations as “use day, week or month limits for payment card transaction”, “check carefully your bank account and payment card statements, when you get them”, “if you find a discrepancy in your bank account and payment card statements (for example a transaction you have not made by your payment card, the amount of a transaction is higher than it really was), you should contact your bank, payment card issuer and complain about the transaction” and “if you have a suspicion that data from your payment card were copied, you should contact police and the bank to stop-list or block the payment card”. These common recommendations contribute to reduce the skimming risk.

CONCLUSION

The ground of skimming fraud is to obtain sensitive information about a payment card when the original data are copied from the magnetic strip on the payment card. The ground of skimming fraud has been known for a long time, possibilities to reduce the skimming risk exist, but in this year the number of skimming frauds in the Czech Republic has increased dramatically. But not only banks, payment card issuers or payment system operator are responsible for reducing of the skimming risk, payment card users are of great importance to reduce it too. One of the problems in this field is an unsatisfactory financial literacy of payment card users, breaking basic rules for safe using of payment card and low respect for basic recommendations for reducing of the skimming risk. The switchover from payment cards with magnetic strips to payment cards with chips will eliminate this risk, because the skimming fraud is connected with payment cards with magnetic strips only.

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TRENDS IN THE ORGANIZATION OF FINANCIAL SUPERVISION OVER THE OCEAN

Dalibor Pánek

ANNOTATION

Text of the paper includes the current issue of institutional arrangements and supervision of financial market supervision in the United States and Canada with the aim of understanding current trends in the financial system.

KEY WORDS

Financial supervision, institutional arrangements of supervision, financial system, financial institutions risks

JEL classification: G100

INTRODUCTION

Regulation and supervision of banks with supervision of other financial institutions can be traced back over three decades past. Regulatory and financial market supervision is given special attention in connection with the liberalization of financial markets, the emergence of national and multinational financial groups, the international harmonization of business rules, financial institutions and resolving financial crises. The roots of the existence of regulation and supervision of financial institutions are in the historical development of financial systems of individual countries and are associated with the pursuit of stability and security operations of financial institutions.

AIM AND METHODOLOGY

Aim of this paper is to describe and talk about the current trend of development and organization of regulatory and supervisory systems in the United States and Canada. They used methods of description and comparison.

TRENDS IN THE ORGANIZATION OF FINANCIAL SUPERVISION OVER THE OCEAN

Canada

Canada's financial system is stabilized by long-term, methodologically sophisticated, retains its resistance to internal and external negative influences. Stability was not compromised even during the global financial crisis in the predominance of economic ties with the United States of America. In the financial system are applied conservative care and preventive approaches to stability.

The federal government has supervisory committee as a coordinating body for financial institutions (IFCS-Financial Institution Supervision Committee), which sets the regulatory

policy of the country. Includes activities of the Ministry of Finance responsible for financial supervision and four independent agencies:

- OSFI (Office of the Superintendent of Financial Institutions),
- Central Bank of Canada,
- CDIC (Canada Deposit Insurance Cooperation),
- FCAS (Financial Consumer Agency of Canada).

FICS regular five-year survey conducted by state legislation and the need for legal regulations in force in the financial system for the central bank.

Central Bank of Canada is responsible for the performance of monetary policy, sets key interest rates, shall submit regular reports Ministry of Finance, the lender of last resort and provides loans to enhance liquidity and non-bank financial institutions if interest so requires stability of the financial system.

The institution's deposit insurance in financial system is Canada Deposit Insurance Corporation /1967/. Deposits are insured up to 100 thousand dollars member banks of the institution.

Office of the high key roles in supervision of financial institutions is established **OSFI - Office of the Superintendent of Financial Institutions / 1987** . Institution is an independent oversight agency for the Canadian government, the main objective is to support public confidence in Canadian financial system. On the basis of a special law acts as the primary regulator of federally operating banks, insurance companies and pension funds.

OSFI Supervisory Authority has the primary responsibility in proportion areas of assistance aimed at minimizing the losses of depositors and shareholders. It sets out the capital adequacy of the banking sector, usually at higher standards than the international rules.

The main responsibilities of OSFI:

- the conditions for the activities of financial institutions,
- evaluation of information obtained from financial sector and compliance with reporting obligations of financial institutions,
- organization of regular meetings with management of financial institutions,
- authority in the presence and hearing about the results of discussions,
- assessing the risks of financial institutions and to become acquainted with results,
- advisory body to exercise oversight of corrective actions and monitor their performance,
- prepare an annual report on the financial sector for the Ministry of Finance.

The activities OSFI is internally organized into organizational units (sectors) methodology reflecting the mission and goals of the institution supervision [1] :

- financial services sector,
- sector methodology.

USA

The basic supervisory authority in the **United States** is the Federal Reserve System (1913), which shares responsibility for the regulation and supervision of financial markets. In addition to the performance of monetary policy is focused to financial stability, protecting consumers

of financial services and participate with other bodies (particularly the Federal Deposit Insurance Corporation) to the supervision of financial institutions.

The global financial crisis and a series of bankruptcies of financial institutions has opened space for discussion and implementation of major changes **regulatory and supervisory USA**. Has the need to increase the efficiency of supervision

The basic structure of supervision of financial institutions in United States is as follows:

- national commercial banks and branches of foreign banks supervised by the Office of Comptroller of the Currency (OCC),
- financial and bank holding companies supervised by the Federal Reserve System alone (FED),
- national and state commercial banks are supervised by the FED along with Federal Deposit Insurance Corporation (if they are involved in the deposit insurance system),
- national and state savings banks are supervised by the Office of Thrift Supervision (OTS),
- national and state credit unions supervised by the National Credit Union Administration (NCUA)
- securities and Exchange Commission (SEC) has oversight responsibility of the securities and exchange market,
- insurance corporations are regulated and supervised by the National Association of Insurance Commissioners (NAIC).

In July 2010, signed by President of United States of America [2] **fundamental reform of financial sector supervision**. Surveillance system was expanded to include elements of the functional organization of the creation of special institutions this mission:

- **National Bank Supervisor (NBS)** is part of the organizational arrangements of the Ministry of Finance,
- **Consumer Financial Protection Agency** as an independent office of the acquiring authority in protection of clients,
- **Financial Services Oversight Council** with task to reduce systemic risk and coordination supervisory authorities of other financial market,
- **Office of National Insurance (ONI)** as part of the organizational structure of the Ministry of finance is intended to coordinate the supervision of the insurance sector.

Major share of the financial crisis had a failure of major financial institutions and the current system of regulation and supervision, with the lack of monitoring and detecting threats to the risks undertaken. Decided by financial institutions (financial holdings) of the U.S. financial markets were overseen by the FED. The financial crisis has revealed the need to strengthen the supervisory in monitoring of potential **systemic risk** and its solution. Autonomy monitoring program for the financial institution has limited options addressing the threat of the entire financial system. Due to the financial crisis proved to be a major strengthening consolidated supervision of financial institutions, risk management and consumer protection.

CONCLUSION

The internal organization of institutions monitoring and targeting of the Canadian High Authority for the supervision of financial institutions is evident its functional layout with minimum content elements of a sectoral organization. Surveillance system as a whole includes the principle of decentralization, financial sector supervision. Its current arrangement corresponds to the historical development of the regulatory and supervisory with traditional key roles the Ministry of Finance in Canadian financial system.

Changes in financial sector supervision in U.S. in its essence does not include elements of integration of surveillance, the system shows no tendency to simplify the organization, there are still possibilities of duplication in supervisory practice. New legislative and related organizational structure of supervision in U.S. strengthens the functional elements of the system, leaving the sector structure. There is not a tendency of integration of the supervisory system, are still used traditional authority of state institutions.

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THE USE OF VaR IN THE PROCESS OF TRANSACTION SYSTEM RISK REDUCTION: THE EXAMPLE OF DERIVATIVES

Radosław Pastusiak

ANNOTATION

The goal of this paper was to show the applicability of VaR risk management tool to increase the efficiency of transaction system for the WIG20 futures traded on the Warsaw Stock Exchange. For this purpose, a simple but presenting high efficiency trading system based on data from the years 2003-2011 was built. It is a mechanical system, providing the investor with specific values signaling the reversal of position in everyday trading. In such conditions the system showed a maximum drawdown of capital of -804 points. Then the method of historical simulation was used in order to calculate VaR for the series of analyzed data at the confidence level of 0.95, which equaled -530 zł. The practical significance of these calculations is high, because the calculated VaR was introduced into the transaction system algorithm, yielding new parameters. The system shows the 4.000 points higher efficiency than before, and lower maximum drawdown of capital.

KEY WORDS

Value at Risk, risk, capital market, technical analysis, mechanical system

JEL classification: G17, G14, G13, G12, G11

I. INTRODUCTION

The investments in derivatives market are characterized by high risk. This risk is understood as the possibility of incurring severe losses, often exceeding the possessed capital. The investor active in the derivatives market is affected by psychological factors which generate specific state of emotions, resulting in possible mistakes while making decisions. In order to increase the chances of success in this market, the investor can apply a mechanical system using an embedded algorithm which will assign him/her each day a specific signal depending on the established position. Well set up mechanical system should generate profits in the future. For the purpose of this paper liquid instruments with a relatively long trading period - WIG 20 futures listed on Warsaw Stock Exchange (GPW) - were used. When using the transaction system, the investor has to take into account the possible drawdown of capital after a series of loss signals, and there is also the possibility of an unexpected event causing a rapid change in value of the contract in the opposite direction to the position held by the investor.

The goal of this paper is to show the functioning of the mechanical system for derivatives using the VaR tool. It has been assumed that the VaR in the algorithm of the mechanical system increases efficiency and eliminates the potential periods of horizontal trend in the line of capital.

II. CHARACTERISTICS OF THE TRANSACTION SYSTEM FOR WIG 20 FUTURES

Nowadays, popular and frequently used mechanical systems are based on technical analysis indicators. The advantage of mechanical systems is that generated signals are unambiguous. This means that in every situation the investor knows exactly what to do. It is also important that systems based on mathematical and statistical formulas are easy to test on historical data and may also respond to real-time data. Despite the advantages, many users of this method fail to succeed. Its application requires the subordination of investment decisions to the signals generated by the system.

It is worth considering what is easier: the analysis based entirely on historical data or step by step analysis of current situation? Both undoubtedly require a broad knowledge and skills. The difference is that the latter is accompanied by emotions. The market often creates situations suggesting increasing the position, its closing, searching for peaks or valleys. In emergency situations the investor often closes prematurely profit position or worsens a loss position¹. Every success and failure results in positive or negative emotions affecting future behaviour. Building and using mechanical transaction systems can completely eliminate the investor's sentiment. The analysis itself is carried out by means of calculation giving in result the signal: "buy" or "sell". The investor who uses a mechanical strategy is responsible only for order processing². Lack of sufficient confidence in the system means that the investor does not execute all commands and independently tries to find a convenient position to close the transaction. Therefore, self-construction and in-depth testing of the system allows for a required state of trust and confidence in the correctness of its decisions. Custom design allows the investor creating a model that will bring a satisfactory rate of return and acceptable level of losses³.

The purpose of using a mechanical transaction system is to minimize losses and maximize profits. When building the system, it must be remembered that technical analysis is just a set of observed phenomena recurring in time. Transactions in the stock market, that are executed via investment system based on technical analysis indicators, will also be recurring in some way. If the number of transactions is high enough, they will be distributed in a way that is possible to predict with some approximation. It is important that the technical methods of market analysis are not very precise and measurable - just as the market - and therefore are not infallible. Users of this method must accept the fact that every profit generates specific costs. When analyzing the system one should therefore carefully review the relationships between profit and loss positions. The use of the investment system is generally justified in the long run. In a short period of time it may happen that the investor closes a few/several loss transactions, which are in completely no relation with calculations and expected efficiency of the system. However, based on statistics and probability, it is certain that in the long run profits and losses will be offset and the efficiency of the system will be similar to the efficiency calculated by the investor. The integrity of the system depends on a number of principles which have to be followed when designing the algorithm⁴.

Before starting the investment, the expected level of profit has to be determined. The universal approach would be to determine the annual rate of return, which will indicate the accuracy of the whole system. It is noteworthy that the higher are the expectations the greater will be the risk. Determination of the maximum capital drawdown will allow for specifying the size of losses, which will be acceptable to the psyche of the investor. This is an important

¹ See also: Elder A., *Zawód inwestor giełdowy*, Oficyna Ekonomiczna, Kraków 2001

² *Gazeta Parkiet* webpage: <http://www.parkiet.com/arttykul/14,322057.html>, April 2010.

³ LeBeau C., Lucas D. W., *Komputerowa analiza rynków terminowych*, Warszawa 1999, p. 4

⁴ Schwager J.D., *Analiza techniczna rynków terminowych*, WIG Press, Warszawa 2002, p.594

element in the period in which the system makes a series of incorrect decisions. The predefined level of drawdown shows how much the investor's psyche and, above all, his portfolio can endure and not fall out of the market and how big losses in relation to the whole possessed capital the investor should withstand till the moment of the upturn of the capital curve and the return to growth trend.

For the purpose of this paper a simple mechanical system was developed. The algorithm of the system focuses on the analysis of the difference between maximum and minimum values of futures over the past five trading days. It looks like below:

$$S = \frac{(Max_{-4} - Min_{-4}) + (Max_{-3} - Min_{-3}) + (Max_{-2} - Min_{-2}) + (Max_{-1} - Min_{-1}) + (Max_0 - Min_0)}{18}$$

where:

S – signal

Max₋₄ – maximal value in contract points four days back

Min₋₄ - minimal value in contract points four days back

Max₋₃ – maximal value in contract points three days back

Min₋₃ - minimal value in contract points three days back

Max₋₂ – maximal value in contract points two days back

Min₋₂ - minimal value in contract points two days back

Max₋₁ – maximal value in contract points one day back

Min₋₁ - minimal value in contract points one day back

Max₀ – maximal value in contract points on the day

Min₀ - minimal value in contract points on the day

The number 18 in the denominator of the algorithm allows for the averaging of system indications and in the analyzed period of trading (9 years) shows the adaptation of the system to the downward, horizontal and growth market. The initial capital required for one contract is 10.000 zł. Detailed results of the system are shown in Table 1 and Figure 1

Fig 1. Summary of the transaction system for WIG 20 futures in the years 2003-2011.

Initial capital in zł	10.000
End capital in zł	98.620
Net profit (without reinvestment) in points	8.862
Average annual rate of return	98,46%
Investment period	9 years
Number of transactions	1418
Average duration of established position	1,6 days
Profit transactions	658
Accuracy	46,4%
Average profit from profit transaction in points.	40,5
Loss transactions	760
Accuracy	53,5%
Average loss on loss transactions in points	- 29,4
Maximal drawdown of capital in points	- 804

Source: Author's elaboration

The system is highly profitable, despite the advantage of the number of loss transactions the average profit significantly exceeds the average loss. Transaction costs were estimated at 2 points. The system was developed using " data snooping", but a long period of testing (as well as profitability analyzed under different market conditions: bull market, bear market, consolidation) indicates the possibility of its successful use in real life.

The introduction of additional protection based on VaR to the system can contribute to reducing the maximum drawdown of capital and shortening of the period of capital curve consolidation in the period between quotations 1750 to 2100.

III. APPLICATION OF VALUE AT RISK INDICATOR

VaR (Value at Risk) can be defined as the maximum loss of market value of portfolio or of financial instrument, possible to bear in a specified period of time and at a given confidence level.

The use of Value at Risk is associated with a number of benefits which include the following aspects⁵:

- VaR enables uniform formulation of various types of risk;
- Takes into account the diversification of the portfolio;
- Having appropriate data on realized losses that exceed VaR it can be relatively easy to verify this method;

The VaR method has advantages but also disadvantages:

- In situations where the loss exceeds VaR a company has no information regarding the level of expected losses;
- In certain situations it might be impossible to distinguish between portfolios in terms of risk, although their risks are obviously different;

VaR depends on two elements that should be determined by the management of every company. These parameters are:

Significance level (for example, JP Morgan uses 0.05, and the Basel Committee 0.01) - the significance level, which is close to 0 can also be used interchangeably with the confidence level, which is the difference between 1 (100%) and the significance level. When the significance level is lower (confidence level is higher), the VaR is higher⁶.

An important criterion for the VaR is the time horizon. Banks typically use one day, but businesses can take periods of up to 1 month. The longer the time horizon, the higher the value of VaR.

Consequently, the VaR can be written as an equation:

$$P(W \leq W_0 - VaR) = \alpha$$

where:

α - the significance level ,

W - value of the portfolio (instrument) at the end of the period, defined as a random variable,

W₀ - the current value of the portfolio (instrument).

In case of the analyzed scheme, the VaR was calculated with the use of historical simulation method. On the basis of a distribution of 2263 daily rates of return from the system, the following procedure was applied:

- The first step is to obtain a series of percentage changes of prices for the established position throughout the analyzed period,
- The results should be sorted in ascending order,
- The last step of calculating Value at Risk is to determine the percentile adequate to the desired level of confidence - a result of this step gives the value of VaR.

⁵ See: Jajuga K., Kuziak K., Papla D., Rzyko rynkowe polskiego rynku akcji – Value at Risk i inne metody pomiaru [in:] Rynek kapitałowy: skuteczne inwestowanie część I., Uniwersytet Szczeciński 2000

⁶ Jajuga K., Miary ryzyka rynkowego – część trzecia, Rynek Terminowy no. 8/2000

The value corresponding to the probability level equal to 0.95 is -5.3%, which means a possible drawdown of the capital of 530 zł on a single trading day. This information can be used in current trade but also as an additional variable in the developed algorithm.

In order to use VaR to protect the capital against the negative influence of a random factor, an additional protection in the form of the maximum daily loss limit of -53 points was introduced. When this value is reached, the investor closes the position, and opens it again in the final fixing. The time series analysis of daily volatility of futures during the nine years period showed that it has worked in dozens of cases. Fig 2 shows the new transaction system parameters.

Fig 2 Summary of the transaction system for WIG 20 futures in the years 2003-2011 with capital protection at the level of VaR.

Initial capital in zł	10.000
End capital in zł	134050
Net profit (without reinvestment) in points	12405
Average annual rate of return	137,83%
Investment period	9 years
Number of transactions	1418
Average duration of established position	1,6 days
Profitable transactions	658
Accuracy	46,4%
Average profit from profit transaction in points.	40,5
Loss transactions	760
Accuracy	53,5%
Average loss on loss transactions in points	- 24,5
Maximal drawdown of capital in points	- 559

Source: Author's elaboration

Compared to the system version without the capital protection level, the system's efficiency improved significantly by 3543 points and the maximum loss on capital also decreased to 559 points. Thus, the average loss on transaction fell from 29.4 points to 24.5 points. In this perspective, it is clear that the use of additional level of protection yielded positive results in form of increased efficiency and lower value of capital exposed to loss.

However, the influence of VaR on the consolidation of capital is low. The system still shows a horizontal trend between quotations 1750 and 2100, although this time without such a large capital decline as before, but it should be noted that the use of VaR changed little in this regard.

IV. RESULTS

The goal of the paper was to show that VaR can be a good way of increasing the efficiency of the transaction system and can eliminate the potential periods of the horizontal trend in the line of capital. The goals were achieved partially. Indeed, the use of VaR calculated using the historical simulation is an interesting solution, significantly increasing the efficiency of the system, but in this case it does not reduce the period of horizontal trend of capital generated by the transaction system. Despite this, the VaR instrument is an interesting alternative for investors using mechanical transaction systems. When using this solution in practice, the following restrictions should be taken into account:

- VaR assumes a "normal" functioning of the market. VaR-based risk measurement gives correct results only when there are no unusual, extreme situations in the market,.
- VaR gives the probability that the loss should not exceed the predefined level, but says nothing about the possible size of loss in extreme situations.

This means that investor in the derivatives market must be prepared for various unusual scenarios that have not yet emerged in the historical data. In addition, it is worth noting that the transaction system used here is very specific, in particular:

- The capital line does not take into account the taxation of income,
- The adjusted system with protection level on the VaR line does not include transaction costs of protection activation and delayed market entry,
- The analysis of cases of particularly high daily volatility showed situations where, during the session, the level of protection was activated but later the market changed the direction and, consequently, the final loss was lower than the protection level. The algorithm of the system did not take into account such situations, which in some cases during the analyzed period, resulted in overstatement of the loss.

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RISK FACTORS OF CONTEMPORARY „FINANCIAL CRISIS“ AND THEIR INFLUENCE ON FUTURE DEVELOPMENT OF WORLD ECONOMY

Oldřich Rejnuš

ANNOTATION

The article deals with problems of contemporary “financial crisis” that appeared in 2008 and subsequently developed into very serious global economy crisis. First of all, factors that lead to the crisis are identified, consequently, their influence on contemporary developmental trends, intruding operation of world financial system and endangering future development of world economy are analyzed. At the same time essential issues regarding future “market economy”, which depends on contemporary society are formulated.

KEY WORDS

Financial crises, risk factors, economic crisis, financial markets, global economy, market economy, critical factors, state regulation, quantitative easing,

JEL classification: G01

INTRODUCTION

There is a number of opinions on the causes and origin of contemporary “financial crisis”; these opinions are neither unanimous, nor clarifying. Nevertheless, it cannot be called into question that a deep economic crisis appears all of a sudden; its causes are formed step by step. As this is the most important crisis that arose since the Great economic crisis in 1929, it is necessary to analyze it in details. Unless its causes are eliminated, it might not be solved satisfactorily. And in case it is solved after all, it might come again in the future; considering ongoing globalization of financial system, functioning of global world economy might be totally endangered.

AIM AND METHODOLOGY

The goal of this paper is to specify the most important risk factors that lead to contemporary “financial crisis” and consequently to analyze how they participate in contemporary negative development trends that might seriously disrupt allocation function of the whole globalized world financial system and endanger functioning of world economy.

RESULTS

Despite economic crises evince many common features, each of them is specific. This applies also to contemporary “financial crisis” that started in 2008 by failure of financial system in the USA and consequently spread quickly to economically most developed countries of the world. It is undisputable that this crisis did not emerge suddenly; it resulted from a number of negatively impacting factors over a long period; as they were not solved, they developed into following negative development trends.

1. Process of growing indebtedness of economic subjects

This is an exceptionally important trend, very specific for contemporary “financial” crisis. Its importance is enhanced by the fact that it is connected with indebtedness of all kinds of economic subjects, households, companies as well as states.

- **Household indebtedness** is connected with the politics of governments of economically developed countries and their central banks to increase domestic consumption and to support economic growth on one hand, and with effort of companies to increase their revenues by means of sale support of goods and services on the other hand.
- **Indebtedness of companies** is based on widely spread opinion that external funding resources are cheaper than internal funding resources on one hand and on demands of partners (shareholders) to maximize profit and payment of shares (dividends) on the other hand. This is the reason why most companies get indebted more and more and in case that economic situation worsens, they are more susceptible to bankruptcy.
- **Indebtedness of (most) states** is growing as a result of long term deficit fiscal politics of governments of individual states on one hand and as a result of the fact that expenses of regional governments are higher than their incomes¹.

It is clear that in case the trend of growing indebtedness of economic subjects keeps growing, it will be more and more difficult to fund them, since their debt costs will grow due to the growth of risk of possible insolvency. Finally it might result to the possibility that the investors might lose their confidence in their debt instruments, which would prevent them from having access to financial markets. This might result in household insolvency, bankruptcies of banks and other subjects or even to collapses of state finances of heavily indebted countries.

2. Growth of differences in economic and political power of individual subjects

This developmental trend is based on gradual growth of differences between states, corporations and even individuals (households) in terms of their economic and political power or their influence on human society:

- **Economic (political) power of states** is employed in their foreign policies; economically strong states enforce their will to weaker countries. This is made directly by means of bilateral contracts or by means of membership in international or supranational institutions, where important states usually have bigger power.
- **Economic power of corporations** becomes evident especially in case of “supranational companies”; many financial institutions belong among them. Their economic power is based on their economic results, as they are sometimes higher than VAT of smaller countries on one hand, and they get majority position in their fields on the other hand. This leads to restriction of competition and pushes market conditions to those of oligopoly in which they try to get as important position as possible on the other hand. It has been proved that gradual growth of size of corporations is connected with their growing economic power, which enables strong lobbying and might lead to political influence. Supranational corporations often move their production to developing countries with a goal to minimize production costs (especially payroll costs). This results in production restriction in home

¹ US public debt reached nearly 16 trillion USD; European Union debts have exceeded the value of 12 trillion €.

countries; goods produced abroad has to be imported to those countries and consequently decreasing number of job opportunities, creating business balance deficit. As it is possible to establish daughter companies anywhere in the world, legislative differences in individual countries are taken into account for this purpose to make use of „transfer pricing“.

- **Dominant position of individual in society** represents an important factor that has developed into an important development trend. It can be characterized as always growing increasing of incomes² (and consequently value of owned property) of individual members of society. It results in growing number of “millionaires” or “billionaires“, who so often enforce special privileges within human society. This would not cause a problem in case that the differences in incomes of individuals were based on merit and contribution of individuals to their society. In fact, this is often made by means of breaking law (hidden) and bribery. In some countries, it can even be connected with misuse of state or business functions, possibly even without any possibility of personal sanction (immunity). The worst think is, that all those “tunnelled” values are consequently transformed to debts of individual states, which means to the back of “common” taxpayers.

All above mentioned facts lead to the fact that market competition is declining. It means that fair prices are not created any more. Without fair (market) recognition, contemporary economy cannot work effectively.³

3. Creating new sorts of synthetic derivative instruments

New sorts of financial investment tools are presented and offered in the market. These are often not instruments that would be beneficial for the economy; these are mostly investment instruments made on purpose, bringing prosperity before all to their issuers. The most problematic factors we face in the process of creating new sorts of financial investment instruments are considered creating new sorts of derivative investment instruments (so called structured products), derived from many sorts of different underlying assets as well as calculated use (or misuse) of securitization:

- **Creating structured products** can be characterized as constructing new, often purposefully very complicated sorts of synthetic financial investment tools based on the principle of derivation from various underlying assets.⁴ Even in case that there are specific regulation restrictions in different countries, these often rather risky instruments are almost without any restrictions offered to investors, due to liberalization and internationalization of contemporary financial market.
- **Purposeful utilization of securitization** is based on transformation of non-liquid financial investment assets (before all loans) to marketable securities. This is, of course perfectly all right, unless investors are disadvantaged. But in case these transformations are purposefully

² In some cases, top managers in the US get salaries exceeding average salaries by many hundred times (eg. US).

³ see Zelený, M. Geneze krize [5].

⁴ This means structured deposits, structured bonds, securities of collective investment structure funds and securitized derivatives - see Rejnuš, O.: Finanční trhy, s. 579-660 [2].

very complicated and nontransparent⁵, they enable to transfer bad quality assets and for much higher prices than those negotiated for case of their direct sale.⁶

Creating new synthetic derivative investment instruments leads to growing number of securities that are not directly connected with real economy and represent only a certain intergrade without any real economic benefit. Most often, their issuers profit from them (mostly financial institutions) mostly to the detriment of investors. Issuing these obligations supports creating so called: „pyramidal superstructure“. It grows or fails depending on the growth or fail of their basis, or, in other words, with growth or decline of prices (values) of underlying assets from which individual “superstructural” investment instruments are, directly or indirectly, derived.

Based on previous analysis of the most important contemporary negative development trends, a question comes into mind, what essential measures were taken since the beginning of contemporary “financial crisis” in individual countries and supranational economic entities and whether they proved successful.

As far as indebtedness issues are concerned, the US government “solves” it, together with FED policy, by means of so called “quantitative easing”, which is nothing but continuation of extreme state expenses. It leads to further increase of American state debt, which means this is not an effort to solve contemporary crisis. To the contrary, the European Union (primarily Euro zone countries) tried to solve the problem (until recently) the other way, by cost-saving fiscal policies of individual states. Of course, this threw the weakest countries into recession, that was accompanied by disproportionately high unemployment and was followed by social unrest. This led to strongly increased risk of their possible bankruptcy and failure to pay back their obligations, which would seriously jeopardize existence of many (chiefly European) banks and commencement of so called avalanche spreading of bank crisis. This is why the European Union management, together with European Central Bank and with support of the International Monetary Fund, started to implement similar supportive policy as the US.

As far as decaying market competition is concerned, this problem is solved neither in America and Europe nor in other parts of the World. On the contrary. Both the strongest countries of the World and important companies are trying to strengthen their dominant position. At the same time, influence of rich individuals is increasing; they are not only representatives of steering bodies of important corporations, they are represented in governments and parliaments of most countries and they often advance their own interests. This leads to distortion of market environment, without which contemporary economy cannot work⁷ and, at the same time, the principle of equal rights of citizens is infringed.

As far as creating harmonized international regulation, focused on business activities of financial institutions and properties of publicly marketable instruments are concerned, this problem is not satisfactorily solved either. The European Union has established several

⁵ *Real value of securitized assets is only known to the relevant financial institution, where newly issued securities are usually divided into several, by rating differently assessed tranches.*

⁶ *These are so called „Assed Backed Securities” [ABS] – see Rejnuš, O. Finanční trhy, s. 613-627 [2], or Jílek, J. Finanční a komoditní deriváty v praxi [1].*

⁷ *It is impossible to set fair (market) prices without market competition; economy cannot work effectively without them.*

institutions, but has not solved anything yet and the US have even cancelled the most supplementary regulation measures that had been accepted some time ago. It is clear that different legislation of individual states, that is based on different principles, makes the possibility of international harmonization of regulation principles much more difficult and that, without unified regulations, there will always be ways how to circumvent regulation in individual states.

It seems to be clear that the solution of all aforementioned crisis factors is highly problematic and cannot be successful without close international collaboration. However, now, individual countries and supranational economic associations⁸ try to solve their economic problems very individually. The reason is, first of all, based in the fact that most politicians are concerned on their own political success and they prefer political success of their own countries or political parties and this is why the solutions they advance are not always optimal from the point of view of economy. Another factor is the way how parliamentary democracy works. The fact, that functional term of office of politicians (and it is the same in case of economic bodies of companies) is restricted, they prefer short-time solutions to long-term ones, to sophisticated strategies.⁹ This leads to further worsening of economic crisis and postponing it indefinitely.

CONCLUSION

Above mentioned facts show that contemporary “financial crisis” will surely not be solved in the nearest future. On the contrary, we can reasonably expect that contemporary trends of European Union business policy (especially Euro zone) and the US will be more and more confronted with intentions of the most important Asian or other countries, where interests of „BRIC“¹⁰ countries must not be undervalued. Since we can reasonably assume that politics of quantitative releasing of the US, enforced over a long period, and strong monetary expansion focused on rescue of European banks or bankrupting European Union countries will cause high inflation in the future, which will be followed by distinctive weakening of US dollar and Euro. It will give rise (even in case that the Euro zone will retain) to strong financial market shocks. It will lead to currency turbulences that will impact the whole world and consequentially will lead to global financial and global world economic crisis. It is supposed to be much more intensive than any other crisis in the past and it might bring immense consequences for the whole mankind.

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- [6] <http://usdebtclock.org>

⁸ Before all, European Union is concerned.

⁹ Particular example of such nonconceptual operative decision making is decision of German government on cancelling nuclear power engineering for the sake of results of future elections.

¹⁰ These are Brazil, Russia, India and China.

[7] <http://www.google.com/publicdata/explore>

[8] <http://www.verejnydluh.cz/>

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THE IMPACT OF THE FINANCIAL AND DEBT CRISES ON THE INVESTMENT ACTIVITIES OF INSURANCE COMPANIES

František Řezáč

ANNOTATION

Financial and debt crises have not significantly influenced the activities of insurance companies, especially their investment activities. Using methods for the analysis to show that the European insurance market and insurance market in the Czech Republic there was little change in the financial position of insurance companies available funds. The paper aims to analyze current trends and structure of investment activities of chosen insurance companies in the Czech Republic. The comparison of investment activities in European and Czech insurance markets is also provided.

KEY WORDS

Financial and debt crises, investment activities of insurance companies, investments, financial instruments.

JEL classification: G 22

INTRODUCTION

Following the 2008 financial crisis in the United States, the conditions of investment activities of financial institutions became constricted in the European Union as well. The situation is further amplified by the current debt crisis in Europe, which not only affects the macroeconomic conditions and indicators, but also has a significant impact on the competitiveness and threatens the existence of the European economic community. For insurance companies, it resulted in the increased capital requirements and stricter rules for investing available funds from company's technical provisions into different financial instruments.

Capital requirements for domestic insurance companies depend on the nature of insurance business and are specified in the Insurance Act. Commercial insurance company is also required to establish technical provisions to cover the liabilities of insurance or reinsurance activities, the time of occurrence and amount for which are not entirely specified. The Insurance Act regulates the formation and usage of technical provisions, as well as the structure of investments. Additional statute of the Czech National Bank defines the limits of investing into particular financial instruments on the financial market.

AIM AND METHODOLOGY

The aim of the paper is to analyze trends in the allocation of available funds by the chosen Czech insurance companies as well as the structure of their investments from the beginning of financial and debt crises till the present times. Methods of description and content analysis are implemented in the discussion of the problem.

RESULTS

The objective of investment activities is to appreciate the capital of the insurance company. Therefore, insurance company must invest the available funds in way that it could be able to fulfill the obligations to clients at any time in the future. Insurance companies invest temporarily available funds from their technical provisions and equity capital in order to appreciate it on the financial market.

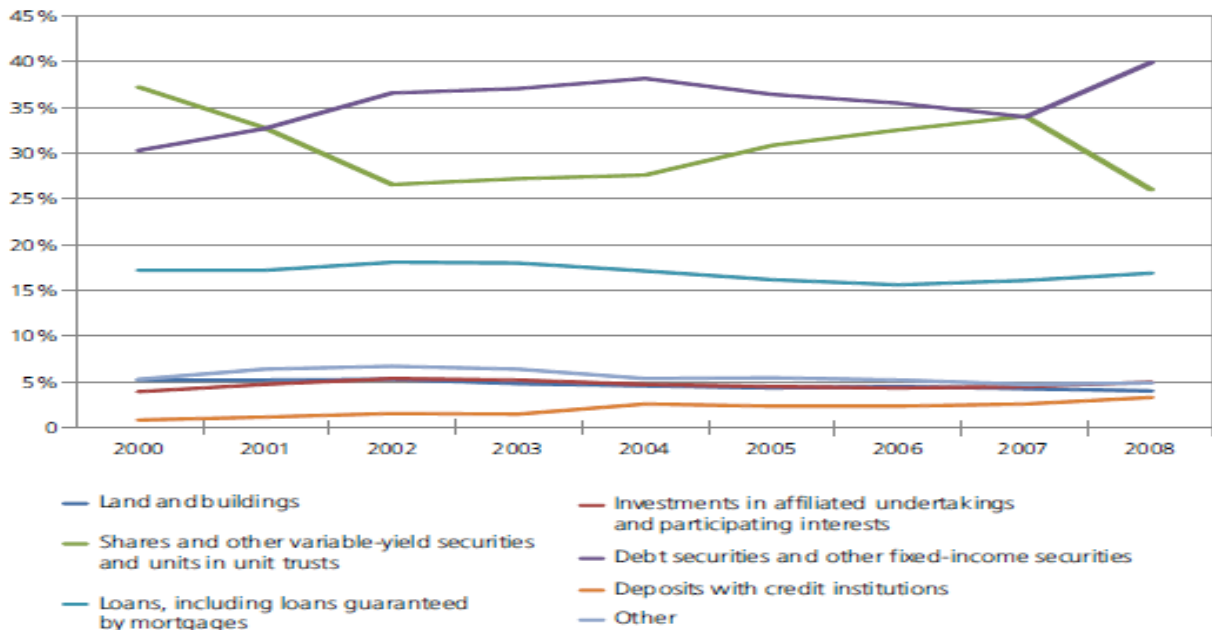
For the analysis of investment activities of insurance company, it is necessary to differentiate investment activities for the purposes of life insurance and investment activities for purposes other than life insurance. When technical provisions of life insurance funds are invested, the emphasis of the investment choices is on safety and return, if the necessary liquidity is certainly ensured. Safety and liquidity are two basic parameters in the case or investing technical provisions of other insurance activities. When the certain level of risk and liquidity is reached, the aim of the maximization of returns might be addressed.

To meet the requirements for investment activities, insurance companies should be guided by the following principles:

- Safety – all investments should provide a guaranteed return;
- Profitability – all investments should ensure profits from its holding or sale;
- Liquidity – all investments, especially those of technical provisions, should ensure the availability of funds to cover claim payments of insurance companies as quickly as possible;
- Diversification – all investments should be spread among greater number of companies and other legal entities, which could not have any common owners or other influential relationships.

Figures 1 and 2 illustrate the difference between investment activities of European insurance companies and the situation on the Czech insurance market.

Fig.1 Investment activities of European insurance companies according to Comité Européen des Assurances - CEA

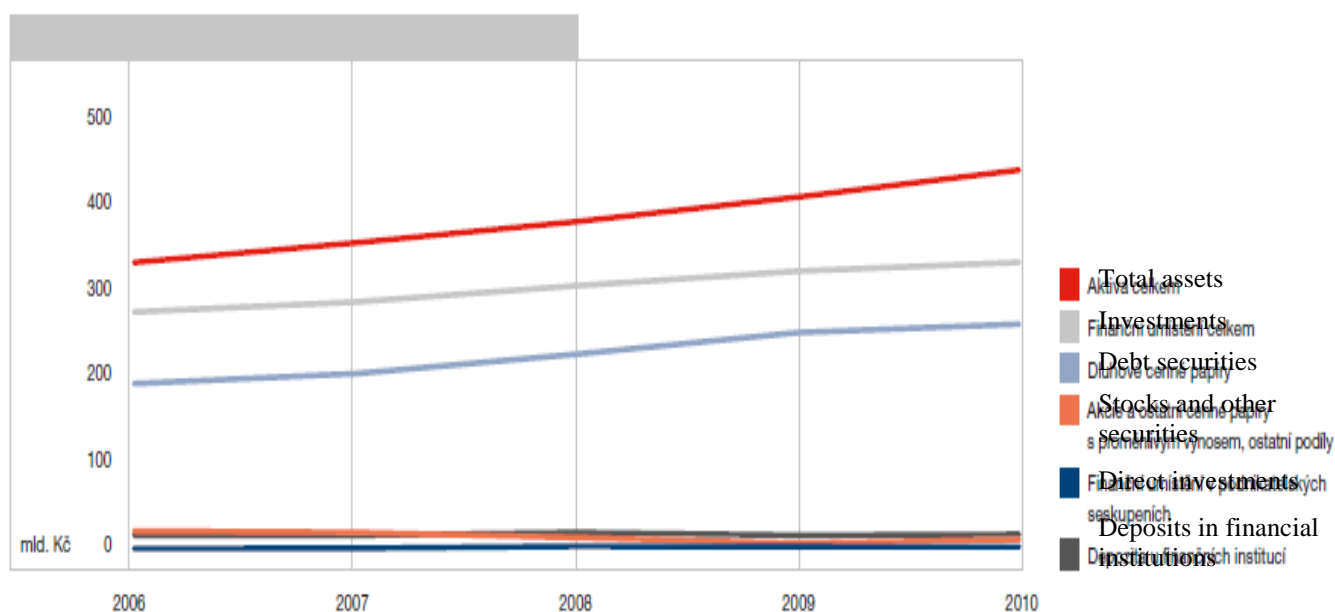


Source: Comité Européen des Assurances - CEA

Certain observations might be derived from the comparison of these graphs:

- Clear long-term trend of asset growth is evident on the insurance market of both European Union and Czech Republic.
- Both insurance markets prefer investing in safer financial instruments, however on different levels.
- The overall situation on insurance markets show that the global financial crisis did not have a significant impact on market developments, what is an extremely different result comparing to other financial markets (for example, banking market)
- It is still not clear, how European debt crisis has affected insurance market. However, considering the fact, that insurance companies invest considerable amount of their funds into government bonds, it became obvious that further financial troubles of several countries, such as Greece, Ireland, Portugal, Spain or Hungary, might lead to unexpected losses.
- Investment managers of insurance companies have to reassess company's investment portfolio and find alternative ways for investing funds.
- Any losses from risky financial instruments might lead to the decrease of assets, which threaten the obligations of the insurance company to cover claim payments committed previously.
- The problem might be addressed by the implementation of the first pillar of the Solvency II EU Directive, which set out qualitative and quantitative requirements for solvency capital, technical provisions and investment activities.

Fig. 2 Assets and financial activities of Czech insurance companies according to the Czech Insurance Association - ČAP



Source: Czech Insurance Association – ČAP

According to the 2007 annual report of the Czech Insurance Association¹ (before the financial crisis) the assets of ČAP members have been increased by 6.6%, when in the previous year the growth was 3.7%. A similar growth of 4.1% in investment activities was recorded, while in the previous year investment activities grew by only 2.2%. Since 2001 debt securities

¹ The annual report is available at: www.cap.cz/CZ_vyrocní_zpráva_2007

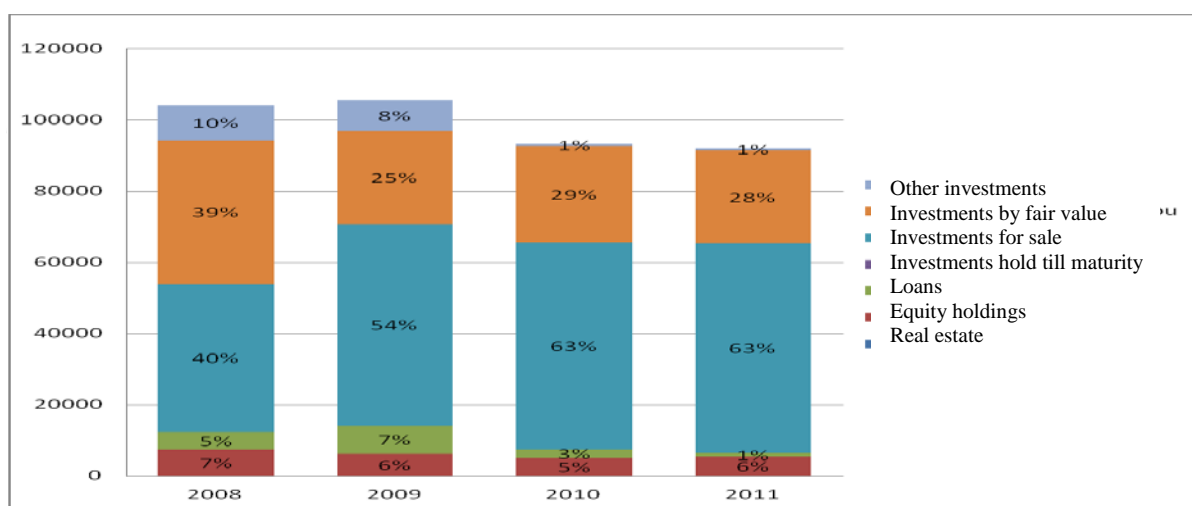
played the most significant role in investment activities of insurance companies. In 2007 the share of debt securities in the investment portfolios of insurance companies was around 70%, while deposits in other financial institutions formed only 10% of portfolio.

The 2007 annual report of the Czech Insurance Association² (the beginning of the financial crisis) reveals early signs of the possible impact of the financial crisis, when life insurance activities had a significant decrease and led to the cumulative losses of 9.5 million CZK. The losses were mainly caused by losses from investment activities. Other insurance activities resulted in the amount of 5.1 billions CZK and stayed at the same level as in the previous two years.

The 2008 annual report of the Czech Insurance Association³ confirmed the stability of the insurance market and its positive developments despite of the economic instability and financial turmoil. However, the impact of the financial crisis on the financial results of ČAP members is apparent, since the total volume of insurance premiums increased by 3.1% to 141.4 billion CZK. Annual asset growth had slightly accelerated from 6.7% to 7.3%, while investment activities increased by 5.4% in 2008 against the 6,3% growth in the previous year. The nature of investment activities has remained largely unchanged. Nevertheless, the share of debt securities in the investment portfolios of insurance companies increased from 74.9% to 78.6%. The share of bank deposits decreased from 9.6% to 8,1%.

In 2010, Czech Insurance Association⁴ evaluated a slight slowdown in insurance companies' asset growth, when assets of its members comprise 431.3 billion CZK (328.8 billion CZK in 2009), a growth of 7.5% against the growth of 7.8% for the previous year. The share of debt securities in the investment portfolio was 79.1% (similar to previous years). Bank deposits have been accounted for 8.2% share in the investment portfolio of insurance companies. Figure 3 discloses the investment portfolio of Česká pojišťovna in years 2008-2010 as an example of investment activities in the insurance market of the Czech Republic.

Fig. 3 Investment activities of Česká pojišťovna, a.s.



Source: The 2010 annual report of Česká pojišťovna, a.s.

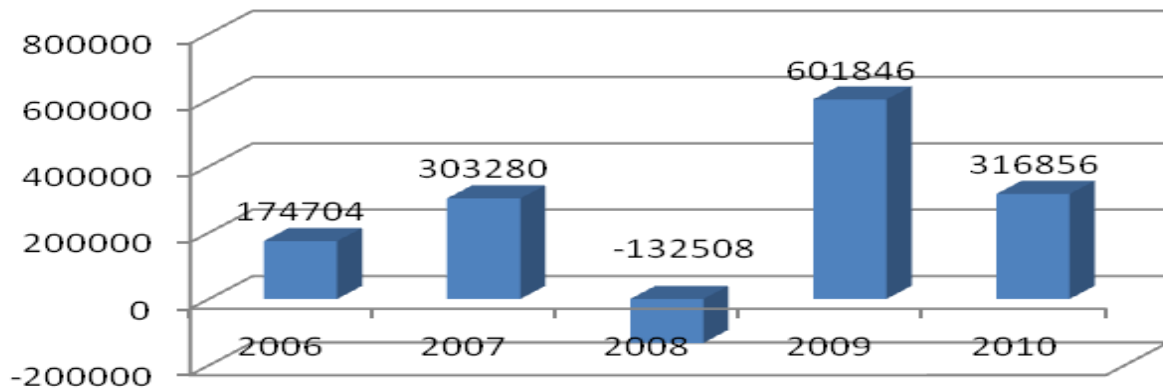
² The annual report is available at: www.cap.cz/CZ_vyrocní_zpráva_2008

³ The annual report is available at: www.cap.cz/CZ_vyrocní_zpráva_2009

⁴ The annual report is available at: www.cap.cz/CZ_vyrocní_zpráva_2010

The difference between the revenues and expenses from insurance company's investment activities is also of particular interest to our study. As an example, such indicators for Generali pojišťovna in years 2006-2010 are reported in Figure 4.

Fig. 4 Revenues and expenses from investment activities of Generali pojišťovna, a.s.



Source: The 2010 annual report of Generali pojišťovny, a.s.

Neither the changes in amount of investment activities nor the differences between the revenues and expenses from investment activities do not confirm general assumptions for the significant negative impact of the financial crisis on the insurance market in the Czech Republic. Czech insurance companies did not suffer from significant decrease in assets or unexpected shortcomings in investment activities.

CONCLUSIONS

Reported results of investment activities of insurance companies in the period 2008-2010 reveal that investment activities of European insurance market or Czech insurance market were not significantly influenced by the global financial crisis. The investments in debt securities are still preferred, while the share of bank deposits in the investment portfolio of insurance companies is declining. Therefore, insurance market remains stable and is yet able to flexibly respond to developments on the financial market.

However, still deepening debt crisis in Europe could affect the investment activities of insurance companies in a more damaging way through threatening the usage of different financial instruments. The decrease in such activities might be caused by the following situations:

- Less amount of insurance premiums due to the decline of living standards and business revenues (decline in personal and business incomes first of all lead to the rejection of insurance services)
- The deterioration of conditions for investing available funds into different financial instruments on the financial market.

The decrease in such activities might have an impact on the following indicators:

- Lower returns on investments
- Inability of insurance companies to cover insurance claims
- Lower clients' trustworthiness in insurance companies
- Higher legal risks for insurance companies

To conclude, it should be stated that insurance companies will probably be able to handle the changing situation in financial markets and their investment activities will not change significantly in the future.

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AN ANALYSIS OF UNSUCCESSFUL MERGERS IN THE CZECH ENVIRONMENT

Jaroslav Sedláček, Kristýna Kuhrová

ANNOTATION

Mergers are perceived as strategic decisions made by owners (and the management) of a company which bring significant changes of the activity of the company. A successful merger can cause a concurrence of several individual factors affecting the company and thus increase its economic performance and stability. However, in the case of an unsuccessful merger, the resulting impact of all factors can be so negative that it can threaten the very existence of the transformed company. The great risk related to mergers provides inspiration for their deeper exploration and publishing of results in scientific papers and professional literature. Although there is a lot of theoretical knowledge and studies published, the proportion of unsuccessful mergers is not negligible and this situation has been unchanged for a long time. This paper deals with the identification of unsuccessful mergers in the Czech Republic and the comparison of their development with the published data.

KEY WORDS

company transformations, types of mergers, merger development, unsuccessful mergers, macroeconomic environment, regression and correlation analysis

JEL classification: M 21, G 30

INTRODUCTION

The first mergers and acquisitions were reported at the end of the 19th century, when a need for greater investments in business appeared in the USA together with the effort to strengthen the position of some companies at the market. These mergers mainly provided a horizontal growth of monopolies within an economic field. At the beginning of the 20th century, the interest shifted to oligopolies and vertical combinations were implemented (upstream or downstream mergers). The motivation for company combinations then changed gradually from the effort to enter unrelated fields (conglomerate mergers), to combine companies similar in field but with a different production (congeneric mergers), and finally at the end of the last century to the effort to gain a target company in a different country. In the last decade, mergers and acquisitions are mainly motivated by globalization, support by governments, and growth of private equity funds. This uneven development of mergers and acquisitions, referred to as merger waves, has been a subject of many studies and publications analysing the causes and also consequences of these mergers. For more see e.g. Allen & Overy (2011), Bruner (2004), Martynova and Rennebook (2008) and Lipton (2006). Although we can explain and describe the merger waves, we do not know what triggers them and we cannot identify the moment when a wave begins forming or dying [3]. The studies usually do not differentiate between mergers and acquisitions and use a summarizing term M&A. However, there are quite important process differences between these two (legal, accounting, taxation, and social differences) that have economic effects on the participating companies [2] and [11].

A closer observation of the causes leading to company transformations allows us to classify seven attitudes, identified by Trautwein (1990) as motivation theories, which ultimately lead to reaching a higher value for owners of the successor company (investors). The most recent study KPMG (2011) ascertained that the main motive for mergers and acquisitions is the effort to achieve a higher market share – this was reported by 48% of companies merging in the period 1997–2009. The other reasons for mergers and acquisitions implemented by the

clients of this auditing company are summarized in Table 1. The fact that interfirm transaction activities are becoming global, across countries and continents, brings still new obstacles to a successful integration of companies and an increased risk of failure. Mergers and acquisitions do not have to be a guarantee that expected effects will be generated and they do not imply success automatically. They are implemented to bring advantages but we have to take into account that they are a sophisticated process in which company processes of different companies with different cultures are to be reconciled. The aims of our research are to classify mergers from the perspective of their success or failure, to find the rate of unsuccessful transactions implemented in the Czech territory, and to compare the data with the published results. The hypothesis is that the rate of failure should correspond to the data published in foreign literature.

Tab. 1: The rationale behind the acquisition in the period 1997 - 2009

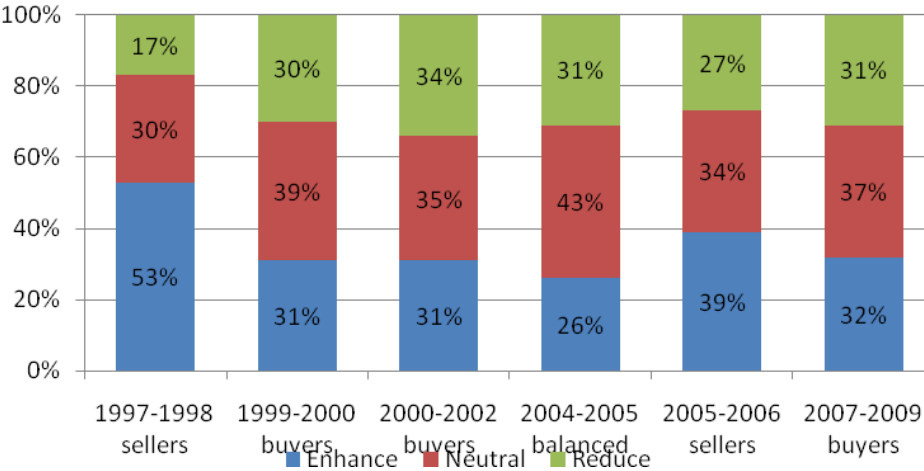
Motives	%
Increase market share	48
Geographic growth	35
Expanding into a growing sector	27
Cost synergies	19
Investment opportunity	18
Enter a new market	17
Acquire brand/additional service	13
Other	12
Diversity	10

Source: KPMG (2011)

AIM AND METHODOLOGY

The most frequent reason for a failure of a merger or an acquisition is unrealistic estimations of the future potential of the companies after the combination, a lack of concept and strategic management, little flexibility and inability to respond quickly to changes. A huge weak point is the human factor, mainly the absence of a will to identify with the new company, inexperience and little expertise of the management which can spoil even a good initial plan. The combination is doomed to failure from the very beginning if it is only a fulfilment of undue ambitions of the bosses of combining companies. Most of the studies investigating the success of mergers ascertained that 54% up to 90% of implemented transactions did not bring the expected benefits or ended in failure [6]. According to KPMG (2011), which sums up the

Figure 1: Tracking trends in M&A value enhancement over the past 12 years

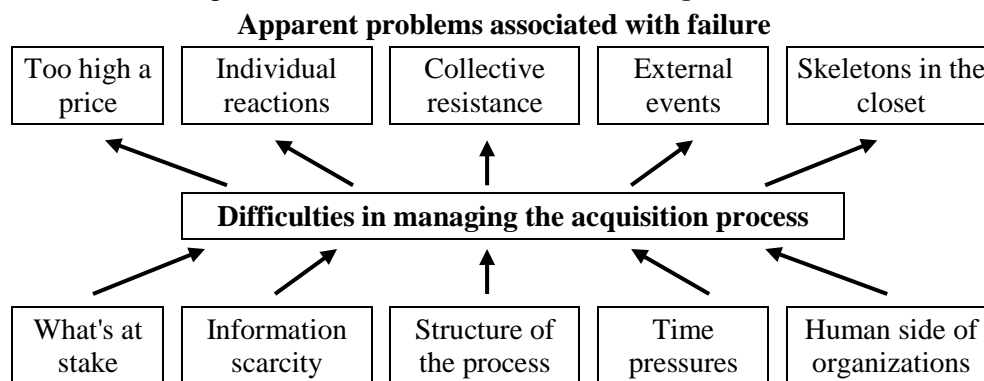


Source: KPMG (2011)

results of mergers of their clients in the past 12 years, the value for company owners after the combination increased in 17% up to 34 % of transactions, while in the other implemented cases the economic effect did not occur or the value of the company after the combination even decreased (for details see Fig.1).

Very (2004) considers a merger or an acquisition unsuccessful when the value of the acquirer after the acquisition is lower than expected at the moment of transaction negotiations. The defined main causes of failures of mergers and acquisitions, which are usually brought about by problems in the acquisition process management, are presented in Fig. 2.

Figure 2: The causes of unsuccessful acquisition



Source: Very (2011)

The focus of studies and publications, e.g. Very (2004), Stahl and Mandenhall (2005), Zappa (2008), etc., is mainly on acquisitions, which are related to financial flows and economic effects for investors. They do not require an assent of all companies entering the transaction and they can even be hostile. The inflow of new resources, changes in owners, new management and integration of the controlled company into the group should ensure the expected return on the investment. Mergers, as similar transactions, are not usually analysed separately although the successor companies gain control of the others which is similar to acquisitions and the other companies are legally dissolved [9]. However, this is not a purchase – mergers are combinations of two groups of owners into one whole, there is no risk of overbidding, which is important for the scheduling of the entire operation, and the ownership structure of the successor company usually remains the same as the structure of the merging companies, which can cause complications in the strategic planning. Therefore, when analysing the causes of merger failures, the question of the “purchase price of the dissolved companies” will not be as important as in the case of acquisitions although it plays a role, especially in the case of a merger of companies that have a different (mutually independent) shareholders (owners) [10]. The research investigates mergers implemented in the Czech territory in 2005–2008, recorded in the Trade Register [13]. To obtain empirical data, a representative sample was created by a random choice from the basic set of all companies where a merger occurred within the explored period. The sample contains 201 companies and these are divided by the field of economic activity and years when the transformation took place (see Table 2).

To be able to ascertain the merger failure rate, we need to separate the unsuccessful transactions from the successful ones. The initial criterion of the selection is the evaluation of a possible unlimited duration of the company and ability to develop further. A bankruptcy declaration or entering liquidation of companies which implemented a merger in the explored period, are considered a danger to their further existence. Also the successor companies that did not achieve the expected economic advantage after a merger will be considered unsuccessful. The criterion will be the disposable profit achieved by the participating companies in the year before the merger and of the successor company in the three years after

the merger. The expected economic advantage has not been achieved if a profit is reported in the period before the merger but in the following years there is a loss or a negative profit for all the four years.

Tab. 2: The temporal and field classification of the companies within the sample

Field / number	2005	2006	2007	2008	In total
Agriculture, forestry and fishing	1	2	2	3	8
Industry, mining and extraction	13	11	9	13	46
Trade, transport, accommodation and restaurant services	9	11	16	16	52
Building industry	2	1	5	11	19
Information and communication activities	3	4	6	5	18
Activities related to real estates	2	10	12	14	38
Other activities	3	3	6	8	20
In total	33	42	56	70	201

Source: authors

After separating the unsuccessful mergers, the selected set can be tested for the production power of the successor company and the achievement of the expected synergy effect. The basic measure is the return on assets calculated using equation

$$ROA = \frac{EAT}{A} \quad (1)$$

where: ROA – return on assets

EAT – earning after tax

A – total assets

In the year before the merger (R_{f-1}), the performance of all participating companies enters the calculation so that it could be compared with the performance of the successor company. We can expect a positive effect of the merger on ROA as a consequence of consolidation of assets and liabilities of the merging companies but accounting procedures themselves should not affect the general evaluation. The return on assets as of the balance sheet day expresses the sum of values of n-merging companies

$$ROA_{f-1} = \frac{\sum_{i=1}^n EAT_i}{\sum_{i=1}^n A_i} \quad (2)$$

The macroeconomic effects caused e.g. by the economic (2007-2008) and then debt (2009) crises have been removed from the profit reported by the successor company in the period after the merger R_{fup} to R_{f+2} . The values of the reported profit are modified using the GDP change index in permanent prices within individual fields and years. The calculation of the return on assets for the year R is done using equation

$$ROA_R = \frac{EAT_R * I_R}{A_R} \quad (3)$$

The companies in the sample were classified using the criterion of the return on assets into six levels (Table 3).

Tab. 3: Successful and unsuccessful companies by the return on assets criterion

Level	Classification	Description
1	successful	ROA is higher in all monitored periods after the merger than before the merger.
2	successful	ROA in the year of the merger is lower than before the merger; in the following two years it is higher.
3	successful	The values of ROA fluctuate; the weighted mean of individual years after the merger exceeds the value before the merger (weights 1, 2, 3 – the weight grows with time, considering that complete stabilization comes about 12–18 months after).

4	unsuccessful	The same procedure of evaluation as in 3 but the weighted mean does not exceed the value of ROA before the merger.
5	unsuccessful	ROA fluctuates after the merger with a falling trend there is a loss at least in one of the periods or ROA dropped by more than 10 % (the weighted mean compared to the value before the merger).
6	unsuccessful	ROA after the merger is lower in all monitored periods than the total ROA before the merger.

Source: authors

Based on the classification of the companies in the sample, we can establish the distribution function π = the number of unsuccessful companies /the number of companies in the sample (n), which provides each merger in the sample with the probability of its failure. If the distribution is to be generalized to all mergers that took place between 2005 and 2008 (on condition that the same evaluation system is applied), we need to establish the reliability interval using the interval estimate of the middle value for alternative distribution with parameter π :

$$\left(\pi - u_{\left(1-\frac{\alpha}{2}\right)} \sqrt{\frac{\pi(1-\pi)}{n}}; \pi + u_{\left(1-\frac{\alpha}{2}\right)} \sqrt{\frac{\pi(1-\pi)}{n}} \right) \quad (4)$$

The condition for the use of normal distribution approximation: $n\pi(1-\pi) > 9$ (5)

where: $u_{\left(1-\frac{\alpha}{2}\right)}$ – quantile of normal standardized distribution
 α – level of significance

RESULTS

The results of company classification using the criterion of maintained existence (K1) and profit achievement in the four-year period (K2) are summarized in Table 4. After excluding all unsuccessful transactions, the development of the return on assets was explored as calculated using equations (2) and (3) for the companies, remaining in the sample. Based on the calculated values of return on assets and their development in time, the remaining companies could be classified into groups by the achieved level of criterion (K3) presented in Table 3. The results of the classification by criterion K3 are added to the resulting Table 4.

Tab. 4: The total classification of mergers in the sample by criteria K1 up to K3 (number of transactions)

Criterion	2005	2006	2007	2008	In total	Proportion in the sample
K1 – number of the excluded	2	3	5	3	13	6.47 %
K2 – number of the excluded	2	4	8	12	26	12.94 %
K3 – successful (level 1)	2	2	3	6	13	6.47 %
K3 – successful (level 2)	2	3	4	6	15	7.46 %
K3 – successful (level 3)	11	11	11	16	49	24.38 %
K3 – unsuccessful (level 1)	6	7	15	15	43	21.39 %
K3 – unsuccessful (level 2)	6	6	5	6	23	11.44 %
K3 – unsuccessful (level 3)	2	6	5	6	19	9.45 %
Total number in the sample	33	42	56	70	201	100.00 %

Source: authors

To be able to verify the validity of the condition based on inequality (5), we calculate the distribution function

$$\pi = \frac{\text{number of unsuccessful mergers}}{n} = \frac{124}{201} \cong 0.6169$$

Condition based on (5) has been met because: $n\pi(1-\pi) = 201 * 0.6169(1 - 0.6169) = 47.5 > 9$

For the selected level of significance $\alpha = 0.05$ and the table value of quantile of normal distribution 1.96, we can establish the reliability interval using equation (4)

$$\left(0.6169 - 1.96 \sqrt{\frac{0.6169(1 - 0.6169)}{201}}; 0.6169 + 1.96 \sqrt{\frac{0.6169(1 - 0.6169)}{201}} \right)$$

The interval estimate for $A(\pi)$ is then (0.54969 ; 0.68411) and we can expect the real proportion of unsuccessful mergers in all implemented mergers between 2005 and 2008 to be 55%–68% with 95% reliability.

CONCLUSION

The proportion of unsuccessful mergers in the Czech Republic in the examined period ranged around the level published in literature. The hypothesis has been confirmed and leads us to further questions that would be suitable to answer in relation to merger failures. These are mainly the causes of the failures of the transactions and a search for their possible prevention or reduction. Finding the causes of failures and their analysis together with proposals for an improvement of the entire process of company combinations is, as this paper, a part of our further research conducted within CR Grant Agency project no. 403/11/0447 “The Analysis of Taxation and Accounting Procedures during Mergers”.

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COST MANAGEMENT EVOLUTION FOR MANUFACTURING COMPANIES

Vladimir Shatreich

ANNOTATION

This paper researches of newest tendencies of cost management evolution. The main goal of this paper is to evaluate of the current situation, tasks and development trends for the manufacturing companies in developing countries. The aim of this paper is to analyze the crucial aspects of cost management tools that influence the financial output of the companies. Our main conclusion is that cost management needs to be upgraded with some tools from strategic management. This conclusion is done based from the results of the existing literature that shows that cost strategy is main competitive advantage used by companies from developing countries. Authors use evolutionary approach presenting strategic cost management as improved cost management. In this paper strategic cost management is analyzed as evolutionary transition phase to consistent strategic management for companies in developing countries.

KEY WORDS

Cost management, manufacturing, business strategy, innovation, sustainable development, strategic management.

JEL classification: E01, E23, E64, O31, O33, O38

INTRODUCTION

As well as a long-term perspective, the concept of competitiveness and sustainable development entered in the Latvian system of planning under the influence of international commitments and planning practices. The concept of sustainable development in the Latvian public space appeared only around 1995 and its increased use is observed only since 2000. Sustainable development is most often seen declarative as a question of environment and natural resources quality; as a problem of a single ministry, not reflecting in planning policies of industry.

Nowadays currently developing countries have pointed manufacturing emphasis from the product that helps to increase competition level of the brand and technology, developing an industry standard, to production process mostly decreasing cost level. The explanation suggested for above mentioned fact is that developing countries may be expected to play a role of residual or alternate suppliers of growth products on world markets due to their late entry into the world markets for growth products. It is difficult for developing countries to spend on research and on product development and make loyalty of consumers to products manufactured, technology and innovations improves the standards and manufacturing process, but requires a lot of investment (R&D), which is why, is easier for companies in developing countries to focus on decreasing the cost level. This takes into account both demand factors, such as consumers preferences and the business cycle, and supply factors, such as the lack of human skills in developing countries. Because developing countries are likely to be residual suppliers of growth products, they probably absorb a relatively large share of demand fluctuations during the business cycle, being able to expand their exports of these products during the upcoming phase of the business cycle, when industries are working close to

capacity in industrialized countries, but experiencing a decline in sales (or in the growth rate of sales) during the downturn phase.

Nevertheless to respond to competition and develop in long term perspective, organizations should create sustainable competitive advantages in order to maintain current customers and acquire more customers. Strategic management is the best instrument to compete rivals at short and long runs, but too expensive for companies in developing countries.

After overviewing series of literature in previous works authors presented strategy model which explains the role of different strategies for manufacturing industry according to income level (Shatreovich, 2012). (Figure 1) It is also important to understand the performance and profit output implementing these strategies.

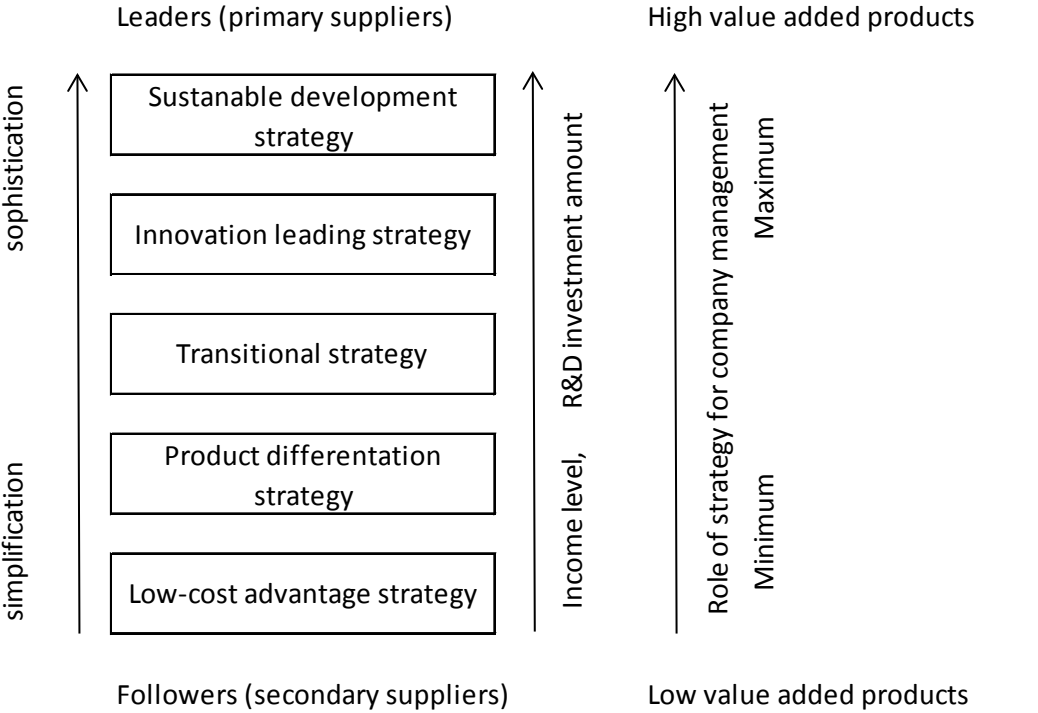


Figure 1. Model of Strategy role for manufacturing industry.

A new era in strategic management was generated by the idea of competitive advantages based on core competencies and resources. Over time, the increasing attention given to intangible and invisible assets has emphasized the role of new sources of competitive advantages. The growing role technological advantage represented in strategic management, as technological cycles become shorter and innovation becomes critical for survival, contributions in strategic management require a renewed integration of their perspectives and a closer connection with the business world.

But sustainability issues are too complex and interconnected to be managed by small and medium companies. Usually only large companies could afford such complex and sophisticated strategy system.

Author and some researchers [Hilton et al. (2000)] believe that traditional cost systems used by companies in developing countries will be switched by strategic cost management. Traditional cost systems focus on measuring and controlling product costs. Therefore, they are not producing information needed at current business environment.

As a result, new cost management concept emerges. This system integrates some crucial part from strategic management as aims to produce a continuous cycle of information about activities at both short run and long run to add value to customers and reduce costs [Hamilton (2004), Horngren et al (2003), Nicolaou (2003)].

Despite cost management is a common concept in literature, this concept is not well defined in acceptable way [Horngren et al. (2003), Agrawal et al. (1998)]. Some researchers looked at long-term dimension of cost management. Within that, strategic cost management has special attention as a system that not only traditional cost systems but also generates necessary information to support strategic management and sustain competitive advantage at the long run [Blocher et al. (1999), Shank (1989)]. Other researchers [Hilton et al. (2000), Dailey (1998)] ignore dividing cost management into two constructs according to time dimension. Therefore, cost management concept used to maximize profit and sustain competitive advantage at short run and long run as well.

Usually cost management is considered as a system of improvement. This system aims to permit organizations to seek what is needed to cement its ties with customers to attain their satisfaction and reduce costs at the same time via specific tools to maximize profit and sustain competitive advantage by using long-term strategies [Horngren et al. (2003), Nicolaou (2003), Barfield et al. (2001), Hilton et al. (2000)].

In the 1980s Porter's models helped companies to analyse the industry and gave vectors to their strategies, companies now need new models to create and manage knowledge and learning from market. Companies now compete in a very complex and dynamic environment, where knowledge and information is increasingly becoming the most valuable resource. The impact of technology, innovation and globalization increasingly defines that high capability of companies to transform, create knowledge and to be innovate is crucial to compete successfully.

AIM AND METHODOLOGY

The object of this paper is cost management. The aim of this paper is to analyze the crucial aspects of cost management tools that influence the financial output of the companies. (table 1). Our main conclusion is that cost management needs to be upgraded with some tools from strategic management. This conclusion is done based from the results of the existing literature that shows that cost strategy is main competitive advantage used by companies from developing countries. The broad number of studies indicate that more innovative companies and companies which have sufficient level of strategic management seem to be more competitive, nonetheless that the empirical evidence is not totally conclusive it seems that both in developed and in developing countries innovative activities do influence the decent output probability, and it is expected that company needs a minimum level of strategic thinking and innovation level in order to be competitive on the world market. So the less innovative and strategic level company has the lower competitive level probability.

Firstly we analyze a traditional cost management as part of popular cost strategy amongst companies from developing countries. Presenting cost management as a set of certain tools, then compare existing literature, followed by an explanation of influence these tools have on financial result.

Most companies in developing countries have a product specialisation and cost strategy - based on low wages and process innovations of standardised and incrementally improved products- to compete on the world market while the enterprises of the developed countries and of some specific sectors of developing countries do have a product innovation strategy.

So an important conclusion for the comparison of the outcome of different strategies, are these differences those probably explain poor financial results of the company. In some models we are trying to analyse the possible explanatory factors of sustainable financial output probability, the main conclusion shows that implementing strategic management elements and innovation efforts have a positive impact on financial output, but there is also an interesting controversial facts that companies in developing countries have a lack of resources to implement consistent strategic and innovation efforts.

Authors use evolutionary approach presenting strategic cost management as improved cost management. This means that strategic cost management is analyzed as evolutionary transition phase for companies in developing countries.

RESULTS

Recent studies pointed to the importance to distinguish between activities in short run and long-term strategies that adopted to create and sustain competitive advantages [Morse et al. (2003), Horngren et al. (2003), Blocher et al. (1999)]. Accordingly, cost management is an information system that supports the entire managerial functions, which are: strategic management, short-term planning, operational decision-making, and control techniques [Blocher et al. (1999)]. Thus, strategic cost management is used to support strategic decisions such as selecting products, manufacturing techniques and distribution channels.

Table 1 Tools of Strategic Cost Management

Tool	Description
Value chain analysis	add value to customers ‘reducing costs, and understanding relation between business organization and booth customers
Activity based costing	an analytical tool aims to provide accuracy in allocating indirect costs.
Competitive advantage analysis	defining strategy that an organization could adopt to excel over rivals.
Target costing	cost that an organization is willing to incur according to competitive price that could be used to achieve desired profit
Total Quality Management	adopt necessary polices and procedures to met customers expectations
Just-In-Time	a Comprehensive system to buy materials or produce commodities when needed in appropriate time
SWOT analysis	a systematic procedure to identify critical success factors of an organization
Benchmarking	a process performed to determine critical success factor and study ideal procedures of other organization in order to improve operations and dominate market
Balanced scorecard	an accounting report of critical success factors about the organization. It is divided into four major dimensions: financial performance, customers' satisfaction, internal operation, and innovation and growth
Theory of constraints	an accounting report of critical success factors about the organization. It is divided into four major dimensions: financial performance, customers' satisfaction, internal operation, and innovation and growth
Continuous	conducting continuous improvements in quality and other critical success factors

source: Blocher et.al. (1999)

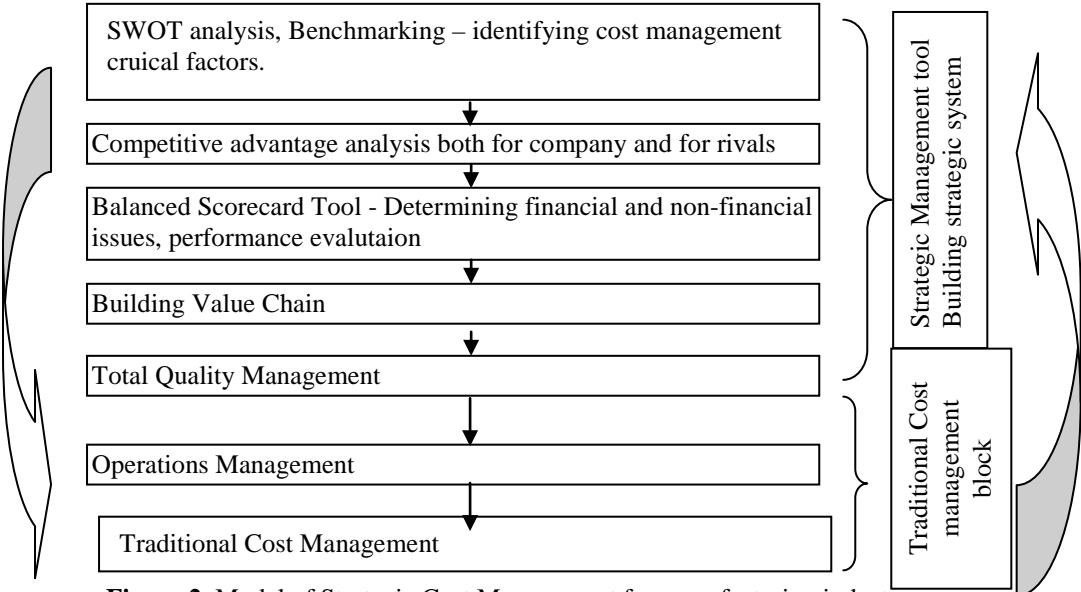


Figure 2. Model of Strategic Cost Management for manufacturing industry.

Figure 2 presents a model of strategic cost management. The model contains a few interconnected blocks as representation of continuous improvement. Consequently, that model is not related directly to strategic cost management, but presents some issues to integrate in cost management in order to improve competitive advantage system as part of long term strategic system.

CONCLUSION

Strategic cost management presented in this paper is a new concept of cost management. It is analyzed as a new system to be integrated in order to implement crucial issues needed for strategic management to help organization to create and sustain competitive advantages. It has to include long-term objectives, which are responding to client requirements comparing to competitors, ability to innovate products, quality, and efficiency. Traditional cost management instrument should be upgraded with important element from strategic management.

Authors point that there is no general acceptance of tools could be used within strategic cost management, authors presented only concept. In addition, some tools have more attention than others do.

So, on the one hand, the company needs a minimum level of innovation and therefore the less innovate ones do not export. This fact probably could explain the low export probability of minimum level innovative companies. On the other hand, on the international markets a combination of an intermediate innovative level with low wages seems to be a good competitive strategy, especially for developing countries.

Nowadays currently we see that developing countries have high tax rates and government shares relative to their state of development. The analysis also shows that high tax rates and government consumption at early stages of development can slow the structural transformation and economic growth, and the size of government expands as an economy develops over time.

In this paper we proved the importance of innovative activity to compete on the world market. This conclusion was confirmed. Also we explained briefly the difficulties in comparing results of the existing literature and in fact the sometimes apparently contradictory results could be explained by the particularities of each of the studies. This was especially so where different studies use different kinds of companies and strategies (large versus small companies, or specific sectors are discussed. This problem was clearly confirmed by the different outcomes from the models. The results of the standard model show that innovation and highly qualified human resources would be a method to reach the international standards of the world market and therefore it is necessary to compete in export markets. We analysed the results of the standard model in the existing literature and found that they are very similar to those of other studies and, and more important, it seems that the existing differences could be interpreted. So paper does not generate contradictory results. This paper confirms that the least innovative companies have the lowest export probability; this relationship is reflected by the number of studies and has no contradictions. On the other hand, the paper defines a certain negative effect for two aspects (product diversification and the size of the company) on export probability. So the companies most specialised in only one or a few products (percentage of sales related to the main product) are more competitive on the world market than the companies with a broad range of products, regarding the company innovation strategy and size.

Our final conclusion is that the innovative activities are related to export; we understand that the interpretations for the relationship presented in this paper are theoretical and abstract explanations do not allow us to clearly define them. However, the modern studies did not specify the strong linear relationship either. Nonetheless, the product strategy as a part of

innovation strategy should be analysed more broadly as causal and significant factor of export, especially in the case of the developing countries. This means that the relationship between innovation and international trade has to be analysed more broadly.

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SEGMENTATION OF CORPORATE CLIENTS IN A BANK

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ANNOTATION

The goal of this paper is to define applicable segmentation criteria for corporate banking clients based upon analyses of corporate client needs. In the first section, I summarize the principles of segmentation and segmentation specifically as it relates to bank strategy. I further analyze client needs and developments in business in the Czech Republic. Applicable segmentation criteria are proposed based upon corporate client need analyses and on a comparison of the segmentation criteria used by leading financial institutions in the Czech Republic and the European Union.

KEY WORDS

Segmentation, segmentation criteria, segment, bank strategy, corporate client.

JEL classification: G21

INTRODUCTION

The planning of overall bank strategy and the bank's marketing and business activities should be based, in addition to other factors, upon the needs of clients in the particular market. Proper targeted client segmentation may thus become a basis for successful planning and for the selection of suitable markets and marketing procedures by the bank.

Client segmentation thus serves as an important springboard for determining business strategy and is currently considered a principle for banks as they develop marketing approaches. Segmentation is defined as a process of grouping clients into segments. Clients in a particular segment have identical or similar requirements and needs which may be subsequently addressed by suitable products or services. Client segmentation therefore involves the classification of clients into segments, with the intent of answering the needs of the individual segments, and thus individual clients, in the best manner possible.

The client segmentation process takes place in several phases. First, the market to be segmented must be selected along with the type of client representing the focus. This phase is primarily tied to the question of whether the bank's chief focus is on private clients or business clients. This controls the amount of attention paid to the private versus business client segment. The second phase lies in determining the segmentation variables. Segmentation variables or segmentation criteria are criteria which allow differences or similarities between clients and their needs to be defined. In the third phase of the segmentation process, the individual segments are designated and analysed. The proper segmentation criteria must be selected. These are then used to designate client segments for further analysis. The fourth phase of segmentation lies in analyzing individual client segments and preparing a marketing approach and suitable products and services for particular clients.

AIM AND METHODOLOGY

This paper aims to propose suitable segmentation criteria for corporate bank clients based upon the analysis of corporate client needs.

To propose segmentation criteria for a bank's corporate clientele, the clients' needs must be known, as well as their expectations for bank products and services. The segmentation criteria currently employed by banks in the Czech market and the EU must also be compared since the Czech Republic adopted EU criteria on January 1, 2005. It must be emphasised that no set

of segmentation criteria is perfect, neither is any market segmentation – exceptions will always arise. Banks must always keep their clients' interests and needs uppermost and continuously verify whether the segmentation criteria they have selected correspond to client needs.

RESULTS

Nature of Segmentation

Using segmentation, banks can individualize and quantify groups with identical behaviour, characteristics, needs and requirements they may wish to address. A precise description of who clients are and what they are requesting, i.e., their targeted identification, is an important step in the bank's understanding of its clients' behaviour.

Proper targeted client segmentation forms the basis for successful planning and selecting suitable markets and marketing procedures. A failure to understand or designate appropriate client target groups often results in marketing and sales campaigns that don't work and lead to poor economic overall results.

“Market segmentation” may give rise to an image of the market being divided, with the bank focusing on the most advantageous segment. But in fact the process is more complex. The principle of targeted marketing requires that significant market segments be understood. If targeted marketing is to succeed, it must respect market similarities and differences and not be based on a random distribution of clients into segments. Further, the segments created are not permanent. Segment characteristics may change over time, as may the way they are manifested and their size. The segments selected must thus be continually monitored to ensure they retain their profile and that their market orientation still corresponds to the segment as originally designated.

Key Phases in the Segmentation Process

Before the segmentation process begins, the type of market to be segmented must be designated, along with the factors influencing client behaviour. Segmentation criteria must be defined highlighting the differences and similarities between individual groups of clients used to define the segments. The segments must be defined in a way which clarifies what a suitable combination of marketing tools for that specific segment would be. The segmentation process may be divided into four phases: market definition, selection of segmentation criteria, segment creation, segment analysis and marketing mix preparation.¹

Corporate Bank Client Needs

Corporate client needs differ significantly depending upon the type of company involved. For example, the needs of industrial enterprises, construction companies and municipalities differ from those of businesses with respect to investment. But the most significant differences may be seen between large, medium and small enterprises.

Large, stable enterprises with a significant market position usually do not invest in development as much as smaller, still developing companies. Large enterprises usually fund their operations using current asset credits or factoring. They commonly use leasing for technology and automobiles and standard banking choices such as current accounts, home banking, payment cards, etc. Their needs mostly concern insurance for exchange rate or interest risks, sophisticated deposit services, quality and prices. Their motivation programs focus on providing employee benefits in the form of retirement insurance of life insurance. This is an opportunity for the bank to boost cross-selling with these clients and reinforce their business relationships.

¹ KOTLER P. Marketing Management. 7th edition Prague: Victoria Publishing, 1992. p.280 ISBN 80-85605-08-2.

Midsize businesses with a significant market position often have needs similar to large enterprises. They usually do not have large investments, using only existing bank services, including funding. They emphasize quality of services and banking product prices. But still developing midsize businesses which have not reached the required market share have different needs. They are focused on investment, development and making use of standard banking services, for which they request quality. Here the bank has enough room to structure client funding both in terms of investment and operations and to offer products within the banking group, for example using technology leasing. The bank may introduce the client to factoring services, connected receivable insurance or the chance to secure exchange rate risks. This segment is particularly attractive to banks because bank product prices are not the client's first concern.

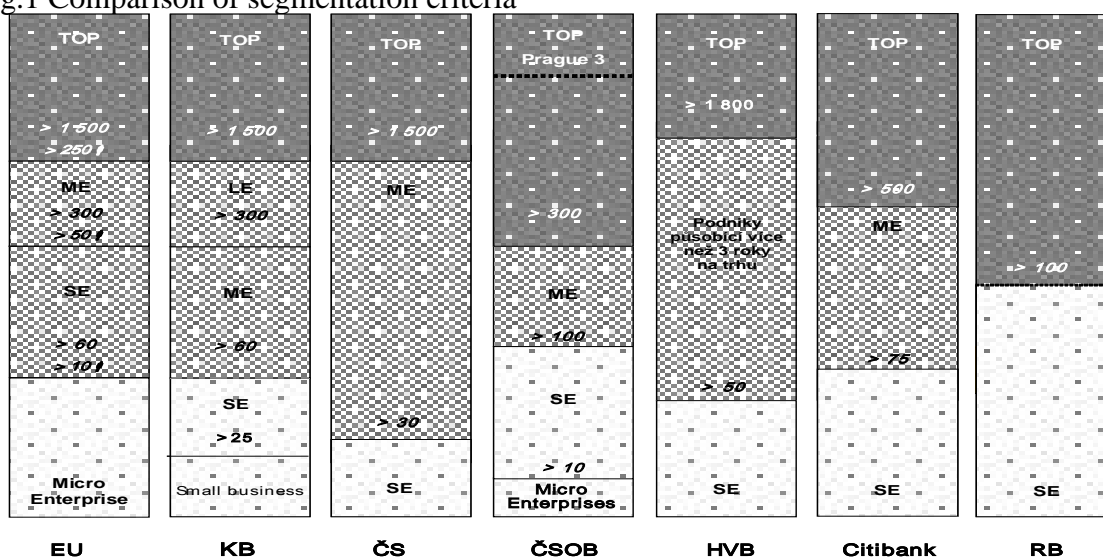
Most small enterprises have been operating in the market for a short period of time. These enterprises are still developing and make use of standard bank services without putting significant emphasis on the quality and prices of services provided. Most start to use credit products by replacing overdrafts with operational loans and make bigger investments in the construction and reconstruction of their companies. Here, an opportunity arises for banks to fund their investment needs via technology and automobile leasing and by offering products from within the banking group. Key products used by small enterprises are current accounts, internet banking and payment cards. Using of loans increases in hand with company size. In contrast, overdrafts decrease with the size of the enterprise.

Comparison of Segmentation Criteria for Corporate Clients of Selected Banks in the Czech Market with the Segmentation Criteria Designated by the European Union

Every financial institution designates segmentation criteria based upon the strategy selected and the institution's objectives. Because the Czech Republic adopted European Union segmentation criteria on 1 January 2005, banks operating in the Czech marketplace should make use these criteria, including segment titles. The bank designates other segmentation criteria and client services need not correspond precisely to the EU segments: rather, this is dependent upon on the bank and its strategy.

The following figure compares the segmentation criteria for selected banks in the Czech market with the segmentation criteria designated by the EU.

Fig.1 Comparison of segmentation criteria



Source: Komerční banka, a.s. marketing research (the values indicated represent the sales of individual enterprises in CZK)

Legend:

- **!** number of employees
- TOP – Large enterprises
- ME – Medium enterprises
- SE – Small enterprises
- Micro Enterprises
- Small businesses – Micro Enterprises

The graph makes clear that every bank employs various segmentation criteria for breaking clients down into segments in keeping with its strategy. Banks use various segmentation criteria and name individual segments variously.

The segmentation criteria of key players in the Czech banking market– Komerční Banka, a.s., Česká Spořitelna, a.s. a Československá Obchodní Banky, a.s. – are very similar and approach the segmentation criteria designated by the EU. As the figure clearly shows, these banks focus on the small and midsize enterprises which drive the Czech economy and form the majority of all companies in the CR. All banks have a segment created for small and midsize enterprises, but each bank uses different segmentation criteria for placing clients into these segments. None of the banks listed takes the number of employees into account as a criterion. All banks follow company sales.

Designating Corporate Client Segmentation Criteria

Most banks operating in the Czech market use client sales achieved over the latest fiscal year as the key criterion. This was formerly not so. Most banks took client credit turnover as their basis. Credit turnover refers to the total sum accepted in the client's account over the designated period (usually a calendar year). Client credit turnover is not a criterion which provides maximum information on company size because it may be distorted by various effects (e.g., fund transfer from one client's account to his/her other account, derivative operations when funds are transferred to the bank's internal accounts and back, and especially payments made at two or more financial institutions). The banks should therefore use the client's income based on the tax return submitted as the key segmentation criterion.

Ownership structure is a less frequently used criterion. It is necessary to verify who in fact owns the client, especially if a legal entity is the majority owner. Even a small company with profit amounting to CZK 10 million may be a member of a large, economically interconnected group and must be approached as such. Attention should also be paid to enterprises owned by the state, state organizations and municipalities. Some banks have a special municipality segment in which municipality experts take care of these clients.

“Loan exposure” should be regarded as another key segmentation criterion. Client loan exposure represents the volume of loans provided or approved as well as off-balance sheet transactions per client. Banks should consider this criterion important given the profit generated from such transactions, from bank asset management and from taking into account the approach to clients with a large volume of loan exposure.

Based upon these analyses the following segmentation criteria are proposed:

- client profit,
- loan exposure,
- membership in an economically connected group.

State-owned clients, state organizations and municipalities should receive special attention.

Segment Definition Based upon the Segmentation Criteria Designated

The third step in segmentation lies in designating specific corporate client segments. Segment creation and subsequent allocation of clients are up to the bank and form a prerequisite for proper targeting of the bank's business policy.

The author proposes to define the basic segments using the EU segmentation criteria:

Fig.2 Basic segments proposed

Micro enterprises	turnover < CZK 60 million
Small enterprises	turnover < CZK 300 million
Medium enterprises	turnover < CZK 1,500 million
Large enterprises	turnover < CZK 1,500 million

Source: Author

This is only a basic breakdown to be expanded by relevant segmentation criteria because turnover does not suffice as the sole criterion.

The author further proposes to break down the segment of small enterprises into sub-segments because a client with CZK 10 million in turnover will very likely have different needs than a client with CZK 60 million in turnover. Therefore, a breakdown of small enterprises into two sub-segments is proposed:

- mini enterprises with turnover up to CZK 30 million and
- micro enterprises with turnover up to CZK 60 million.

For the small enterprise segment, no further supporting segmentation criterion is necessary (given the size of these clients and the products they use).

Loan exposure is proposed to be added into the small enterprise segment. The small enterprise segment would include clients with CZK 60 – 300 million in turnover and clients with turnover of less than CZK 60 million but a loan exposure exceeding CZK 10 million. This criterion is added because of the development and growth of small enterprises in the Czech market. Banks should focus on clients which make greater use of financing. These clients bring the bank more profit than those who do not use financing at all. It is also likely these clients are going to grow and that is why it is necessary to pay attention to them. A loan exposure of CZK 10 million for a company with turnover lower than CZK 60 million is not negligible and may testify to planned company development.

The author proposes no further modifications to the midsize enterprise segment in terms of adding an auxiliary segmentation criterion. These are established enterprises and their needs do not change in any significant way.

The large enterprise segment should be a subject of attention both because of the segmentation criteria designated but also by virtue of its size. Enterprises with a turnover exceeding CZK 1,500 million should be served by the most experienced bank consultants. From this point of view, it would be appropriate not to pay attention solely to company turnover but also to the financing services used by the client and the associated loan exposure criterion. Further, membership in an economically interconnected group should be taken into

account. The large enterprise segment therefore includes clients fulfilling the following parameters:

- turnover exceeding CZK 1,500 million
- loan exposure exceeding CZK 500 million
- companies which are members in an economically interconnected group which achieved a turnover exceeding CZK 300 million.

Clients with a loan exposure exceeding CZK 500 million who make use of sophisticated financial services are significant partners for a bank. That is why such clients must be provided the highest quality services, using the bank's best expertise.

Fig. 3 Proposed segmentation criteria

Micro enterprises	mini enterprises turnover < CZK 30 million
	micro enterprises turnover CZK 30 - 60 million
Small enterprises	turnover CZK 30 - 60 million enterprises with a turnover < CZK 60 million and credit exposure > CZK 10 million
Medium enterprises	turnover CZK 300 - 1,500 million
Large enterprises	turnover < CZK 1,500 million enterprises with a turnover < CZK 1,500 million and credit exposure > CZK 500 million enterprises with a turnover > CZK 300 million belonging to ESKK with a turnover > CZK 1,500 million

Sources: Author

CONCLUSION

The segmentation criteria proposed are in line with the EU segmentation criteria, correspond to CR market development and reflect the needs of corporate clients. Concentration of the largest and most significant clients in the large enterprise segment ensures service by the bank's expert consultants and custom-made services. The bank has also room to create product packages specifically designed for and answering the needs of individual client segments.

Proper breakdown of clients into segments is important for the quality of services provided, something clients look for and require. Providing quality services represents a significant competitive advantage in the banking market and that is why banks pay ever greater attention to the segmentation process.

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APPLICABILITY OF IFRS IN THE PRACTICE OF CZECH SMES: INSIGHT OF CZECH ACCOUNTING PROFESSION REPRESENTATIVES

Jiří Strouhal

ANNOTATION

The originality of the paper also consists in offering insights of Czech accounting profession representatives onto the issues of IFRS/IFRS for SMEs implementation. There was employed an interpretive research design to provide deep, rich understanding and theoretical generalisation of approached field of research. The interviews with the representatives of accounting profession hope that the major benefit of the IFRS for SMEs adoption will be elimination of duplicate accounting, unification of the accounting system within international groups and the higher comparability of accounting data.

KEY WORDS

implementation, IFRS, IFRS for SMEs, accounting profession, Czech Republic, CEE countries

JEL classification: M41, G30

INTRODUCTION

Economists consider that Central and Eastern European countries have pretty well developed market economies, with an institutional environment substantially similar to that of developed Western economies (Rapacki and Prochniak, 2009). This is why these countries are considered good investment opportunities and worthy of conducting researching in. However, the accounting (financial reporting) models in these countries display both similarities with and differences from those in developed economies. Generally, they underwent several reforms, being modelled after one or more models of developed countries, and especially after the European Directives and International Financial Reporting Standards (IFRS), but their particularities strongly affect the way in which the accounting model is operated.

Small and Medium-sized Enterprises (SMEs) constitute the most dynamic sector of CEE countries and represent approximately 99% of the business entities in each such country. In the European Union these entities have accounting obligations, but recently the EU began focusing on better regulation, modernization and simplification of legislation for them. Consistent with its intent to address the need for international comparability in terms of financial reporting by SMEs, International Accounting Standards Board issued in July 2009 the International Financial Reporting Standard for Small and Medium-sized Entities (IFRS for SMEs).

The IFRS for SMEs is considered as a response to strong international demand from both developed and emerging economies for a simpler version of IFRSs (Jermakowicz and Epstein, 2010), and the project had the support of the majority of national and regional accounting standard-setters throughout the world, including the EU. But EU's position vis-à-vis the IFRS for SMEs is difficult to assess, because different countries and different stakeholders have different positions. The European Commission held a consultation in 2010 in order to understand the view of European stakeholders on the IFRS for SMEs, and the European Financial Reporting Advisory Group conducted a compatibility analysis.

Main objective of this paper is to find out the perception of the representatives of Czech accounting profession about the possible implementation of the IFRS, or IFRS for SMEs respectively as a reporting framework for the Czech companies.

LITERATURE REVIEW FOCUSING ON ACCOUNTING CONVERGENCE

The process of accounting convergence and the issues related to the implementation of IFRSs worldwide are topics of much interest recently for standard setters, researchers and practitioners. Previous studies on IFRSs application documented an increase in comparability, transparency and quality of financial reporting (Jermakowicz, 2004). Significant impact on the companies' reported equity, increasing volatility of results and a diminishing degree of conservativeness were reported (Jermakowicz, 2004; Jermakowicz & Gornik-Tomaszewski, 2006; Callao et al., 2007). Also, previous studies analyzed the obstacles and difficulties in the application of full IFRSs (Larson & Street, 2004; Jermakowicz & Gornik-Tomaszewski, 2006).

The national characteristics, i.e. each country's accounting culture and traditions, have developed over (a long) time in close relationship with the political, social and economical environment of each of them, influencing the way in which IFRSs are applied. Factors such as the role of the State, the type of legal system in place, the preferred providers of finance, the relationship between accounting and taxation, the culture, or the role of the accounting profession significantly influence accounting practices (Nobes & Parker, 2008). Also, previous research indicated that the lack of political will, rooted in local culture and a strong national outlook prevent a truly harmonized accounting framework (Callao et al., 2007), that a magnitude of differences exists between countries and high costs to eliminate them (Jermakowicz & Gornik-Tomaszewski, 2006); that local traditions exercise a strong influence on the implementation of new concepts, and that tax and legally-based orientation hinder the harmonization process (Larson & Street, 2004; Vellam, 2004).

As being a part of European Union all listed companies in the Czech Republic shall report under IFRS framework since 1st January 2005. Employees of Czech companies which were obliged to shift the reporting paradigms from Czech concept towards IFRS confirmed that this transition was not easy. Except demanding preparation, which includes theoretical preparation, implementation of new accounting rules, adjustment of accounting systems and considering the impact of the new way of reporting for the company, it is necessary to understand the philosophy of the standards and to learn new way of "accounting thinking".

In many EU countries, financial reporting is linked to taxation, which is inconsistent with IASB's philosophy and raises issues for an accurate IFRSs application, and especially that of the IFRS for SMEs. The application of the IFRS for SMEs will imply breaking the traditional bond between the financial statements and the income tax return (Jermakowicz and Epstein, 2010), which makes countries such as France or Germany to oppose to this standard. On the other hand, many emerging markets that became 'new' EU members have oriented their accounting model towards IFRSs (Sellhorn and Gornik-Tomaszewski, 2006), but they cannot be viewed as a homogeneous block because of their different approaches to accounting reform. Rodrigues and Craig (2007) underlined that these countries should adopt standards which are relevant and useful for them and assess the costs and benefits before making a decision.

As already mentioned the accounting legislation in the Czech Republic (with the exception of interpretations) is issued by Ministry of Finance Czech Republic (MF CR). According to the current position of this organ (European Commission, 2010) there could not be expected an obligatory adoption of IFRS for SMEs in the Czech Republic unless required by the European Union. MF CR hopes that IFRS for SMEs will not be widespread due to the differences of

local legal frameworks, national economics and the structure of the companies in particular EU countries. For this reason is preferred the revision of current 4th and 7th EU Directive according to current trends and needs.

MF CR also argues that IFRS for SMEs could not bring a higher comparability level as there are not defined any official forms of financial statements and IFRS for SMEs (as well as big IFRSs) just determine what shall be disclosed. Despite of this pessimistic view MF CR believes that IFRS for SMEs might be beneficial just for companies that are subject of consolidation process as it would simplify this process.

RESEARCH METHODOLOGY

Main objective of this paper is to find out the perception of the representatives of Czech accounting profession about the possible implementation of the IFRS, or IFRS for SMEs respectively as a reporting framework for the Czech companies. For this purpose there have been interviewed the typical representatives of accounting profession, i.e. preparer (I1), auditor of financial statements (I2), user of financial statements (I3), representative of professional chamber (I4) and representative of accounting regulator (I5). The structured interview consisted of 10 questions about IFRS and IFRS for SMEs implementation. Six questions were common for all interviewees; four questions were based on interviewees' profile.

RESULTS

The views of interviewees vary when discussing the scope of companies which shall implement IFRS for SMEs. Generally they are for application of this standard by joint-stock companies and limited companies with the special consideration of public interest. Interviewee I3 is aware that IFRS for SMEs could represent an incredible administrative burden for small companies.

Interviewee I2 wonders about the definition of the companies with public interest. "According to this definition (financial sector excluded) there is expected also the number of employees exceeding 4,000. There is a question, whether this definition based on Czech Act on Auditors is not too liberal and why the number of employees is not lower, e.g. 3,000 – in such a case we could have much more companies which have to apply the full set of IFRSs. Of course other companies will apply IFRS for SMEs. There is quite hard to consider as a criterion a turnover – you can reach different turnover as a trader (however it depends on commodities) or as a provider (e.g. services with pretty high value added)."

Application of IFRS for SMEs in the Czech Republic mean a total change of accounting thinking from rule based to principle based. All interviewees believe that the major costs of a possible application of the IFRS for SMEs will be the training expenses and costs with the preparation of second financial statements based on Czech accounting regulation due to the tax purposes (I2, I4, I5). Additional costs shall be also expected with the upgrade of accounting software (I2, I3, I5). Interviewee I1 concludes: "The major costs will be about high quality training and training materials (literature) in Czech language – accounting under IFRSs is not about bookkeeping, which is traditional in our area, but about reporting and presentation. It is not a job for just one person in company, but it will be about collaboration of much more people. This I consider as a problematic, as a lot of managers do not have a good financial background and it is sometimes hard to explain them the accounting issues and effects of their decision on accounting profit. There is also necessary to state that the quality software adapted on the reporting under several reporting frameworks is necessary. In case that there will be any reaction of Czech tax system, it will not bring a simplification of work but it brings just another duty of record keeping from which will be necessary to transform the accounting profit based on Czech rules. This definitely has to be changed and it will be a

crucial element in initial discussion about the possible adoption of this standard in the Czech Republic (and I guess not only here). And I still do hope that it won't be cost over benefit..." Interviewee I5 also reminds that the introduction of IFRS system (and probably this also might be a case of IFRS for SMEs) to company is made by external accounting experts or auditors what is very expensive.

Interviewees believe that the main benefit of the application of the IFRS for SMEs will be the unification of accounting methods and principles which will lead towards higher comparability of accounting information. Interviewee I1 describes her experiences with "big" IFRS: "I'm experienced just with big IFRSs. I guess that after one has some good knowledge of IFRS, he'll recognize that sometimes it is really upright to report under IFRS rather than under Czech practices. Of course it will have a substantial impact on accounting profit and its distribution, what could be less favourable for shareholders. From this point of view, in case that IFRS for SMEs will be adopted as a legal framework, it has to be really simplified from big IFRSs and all issues have to be explained (what's a problem of current version of IFRS for SMEs as issued by IASB)." Interviewee I3 concludes: "I really hope that the major benefit will be the abolishment of duplicate accounting (accounting for Czech authorities based on Czech accounting x IFRS for parent company)."

Interviewees agree that in case that the IFRS for SMEs is obligatory in whole EU, the benefits will be considerably higher. Considering the relation between accounting and taxation as a crucial issue for the eventual adoption of IFRS for SMEs, we are providing the reaction of all interviewees:

- It is necessary to harmonize tax and accounting issues. Calculation of taxes in such case has to be based on IFRS for SMEs. Otherwise it wouldn't make any sense for companies – as the burden will be higher than benefits from this standard. (I1 – preparer)
- In case that the current approach to taxation will be very same, the scissors between accounting and tax point of view will get apart. So it'll be about the reaction of Income Tax Act. (I2 – auditor)
- I can imagine that accounting units prepare their IFRS for SMEs financial statements and for the tax purposes shall be adjusted just some taxable revenues and taxable expenses. (I3 – user)
- I'm pretty aware that the situation will be very same like nowadays – citing the Income Tax Act as a tax base you have to use the profit not based on the IFRS (IFRS for SMEs) influence – i.e. to use the profit based on Czech accounting. Of course there is a question what "profit without IFRS influence" really it is, in case you are posting and reporting under IFRS approach. Therefore majority of companies calculate the differences between IFRS and Czech accounting legislation and these differences have to be a part of the tax profit calculation. From my point of view the best option would be that a taxable profit shall be a profit based on the regulation under which I prepare my financial statements, i.e. in case of IFRS for SMEs, the tax base shall be IFRS for SMEs. (I4 – professional chamber)
- I can imagine that the calculation of tax base could be same like now, i.e. accounting profit shall be adapted for non-tax deductible items. But, to be able to apply this view in practice, it'll be about the adoption of the full IFRS for SMEs or some shorter version as a Czech accounting standards. After that it will be possible to change Income Tax Act and non-deductible costs and expenses will be valid for all companies. (I5 – accounting regulator)

All interviewees are aware of a widespread of fair value due to the less liquidity and efficiency of markets in the Czech Republic. It is therefore quite interesting the auditor's view (I2): "I'm for the applying of fair value only in case there exists for the asset/or liability active

market. I'm for the elimination of the qualified estimation – in such a case there shall be rather preferred historical cost.” Interviewee I5 agree and follow up: “Fair value accounting has a general problem in case, that the fair value is not objectively measured. Fair value shall be used “prudently” in SMEs books and this value has to be really reliable and objective. From this point of view I rather prefer historical costs accounting with impairment tests.”

CONCLUSION

Summarizing the results of this research there shall be highlighted following issues:

- professional accountants hope that the major benefit of the IFRS for SMEs adoption will be elimination of duplicate accounting, unification of the accounting system within international groups and the higher comparability of accounting data,
- elimination of the linkage of national accounting system to tax system or preparation of such improvements of tax legislation that will make IFRS for SMEs capable to apply as a reporting framework,
- professional accountants and regulator are aware of the higher initial costs linked to shift of reporting frameworks,
- professional accountants and regulator are for sensitive use of fair value approach,
- professional accountants and regulator believe that the major users of financial statements based on IFRS for SMEs will be capital providers and potential investors.

Acknowledgment

This paper is one of the research outputs of the project P403/11/0002 registered at Czech Science Foundation (GAČR).

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SELECTED MACROECONOMIC FACTORS AND THEIR RELATIONSHIP TO IMPAIRED LOANS OF DEUTSCHE BANK

Boris Sturc, Natalia Zoldakova

ANNOTATION

There are three hypotheses considered in this article. As first stands hypothesis of mutual horizontal correlation of macroeconomic indicators in EU17 and in Germany separately. It establishes that these factors are highly correlated. Second hypothesis says that the same factors are correlated also vertically – between Germany and euro area. Third hypothesis is focused on claiming that the portion of impaired loans on total loans of Deutsche Bank correlates with the development of significant macroeconomic factors. According to the findings will be created a model quantifying mutual relationship of portion of impaired loans and important macroeconomic factors.

KEY WORDS

stepwise regression, impaired loans, macroeconomic indicators, forward selection, euro area, Deutsche Bank

JEL classification: G21

INTRODUCTION

This article is created as addition to research that primarily focuses credit risk management in commercial banks. We pay attention mainly to macroeconomic impacts because the principle of complete observation is based on proceeding from macroeconomic view to microeconomic. Possibility and level of impact of these indicators is deduced from existence of common currency area, similar legislation and other historical factors. Mutual relations between factors are demonstrable but these relations change in time so that there can rise differences that could be caused by modifications of relevant time periods applicable to a certain monitored relationship of two or more indicators. The topic of correlation of these factors is permanently current, it is observed also in case of permanent considering euro area to be optimal currency area (for instance in comparison with US)

Germany will be compared vertically because it is significant for smaller economies like Slovak Republic (export and import partner), for euro area and furthermore for European Union as a whole. Differences between indicators in euro area and Germany could be a threat for euro area functionality in case of extreme values or they can signal imbalances that could result into assets bubbles, to overheating or lagging.

Third we focused on Deutsche Bank. The question of optimal (or acceptable) portion of impaired loans is current in cause of permanently increasing requirements on banking activities with accent on safe and low-risk entrepreneurship. These requirements serve as a frame for profitability and risk of banking operations.

Some groups of authors prefer analysis of all the levels of classified loans (or assets in general) but this article includes existence only impaired loans (not all the classified) that are determined by following definition:

The impairment amount of a loan is defined in mathematical terms. The lender calculates this amount by subtracting the amount expected to be recovered on the loan from the initial book amount of the loan. Impairment may be called "delinquency" or "default" in common

language. Delinquency means enough time has passed since the payment was due for the lender to suspect the payment will not be made. Default means the borrower has failed to meet the terms a lender provided to restore a loan from delinquency. In both cases, the loan would be considered impaired if the lender feels there is no evidence the debt will be collected based on the financial status of borrower, credit status and other factors.

AIM AND METHODOLOGY

First goal is analysis of selected macroeconomic factors for whole EU17 and correlations of their values in period of 9 consecutive years always on 1st January of each year (if the data on this date are not available, we use first available day after this date). This analysis should point to cohesion of development of selected factor of the analysis because their mutual relations are essential in establishing the basis for following analysis.

Macroeconomic indicators that will be observed for their impact on defaulting of subjects could be similarly with many authors split into following groups (1): cyclical variables, indicators of price stability, indicators of households and businesses, indicators associated with financial markets and external indicators. Indicators of household and businesses in most cases can be classified into one of the remaining groups and therefore we will consider only the four remaining groups (2)

Clear list of macroeconomic variables considered in this observation is in the Table 1.

Fig.1: List of macroeconomic variables

cyclical variables	level of GDP in consumer prices, number of employed, average wage index, average monthly wage
indicators of price stability	M1, PPI, inflation
indicators associated with financial markets	3M Euribor, interest rate
external indicators	EUR/USD, export, import,

Cyclical indicators: this group consists of variables that describe the overall state of the economy, as regards the level of GDP, number of employed, average wage index and the average monthly wage. It is expected to be negatively correlated with the portion of impaired loans to businesses and households. The increase in above mentioned is a positive sign of economic development and is therefore lower probability of failure in paying back the loan. Conversely, increase of unemployment causes that some subjects, especially households lose ability to repay loans and the portion of impaired loans will grow.

Indicators of price stability: the main indicator in this group is inflation. We assume that its value is negatively correlated with portion of impaired loans because with growing inflation decreases real value of loan and therefore businesses and households would be failing in smaller extent. With inflation are closely linked also other variables like producer prices index and the amount of monetary aggregate M1. They have in terms of repayment of loan same impact as inflation.

Indicators of financial market: interest rate for up to 1 year, from 1 to 5 years, over 5 years, 3 month Euribor

External indicators: regarding the impact of oil prices on ability of firms and households to repay loans, we know with certainty that rise in oil prices increases costs of households and businesses and thus affects portion of impaired loans. Also about export we can say that its growth means improving of situation of enterprises (in turn their positive development has positive impact on households and that improves their repayment activity). On the other hand, we cannot say what impact will have the exchange rate EUR/USD, its depreciation or

appreciation on financial situation of sectors. On one hand, strengthening of currency is a positive sign of economic development and households and companies should consequently perform better and should also fail in repaying loans in smaller extent. But on the other hand, strengthening the currency makes our products more expensive in foreign markets and that negatively affects position of our businesses reducing their competitiveness and thus the number of subjects that fail to pay back increases.

Our second objective is to compare these factors between euro area and Germany. Thus we see extent to which corresponds development of these factors between this country and the EU17 as a whole. This fact will be crucial in determining the impact of global variables (such as EUR/USD or M1) on German economy and correlation of development of these indicators with emphasis on national difference and global view at the same time.

Third objective is to specify correlation of development of selected macroeconomic indicators with portion of impaired loans on base of foregoing analyses and on base of calculated portion of impaired loans in relation to total loans of selected bank group with headquarters in Germany, to find their mutual relationship and to quantify it. The portion of impaired loans is based on official data from annual reports published by Deutsche Bank on annual basis.

RESULTS

In pursuing the first objective, we primarily focus on monitoring indicators for the entire EU17. Significant correlation is seen between Brent and PPI, while with CPI shows Brent almost no relationship. PPI and outstanding level of M1 is also significantly positively correlated. Significantly negatively correlated is unemployment with 3M Euribor, and therefore slightly weaker but also quite significantly with interests on loans in all 3 categories. Wages development is positively correlated with the development of PPI, with the outstanding level of M1 as well as with its index.

For Germany we can state similar results as for the entire EU17 because of the common currency and common data for monetary aggregate M1. Differences are obvious in case of correlation of unemployment, which is not significantly correlated with any of the selected factors like it was in case of EU17. Significant negative correlation between interest on loans and M1 shows natural relationship of these variables in the economy. Export and Import is logically positively correlated with PPI.

From vertical point of view on correlations as the second goal of the article can be picked up naturally high positive correlation between PPI of Germany and EU17, while CPI shows less clear values. Germany in relation to the entire EU17 has negative values - although not significant. As to wages, Germany does not correlate with EU17 and inflation in Germany correlates similarly to EU17.

Portion of impaired loans in DB portfolio correlated negatively with PPI in euro area but especially with Germany, while with oil prices was relatively low negatively correlated. Higher negative correlation was confirmed in relation to aggregate M1. The highest correlation appeared in relation to export and import in negative direction and with net export in positive way with EU17 and negative with Germany. Other factors that could be considered as significant - such as unemployment or wages - showed weaker relationship to portion of impaired loans.

Final correlations and their comparison proved similar results for relationship with EU17 as with Germany. Undeniable factor is common currency, unmeasured value of M1 for

Germany separately, as well as the relation between Euribor and interest rates monitored. Negative correlation value achieved (-0.9227) and after this value is the correlation of Deutsche Bank with export, import and net export of EU17 and also Germany (the highest is - 0.88204 with EU17 export). It can be concluded that Deutsche bank group clearly correlated with monetary aggregate M1 negatively. Although we expected closer relationships with other indicators - like PPI, unemployment and wages, the results point to their different development in monitored period. Partially could be considered time lag but not higher than one year because the insolvency of debtors in case of households and companies appears following changing wages and unemployment and demand decrease. With involving a lag of 1 year would be results similar.

Model creation:

In order to create model that includes significant factors for influencing impaired loans for each bank in relation to EU17 and Germany, we used stepwise regression. It includes regression models in which the choice of predictive variables is carried out by an automatic procedure. We used one of the often used approaches – forward selection – because it involves starting with no variables in the model, trying out the variables one by one and including them if they are statistically significant.

For model were selected the most significant factors:

EUR/USD

PPI

M1 level outstanding

M1 index

Net export

DB in relation to EU17

The model resulted following values:

Fig.2: Model results DB vs. EU17

		<i>Standard</i>	<i>T</i>	
<i>Parameter</i>	<i>Estimate</i>	<i>Error</i>	<i>Statistic</i>	<i>P-Value</i>
CONSTANT	0.16544	0.0358274	4.6177	0.0017
PPI	-0.124408	0.0317829	-3.91433	0.0045

Since the P-value is less than 0.05, there is a statistically significant relationship between the variables at the 95.0% confidence level. The equation that relates to used model is:

$$DB \text{ Impaired Loans/ Total Loans} = 0.16544 - 0.124408 * PPI$$

DB in relation to Germany

Fig.3: Model results DB vs. Germany

		<i>Standard</i>	<i>T</i>	
<i>Parameter</i>	<i>Estimate</i>	<i>Error</i>	<i>Statistic</i>	<i>P-Value</i>
CONSTANT	0.184399	0.0363336	5.07515	0.0010
PPI	-0.142953	0.0326306	-4.38096	0.0023

$$DB \text{ Impaired Loans/ Total Loans} = 0,184399 - 0.142953 * PPI$$

Forward selection determined PPI to be the only significant factor in this case.

CONCLUSION

Our findings lead to a conclusion that some of indicators were correlated strong and some less significantly. That rejects first hypothesis as it says that all the indicators should be correlated strong. Although Germany is a member state of EU17, we cannot unify the volume of impact of macroeconomic factors for all the members. When arguing with cohesion of M1 with other factors, it is possible to simplify its significance to a fact that increasing liquidity on financial markets is linked with growth of economy as a rule. The same argument could be used for EUR/USD and Euribor.

Second hypothesis was partially true. In relation to horizontal correlation were the values of vertical correlation higher in absolute value in most of cases. In lot of cases of local statistical data (that means the data common for all the countries of euro area were not compared) occurred correlation with level of 0.9 – 1. In other cases were the results caused by nonfinancial factors – for instance the difference between labor market in euro area and Germany is important and the result of reaction to macroeconomic situation can be influenced by social policy or focusing on particular sectors of economy (correlation in unemployment - 0,386). Also wages pointed to lower positive correlation within Germany and EU17 (0,688). Regarding inflation, it was quite correlated (0,869). In this case showed the most extreme results net export that was not correlated really much (-0,717). GDP showed correlation of 0,863.

Third hypothesis was rejected following the results of final correlation of macroeconomic indicators and development of portion of impaired loans. Although we included bank group and not only bank separately, it is not possible to confirm strong correlation between factors and portion of impaired loans. As this strong relationship was not proved, we focused also on lower correlations of these variables and impaired loans. EU17 indicators show better values than local factors. But in general is not possible to unify a relationship of certain factor (or factors) with the portion of impaired loans with unified impact symbolized by similar correlations (when using selected objects).

Despite determined correlation values we used for quantifying of relationship between factors and impaired loans stepwise regression. It enabled us to select significant macroeconomic indicators that were selected from previous set of factors according to correlations. The results of regressions with independent variables used for EU17 and for individual country pointed to significance of one factor - for DB it was PPI. In spite of strict selection is acceptable conclusion that macroeconomic indicators impact impairing loans in comparison with microeconomic indicators not significantly but this observation with larger statistical data could show different results. Our statistical data set is tied to developed countries and their macroeconomic conditions are relatively stable.

After all can be concluded that our findings lead to assumption that in the major economies of euro area depends the portion of impaired loans in relation to total loans of bank institutions at relatively low degree on macroeconomic factors but despite this finding they must be included in risk management of banks.

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This article was created as a part of project OP VaV namely Creation of excellent workplace of the economic research for solutions of civilization challenges in 21st century (ITMS 26240120032). We support research activities in Slovak Republic. The project is co-financed by EU resources.

INFLUENCE OF A MERGER ON THE VALUE OF ASSETS OF MERGED COMPANIES IN THE CZECH REPUBLIC

Petr Valouch, Maria Králová

ANNOTATION

The aim of this paper is to assess whether mergers of companies in the Czech Republic influence the value of the total assets of merged companies in the period of three years after the merger. At the first stage of the statistical evaluation of the influence of mergers on particular accounting, financial and economic quantities of merging companies in the Czech Republic in 2001–2010, the influence of mergers on the total value of assets of merged companies 3 years after the merger is assessed in comparison with the sum of total assets of merging companies as of the date of merger. This article is one of research outputs of the project of the Czech Science Foundation no. P403/11/0447 - The Analysis of Taxation and Accounting Practices during Mergers.

KEY WORDS

Merger, total assets, financial statements, influence of the merger on the value of total assets.

JEL classification: G34

INTRODUCTION

The issue of economic, legal and other motives for mergers, the efficiency of mergers, their development and trends have been discussed by many authors [1], [2], [5]. Domestic authors dealing with mergers usually concentrate on the analysis of their development without a deeper analysis of their economic impacts [3], [4]. An analysis of economic effects of mergers is still missing for the Czech Republic, both because it is difficult to obtain the necessary data as relevant economic data and financial statements of merging and merged companies are not published and persons responsible for preparation and implementation of mergers are often groundlessly unwilling to provide external parties with internal motives and reasons for mergers of the companies they control or own. However, to finalize the process of a merger properly and successfully, it is necessary to verify whether the position of merged companies in the market has been strengthened and the economic efficiency of their activities has been increased. Our research evaluates the effect of mergers of entrepreneurial entities with headquarters in the Czech Republic in 2001–2010 on selected accounting and economic indicators of the merged companies with the aim to reveal troublesome matters and impacts of mergers of these entities on their economy and position in the market. The first outcome of the research is an analysis of the influence of mergers on total assets of merged companies in the period of 3 years after the merger.

AIM AND METHODOLOGY

The aim of this paper is to assess whether mergers of entrepreneurial entities with headquarters in the Czech Republic implemented between 2001 and 2010 influenced the value of total assets of the merged companies in the period of 3 years after the merger (or its decisive day) in relation to the sum of the values of total assets of the merging companies as of the decisive day. The period of three years after the merger has been chosen to reduce the effect of some accounting methods demanding revaluation or exclusion of some assets from the balance sheet of the merged company and also because it is assumed that the three-year

period is sufficient to exclude short-term effects of the merger such as the re-setting of company processes in the merged company that occur immediately after a merger and can have an essential effect on the evaluation of economic parameters of the merger. The data in the Trade Bulletin and the Trade Register of the Czech Republic show that 2396 mergers of entrepreneurial entities took place in the Czech Republic between 2001 and 2010 (mergers implemented by non-profit or other entities have been excluded). Out of these mergers, 2255 were mergers while no new company is formed, during which one of the companies legally ceases to exist without liquidation and its equity is transferred to another existing (successor) company, and 141 were mergers while a new company is formed, during which two or more companies cease to exist without liquidation and their equity is transferred to a newly established successor company. It was essential for us to obtain financial statements of the merging companies as of the decisive day (or the day preceding the decisive day) and financial statements of the merged company from the 3 years following the decisive day. Although these accounting units are obligated to publish their financial statements in compliance with Article 21a of Act no. 563/1991 Coll., on accounting, by submitting them to the collection of documents of the Trade Register, only 314 companies, i.e. only 14 % of merging and merged companies, met this condition in all the demanded years. Two more companies had to be excluded due to the missing data in their financial statements preventing their complete analysis. As a result, 312 companies that met their legal conditions and published all necessary data of the financial statements in all the demanded periods were included in our statistical assessment of the influence of mergers on the value of total assets. At the same time, we have to note that this fact needs to be taken account of when interpreting the following conclusions. When interpreting the p-values of undermentioned tests it is essential to bear in mind the fact that the sample of 312 companies cannot be considered completely random as it exclusively consists of the merging companies that published their financial statement in compliance with the act on accounting in all 4 demanded periods.

As regards the actual statistical assessment of the effect of mergers on the size of total assets of merged companies 3 years after the merger, we proceeded in three steps. First, we looked for an answer to the question whether a merger influences the value of total assets of the merged company 3 years after the merger regardless of the size of companies. Second, we tried to answer whether a merger effect on the value of total assets of the merged company 3 years after the merger is influenced by the size of the merged company. Third, we explored the question whether the merger effect on the value of total assets of merged companies 3 years after the merger appeared in particular size categories. For these purposes, the merged companies were divided into four categories: *mini* companies with the value of total assets up to 20 million Czk, *small* companies with the value of total assets over 20 million CZK but 100 million CZK at maximum, *medium* companies with the value of total assets over 100 million CZK but up to 500 million CZK, and *large* companies with the value of total assets over 500 million CZK. Because of the small number of companies within categories *mini* and *small*, these were united into one category (hereinafter referred to as *msmall*). All statistical tests were conducted at a statistical significance level $\alpha = 5\%$.

RESULTS

Regarding the question whether a merger influenced the value of total assets of merged companies three years after, we used the paired t-test. First, the null hypothesis and the alternative hypothesis for the original variable *total assets* were formulated:

H_0 : the sum of values of total assets of merging companies as of the decisive day does not differ from total assets of the merged company three years after the merger.

H₁: total assets of merged companies 3 years after the merger are higher than as of the decisive day.

As the paired data of the original variable did not correspond to the assumption of bivariate normal distribution, the test was conducted using logarithms of total assets and the hypotheses were reformulated as follows:

H₀: logarithm of sums of total assets of merging companies as of the decisive days and logarithm of total assets of the merged company 3 years after the merger do not differ.

H₁: logarithm of total assets of the merged company 3 years after the merger is higher.

The results of the conducted paired t-test of all companies regardless of their size expressed by the total value of assets are presented in the following table.

Fig. 1: Results of the paired t-test of total assets for all companies

Variable	t-test for dependent quantities									
	Mean	Standard deviation	N	Difference	Standard deviation of the difference	t	df	p	Confidence interval -95.000 %	Confidence interval + 95.000 %
Ln_total assets	12.71352	2.102529								
Ln_total assets_3	12.61143	1.969695	311	0.102083	1.354779	1.328813	310	0.184887	-0.049077	0.253242

Source: Authors

Table 1 after converting the p-value¹ for the above formulated alternative hypothesis shows that we do not reject the null hypothesis for logarithms. We can also notice that the mean logarithm of total assets three years after the merger decreased when compared with the mean total assets as of the decisive day, which can be interpreted as a decrease in mean total assets three years after the merger. Therefore, we have not verified that a merger increases the value of total assets of a merged company at 5 % significance level.

At the second stage, we tried to answer whether the merger effect on the value of total assets of the merged companies is influenced by their size². To evaluate this we used the Kruskal-Wallis test (parametric ANOVA could not be used because the assumption of normal distribution for each of the 3 size categories of merged companies was not met). The following null and alternative hypotheses were formulated:

H₀: the size of the company expressed by the amount of total assets does not influence the merger effect on the value of total assets of the merged company.

H₁: the size of the company expressed by the amount of total assets influences the merger effect on the value of total assets of the merged company.

Fig. 2: Descriptive statistics by the size of merged companies (mini and small companies are included in one category for the reason of their small number)

Variable	Descriptive statistics						
	N of valid	Mean	Median	Minimum	Maximum	Interquartile range	Standard deviation
Difference_assets_all	312	-1687337	-5869	-246348838	12048034	213810.5	18563365
Difference_assets_large	119	-4473119	-147489	-246348838	12048034	1179993	29925254
Difference_assets_medium	119	25920	-4433	-353772	1148519	163235	199398
Difference_assets_msmall	74	37399.51	2407.5	-62662	669550	34130	120344.3

¹ $p = 1 - 0.1849 / 2 = 0.9076$

² The merger effect is represented by the difference between the value of assets three years after the merger minus the value of assets as of the decisive day.

Source: Authors

The table shows that the sample median of the difference between the values of total assets three years after the merger and as of the decisive day is the smallest for large companies and the highest for small companies. This means concerning the value of total assets that small companies gained the most, in contrast to large companies, in which the total assets three years after the merger dropped. The same conclusions are reached considering the sample means. The question is whether the differences among the companies categorized by size are statistically significant. This will be analysed using the Kruskal-Wallis test; the results are presented in fig. 3.

Fig. 3: Results of Kruskal-Wallis test

Dependent variable: Rozdil_aktiva	Kruskal-Wallis ANOVA by ranks Independent (grouping) variable: size Kruskal-Wallis test: $H(2, N = 312) = 14.52367$ $p = 0.0007$			
	Code	N of valid	Sum of ranks	Mean ranks
msmall	1	74	13271	179.3378
medium	2	119	19784	166.2521
large	3	119	15773	132.5462

Source: Authors

As the Kruskal-Wallis test results show, using the selected sample of merging companies at a significance level of 5% we were able to prove that the size of a company significantly influences the merger effect on the value of total assets of the merged company 3 years after the merger ($p = 0.0007$).

The table of multiple comparisons method shows which categories of companies differ significantly at 5% level when considering their influence on the merger effect on the value of total assets of the merged company.

Fig. 4: Results of multiple comparisons method for p values of particular company categories

Dependent variable: Difference_assets	Multiple comparison of p values (two-tailed) Independent (grouping) variable: size Kruskal-Wallis test: $H(2, N = 312) = 14.52367$ $p = 0.0007$		
	msmall	medium	large
msmall		0.981512	0.001377
medium	0.981512		0.011852
large	0.001377	0.011852	

Source: Authors

Table 4 indicates that a significant difference concerning the size influence on the merger effect on the value of total assets of the merged company was found between small companies (including mini) and large companies and also between medium and large companies. Small and medium companies do not differ significantly. The results we achieved by multiple comparisons of p values also allow the interpretation that large companies are worse off concerning the total assets 3 years after the merger than medium and small companies. These results have also been confirmed by the median test. The null and alternative hypotheses were formulated equivalent with the Kruskal-Wallis test. The results of the median test are presented in table 5.

Fig. 5: Results of the median test

Dependent variable: Difference_assets	Median test, median = -5869 Independent (grouping) variable: size Chi-square= 11.86827 df = 2 $p = 0.0026$			
	msmall	medium	large	total

≤ Median: observed	26	58	72	156
expected	37	59.5	59.5	
observed - expected	- 11	- 1.5	12.5	
> Median: observed	48	61	47	156
expected	37	59.5	59.5	
observed - expected	11	1.5	- 12.5	
Total: expected	74	119	119	312

Source: Authors

The results again show that the median test proves a significant influence of the company size on the effect of the merger on the total assets of the merged company 3 years after ($p = 0.0026$). The descriptive statistics of the median test also indicate that large companies end up worse off than medium and small companies, regarding the increase in assets.

The final part of the research endeavoured to ascertain whether mergers increased the value of total assets of the merged companies 3 years after the merger for each category of companies (small including mini, medium and large) separately. Again, the paired t-test was used for this investigation in each category but the original values of total assets were transformed to logarithms due to the need of normal distribution. This transformation also slightly breaches the normal distribution but, with respect to the size of the sets, paired t-tests are preferred to non-parametric tests. Then, the following hypotheses were formulated for particular company categories:

H_0 : the merger has no effect on the value of total assets of the merged company in the corresponding category.

H_1 : total assets of the merged company 3 years after the merger are larger in the corresponding category.

The results of the paired t-test for particular company categories are presented in the following tables.

Fig.6: Results of the paired t-test for the value of total assets of large companies

Variable	Size = large Test of means in relation to reference constant							
	Mean	Standard deviation	N	Standard deviation	Reference constant	t	df	p
Difference_log_assets	-0.442903	1.483024	118	0.136523	0.00	-3.24415	117	0.001536

Fig. 7: Results of the paired t-test for the value of total assets of medium companies

Variable	Size = medium Test of means in relation to reference constant							
	Mean	Standard deviation	N	Standard deviation	Reference constant	t	df	p
Difference_log_assets	-0.0687	0.684496	119	0.062748	0.00	-1.09486	118	0.275808

Fig. 8: Results of the paired t-test for the value of total assets of small and mini companies

Variable	Size = mini and small Test of means in relation to reference constant							
	Mean	Standard deviation	N	Standard deviation	Reference constant	t	df	p
Difference_log_assets	0.387703	1.754753	74	0.203986	0.00	1.900638	73	0.061298

The results show that the logarithm of total assets increased significantly at 5% significance level only in small (and mini) companies 3 years after the merger (the p-value of the right tailed test equals to $0.061298/2=0.0306$), meaning that total assets increased significantly. On

the contrary, this significant increase in the total assets logarithm was not proved for large companies – it even dropped in the sample.

CONCLUSION

The statistical investigations performed within our study using a sample of 312 mergers implemented in the Czech Republic in 2001–2010 lead to the conclusion that a merger does not have an influence on the value of total assets of a merged company 3 years after the merger unless we distinguish the sizes of the merged companies expressed by their total assets. At the same time, we ascertained that the size of a company significantly affects the merger influence on the value of total assets of the merged company 3 years after the merger. Total assets of the merged company increased significantly 3 years after the merger only in small (and mini) companies. Medium companies also manifested an increase³ but this increase was not significant. The total assets of large companies even decreased 3 years after the merger. We also found the highest variability in large companies but “on average” the large companies in the sample manifested the worst results concerning the increase in total assets of the merged company. The descriptive statistics illustrate⁴ that means and medians of the difference of the total assets three years after the merger and as of the decisive day are the greatest for small companies and the difference decreases with the increasing size of the company. It follows that smaller companies have a higher increase in total assets after the merger than medium and mainly large companies. For large companies we can conclude that though particular companies had a considerable increase in total assets 3 years after the merger due to the high variability of the found data, “on average” these companies have worse results than medium and small companies. Generalizing the obtained results (bearing in mind that the sample is not a random choice, as has been explained in Aim and Methodology), mini and small companies have the greatest probability that a merger will help them increase the value of total assets. Although some large companies may profit considerably from a merger, “on average” a large company can expect a decrease in total assets within the three years after the merger. If one of the objectives of a planned merger is an increase in assets of the merged company, statistical results tell us that we should recommend a merger to small companies.

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³ See descriptive statistics in tab. 2.

⁴ See descriptive statistics in tab. 2.

CURRENT APPROACHES TO ASSESS THE FINANCIAL PERFORMANCE OF A COMMERCIAL INSURANCE COMPANY

Eva Vávrová

ANNOTATION

The aim of this paper is to evaluate current approaches to assessing the financial performance of a commercial insurance company as a financial institution specializing in covering the risks taken by economic entities. Its function is also reflected in the specifics of both, financial analysis and the evaluation of financial performance in the insurance industry, which differs significantly from other types of financial institutions in other financial sectors, typically from evaluating financial performance of banks.

The paper describes partial results reached within the research project of the Faculty of Business and Economics of the Mendel University in Brno MSM 6215648904 / research 02 following the aims and methodology of the given research project.

KEY WORDS

commercial insurance company, insurance industry, financial analysis, profitability, indicator, return on equity, return on assets, return on sales, technical provisions, premiums written

JEL classification: G 22

INTRODUCTION

The financial analysis in business has become an important tool for assessing the financial situation of business entities. Less often, however, experts discuss the importance of the financial analysis of commercial insurance companies. It is mainly used by rating agencies and insurance industry supervision (BÖHM, 2004), or since 2006 supervisory authority over the entire financial market in the Czech Republic. Common indicators of a financial analysis are known, but it is questionable to what extent these indicators are applicable to the specific entity, such as a commercial insurance company. There are specially adapted ratios for financial analysis carried out in commercial insurance companies.

AIM AND METHODOLOGY

The main aim of the paper is to analyze and, with the usage of specific indicators, assess the financial performance of a selected commercial insurance company on the Czech insurance market and to draw appropriate conclusions.

Ratio analysis is one of the most widely used methods of financial analysis. The ratio indicator is calculated as the ratio of one or more financial statement items to another item or group of items (KISLINGEROVÁ, 2004). Commercial insurance companies often use liquidity ratios, activity ratios, profitability ratios and debt ratios. The basic indicators of profitability of insurance companies are according to PASTORÁKOVÁ (2006):

1. *ROA (return on assets):* EAT (earnings after taxes) / assets
2. *ROE (return on equity):* EAT / equity capital
3. *ROS (return on sales):* EAT or $EBIT^1$ / sales

¹ EBIT = earnings before interest and taxes

The specificity of an insurance function is reflected in adapted ratios used to assess the financial performance in a commercial insurance company. The following selected indicators are applicable for general insurers with a predominance of a non-life insurance branch (MESRŠMÍD, KELLER; 1998).

net premiums written / adjusted equity capital

The values of the equity adjustment are obtained by deducting the outstanding equity share capital. In the case of Allianz, this equals equity as Allianz has fully paid up equity capital.

adjusted equity capital / earned premium

This indicator measuring adjusted equity capital to net premium earned is also described as an indicator of solvency of the insurance company, called *solvency ratio* (see ČEJKOVÁ, NEČAS, ŘEZÁČ; 2005). Indicator expresses the capitalization of the insurance company.

technical provisions / equity capital

This indicator describes KOROBCZUK (2007) as the indicator of inadequate creation of technical provisions, where recommended value should be less than 350 %.

technical provisions / earned premiums

The recommended value of this ratio is between 100-150 %. KOROBCZUK (2007) calls this indicator *reserve ratio*.

RESULTS

First, I will give an analysis of basic economic indicators of the selected commercial insurance company such as progression of the premiums written, of profit and equity.

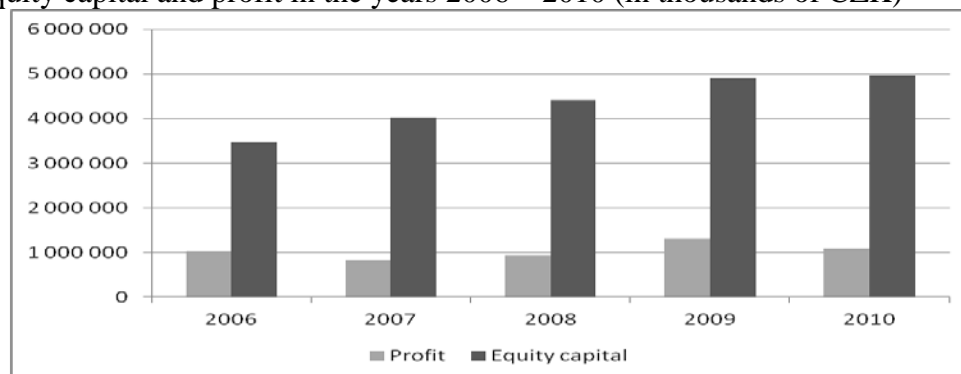
Fig.1 Gross premiums written (in thousands of CZK)

	2006	2007	2008	2009	2010
Gross premiums written	9 373 216	9 597 536	9 861 988	10 244 497	10 651 217
in it: non-life insurance	7 230 796	6 990 344	7 188 103	7 258 095	7 030 290
life insurance	2 142 420	2 607 192	2 673 885	2 986 402	3 620 927

Source: Annual report Allianz pojišťovna, a.s.

The table on Fig. 1 shows that in the period between the years 2006 and 2010 the selected commercial insurance company shows a steadily rising trend in gross premiums written. The insurance company reached an excellent level of business even in the period of financial crisis since there is not any sign of slump from the fall of 2008. This insurance company has a large advantage in non-life insurance in terms of gross premiums written. The proportion between life and non-life classes of business during the reference period is apparently changing, namely from 22.8 % up to 33.9 % in life insurance and from 77.2 % down to 66.1 % in non-life insurance.

Fig. 2 Equity capital and profit in the years 2006 – 2010 (in thousands of CZK)



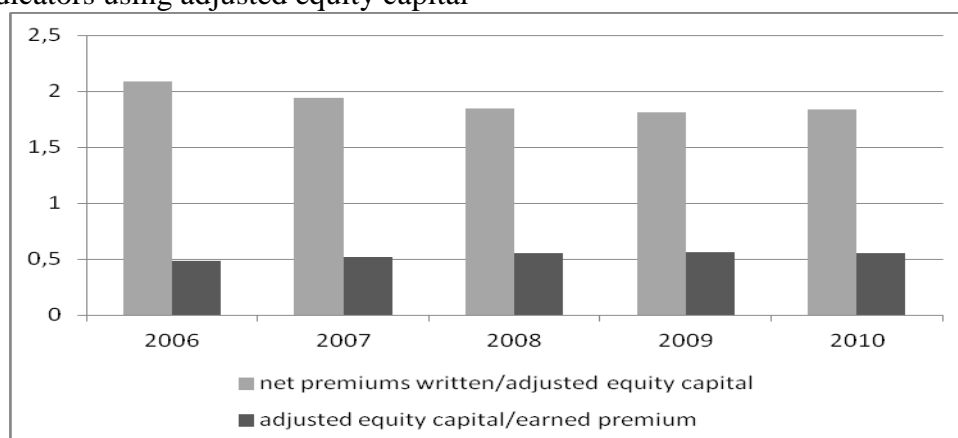
Source: own construction based on Annual report Allianz pojišťovna, a.s.

The graph on Fig. 2 shows that in the period before 2009 the insurance company led the undertaking well as its equity capital and profit² had an increasing trend even in the period after the onset of the financial crisis. Both parameters, however, point at a small decline in 2010. Now it would be speculative to conclude whether the downturn could be affected by the market situation or by a new sales service policy of the insurance company.

Analysis of ratios

For the purpose of the analysis of commercial insurance company, special ratios are used that differ from those used by manufacturing companies (MESRŠMÍD, KELLER; 1998). The only areas of indicators that are consistent with those that are commonly used are the indicators of profitability (see MAJTÁNOVÁ, DAŇHEL, DUCHÁČKOVÁ, KAFKOVÁ; 2006).

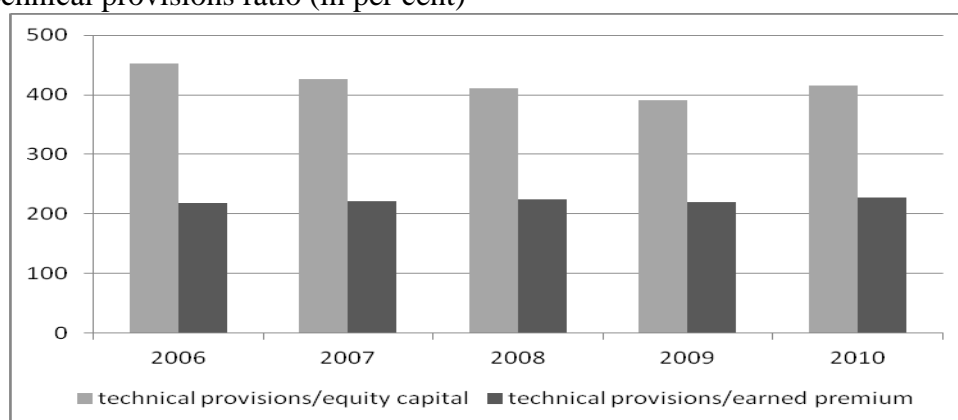
Fig. 3 Indicators using adjusted equity capital



Source: own construction based on Annual report Allianz pojišťovna, a.s.

Ratio of net premiums written to the adjusted equity capital expresses the insurance underwriting risk. In the reference period, this indicator shows a downward trend. Underwriting risk of the insurance company is reduced, which is clearly positive. Indicator measuring adjusted equity capital to net premium earned is also described as an indicator of solvency. The increasing value reflects the increasing share of safety capital, which increases the financial stability of the insurance company mainly for the case of claims.

Fig. 4 Technical provisions ratio (in per cent)

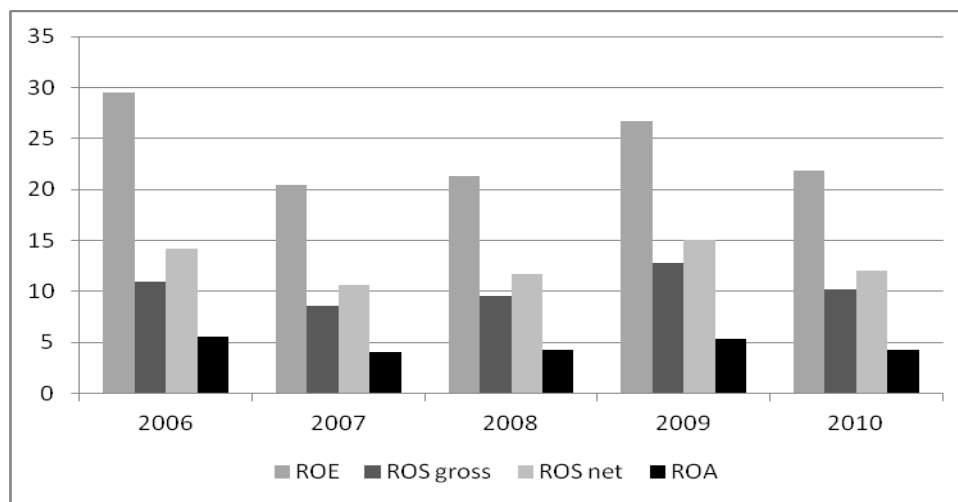


Source: own construction based on Annual report Allianz pojišťovna, a.s.

² EAT = earnings after taxes

Ratio of technical provisions to equity until the year 2009 developed negatively, but in last year began to rise. However, the recommended values should not exceed 350 %, which the insurance company does not meet. So we can say that the insurance company has created more than sufficient technical provisions with respect to the amount of equity. The second indicator *reserve ratio* fluctuated during the reference period within 10 percentage points. Value recommended by KOROBCZUK (2007) indicates 100-150 %. The insurance company exceeds this value, which again confirms the excessive level of technical provisions created under the Act Nr. 277/2009 Coll. Allianz has always profiled as a conservative insurance company, which is confirmed by both indicators.

Fig. 5 Profitability indicators (in per cent)



Source: own construction based on Annual report Allianz pojišťovna, a.s.

The profitability indicators show a similar course. They declined in 2007; two years of progression followed, and in the last reporting year the indicators decreased again. Return on equity has maintained above 20 %, which means that the equity of the company annually produces a profit of over 20%. Return on net sales long-term moves above 10 %. This means that net premiums adjusted of reinsurance annually gives more than 10 % of profitability. Return on total assets indicates that the overall property annually produces income of more than 4 % of assets. All profitability indicators analyzed are at a higher level than the current level of interest. Thus, the owners have placed their capital efficiently. If, for example, they had put their capital in bonds, they would have reached a lower value than in Allianz insurance company. In other words, business risk which the owners are undergoing is rewarded with sufficient profitability.

CONCLUSION

At this point, I would like to summarize the results and comments, which I got with the help of financial analysis.

Premiums written of the selected insurance company in the reference period each year grew. Despite this increase, the trend in net premiums written was negative, which means that the growth has slowed. Profit of the insurance company rose continuously until 2009 then followed a small decline, but the last two years the profit was above the amount of 1 billion CZK. A similar trend was described also in the amount of equity, which is close to 5 billion CZK. Indicators which I assessed financial performance of the selected insurance company with consistently showed that Allianz in this respect is improving except for a slight deterioration in the last year of the period analyzed. Indicators confirm that the insurance

company is easily able to cover its obligations with liquid assets. Technical provisions Allianz maintains at an excessive level as it has profiled itself always as a conservative insurance company which does not want to expose itself or its clients to any excessive risk. The last assessed area was profitability. The indicators confirm that Allianz insurance company is for its owner undoubtedly profitable long-term investment.

Based on the above, we can clearly say that the analyzed commercial insurance company in its field acts very well and achieves still better results. The results also confirm that the analyzed insurance company well withstands the financial crisis with no visible effects.

The scientific paper describes partial results reached within the research project of the Faculty of Business and Economics of the Mendel University in Brno MSM 6215648904 / research 02 following the aims and methodology of the given research project.

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THE SUCCESS OF THE SPECULATIVE BUBBLES BURST PREDICTION USING ARTIFICIAL NEURAL NETWORKS

Jitka Veselá, Soňa Poláková

ANNOTATION

Creating and cracking of speculative bubbles in recent years become more frequent reality of financial markets. The consequence of bursting speculative bubble is a huge increase in market risk, drastic reduction of the wealth of investors, decline in economic activity and substantial disruption of market mechanism functioning. In an effort to mitigate the negative and dangerous impact of bursting of speculative bubbles in financial markets, analysts are trying to use various analytical tools and methods for identifying speculative bubbles, and then to predict its breaking point. One of the modern methods of technical analysis that can be used for this purpose is a method of Artificial Neural Networks. In the empirical part of this paper is the method of Artificial Neural Networks practically applied to the development of the S&P 500 index during the period 02/1999 – 05/2008 in order to verify the predictive ability of this method in connection with the bursting of Technology (Dot-com) and Real Estate Speculative Bubble.

KEY WORDS

Speculative Bubbles; Technical Analysis; Artificial Neural Network; Technology (Dotcom) Bubble; Real Estate Bubble;

JEL classification: G02, G17

INTRODUCTION

Speculative bubbles or irrational deviations of actual market prices from current levels derived from fundamentals occur in the markets of commodities and securities already for centuries. A sudden burst of bubbles destabilizes the situation in the market and results in subsequent financial crisis very often. It is therefore a negative phenomenon, its presence significantly detrimental to the economic entities – their financial situation and relationships. Generally harmful effects as a result of bursting of speculative bubbles always spread the financial markets, but also the entire economy. Among the best known cases of these harmful speculative bubbles can be included the Great Crash in 1929, the deepest one-day drop in the U.S. stock market as a result of the speculative bubble burst in October 1987, Japan's speculative bubble of the turn of the 80th and 90th of the last century, Technological (Dot-com) Speculative Bubble that burst in 2000, China Speculative Bubble burst in 2007 or Real Estate Speculative Bubble whose bursting is considered to be the one of the causes of subsequent stock market crash in Autumn 2008.

Speculative bubbles are events whose creation and inflation is fueled by psychological factors, even though at the beginning of speculative bubbles may become favorable underlying conditions or factors that are followed by overreaction of investors due to their excessive optimism or pessimism. According to Shiller (2005) a speculative bubble can be viewed as “unsustainable price growth, which is driven by investors' buying behavior, and ignores the fundamental information about the price.”¹

¹ SHILLER, R. J. *Irrational Exuberance*. New York: Broadway Books, 2005, s. 27

The speculative bubble fed by excessive optimism of investors is in the context of their creation, inflating and bursting observed several characteristics or factors that may arise during the “life” of bubbles, which can be summarized as follows:

1. at the time of the initial phase of speculative bubble existence, is typical a stable price level or even mild deflation in the economy, which created the conditions for an expansionary monetary policy, characterized by low interest rates and relaxed credit policy,
2. a significant technological progress and innovation, a very favourable business environment and conditions around the time when the bubble was created,
3. an excess liquidity in the economy and the speculative capital inflows in the capital market,
4. a sharp and a steep rise in prices in a relatively short period, which can not be explained by fundamental factors,
5. an exaggerated optimism, which is not substantiated by rational factors, frenzied shopping and the crowd behaviour of most investors,
6. particularly in the second half of the existence of bubble, activities of speculators, and an unhealthy speculation increase,
7. a sudden panic and fear caused by the occurrence of a negative factor (tightening of monetary policy, raising interest rates and limiting the availability of credit resources caused by inflationary pressures e.g.),
8. a destruction of investor confidence in further price increases, there are problems with a lack of liquidity,
9. a fast and a drastic collapse in prices in the market that delivers a fatal loss of the wealth for most investors.

Characteristic features of speculative bubbles are thus known and their presence has been verified and identified by means of several specific examples of speculative bubbles which occurred in financial markets history. It seems, therefore, that an early detection of these characteristic features, including consideration of their chronological order, by the time of the creation of speculative bubbles could help its early identification, which in some circumstances may protect the investor against large and tragic losses.

As an auxiliary tool for identifying speculative bubbles would be possible under certain circumstances use some standard methods or indicators of fundamental and technical analysis. When the speculative bubble is largely fuelled by irrational, (not fundamental) factors, it can be expected, that fundamentally correct, (the equilibrium prices derived from the standard fundamental indicators such as P/E, P/BV and P/S ratio, which in a normal market situation move in certain, a relatively well defined intervals), prices will significantly diverge from the actual, current level of prices in the market. The large current value deviation of P/E ratio indicator from its normal value of 12 to 15 in the period immediately before the speculative bubble burst points out Veselá (2011), which specifically states that in 1929 the average value of the P/E ratio indicator in the U. S. market was about 33, in 2000, the average value of the

P/E ratio indicator for all sectors in the U. S. market was about 44, while the average value of the P/E ratio indicator applied on the technological industry only was about the 200². So it seems that quite substantial deviations from the results of the most standard valuation models and multiple deviations pronounced from relative market indicators calculated by fundamental analysis can point to the existence of speculative bubbles. However, the exact moment of bursting speculative bubbles can not predict by the methods of fundamental analysis, because of its focus, substance and explanatory power. Simply put, the question of the timing of certain events, reactions, behaviour or circumstances, fundamental analysis does not address or does not have the instrumentation for this purpose.

Differently, an alternative type of the analysis is a technical analysis. This analysis on the contrary, can contain the timing of certain situations, the behaviour of investors and their reactions as one of its main objectives. Technical analysis methods are designed to identify market trends in the market and especially its changes. For this reason, it would be interesting to verify whether the selected methods of the technical analysis are able to predict the exact moment of bursting a price speculative bubble in the market.

From a wide range of the technical analysis methods a relatively modern and sophisticated method of Artificial Neural Networks was chosen. The practical ability of the Artificial Neural Networks method will be checked to provide investors with an early warning of the impending collapse of two recently cracked major speculative bubbles worldwide.

AIM AND METHODOLOGY

Proving or disproving the possibility of the exact timing of the speculative bubbles bursting is the main aim of this empirical case. The extreme volatile period from 2000 to 2008 included two speculative bubbles which will be analyzed. In the 2000 the “Dot-com” bubble burst because of the excessive optimistic development of technological stock prices. The accumulation and the sudden burst of the Real Estate Speculative Bubble were at 2007 present at U.S. stock market.

The inefficiency of the given financial market is the basic presumption for the used model. The S&P 500 stock market index was chosen because of its high liquidity. The average yield of S&P 500 in the period of 2000 to 2010 was positive (0.0245%) which is at variance with the efficient market thesis. On the contrary this point indicates the possibility of using the technical analysis for the future stock market development. First - the causality between history and future and second - the trend in the time series of variables analysed are the necessary premises also. Psychological aspects influencing the financial time series development were not considered (because of the difficulty of psychological factors transformation to the time series). Specific time series (trade volume, exchange rate) that can cause a different delay to S&P 500 and the extraordinary news in media causing spontaneous and imitating behaviour of investors were not included to the model likewise.

The data of one of the most liquid stock indices (daily close prices of S&P 500 from 2/1999 – 5/2008) were used for the empirical case. The development of the above mentioned index is illustrated at Tab.1.

² VESELÁ, J. Okolnosti výskytu spekulativních bublin na finančních trzích. *Český finanční a účetní časopis*. 2011. sv. 6, č. 3, s. 18

The chosen data were analysed by Artificial Neural Networks (ANNs). ANN is a type of a mathematical-statistical tool that allows to investigate very difficult relations (without possibility to be described by means of standard mathematical functions) between some particular items of the time series. The ANN is able to find these difficult relations between time series items paralelly by taking the advantage of its specific architecture. The parallel calculation (that secure a speed and a possibility to recognize even complicated relations) is one of its major abilities. The mutually mathematical dependence of each item of the time series can be applied for the future development of variable analysed.

RESULTS

The time series of S&P 500 was divided to two parts relating two selected speculative bubbles. These parts of the time series were given to the ANN to examine. The predictions of ANN were calculated from ten-month's data for the next two-month's period. The predictions were applied on 12 intervals of each time period. Only the 5 most successful ANNs (generating the smallest error) were used for the future predictions. The signals given by these 5 ANNs were noted. If the future downward trend was the prevailing trend for the next two-month's period (validated by min.of 80% of ANNs), the possibility of bursting of the speculative bubble occurred. Subsequently these signals were ex-post compared to the real development of S&P 500 in that period.

Tab. 1 A Summary resumes the predictions of the future S&P 500 trend development in the two reporting periods

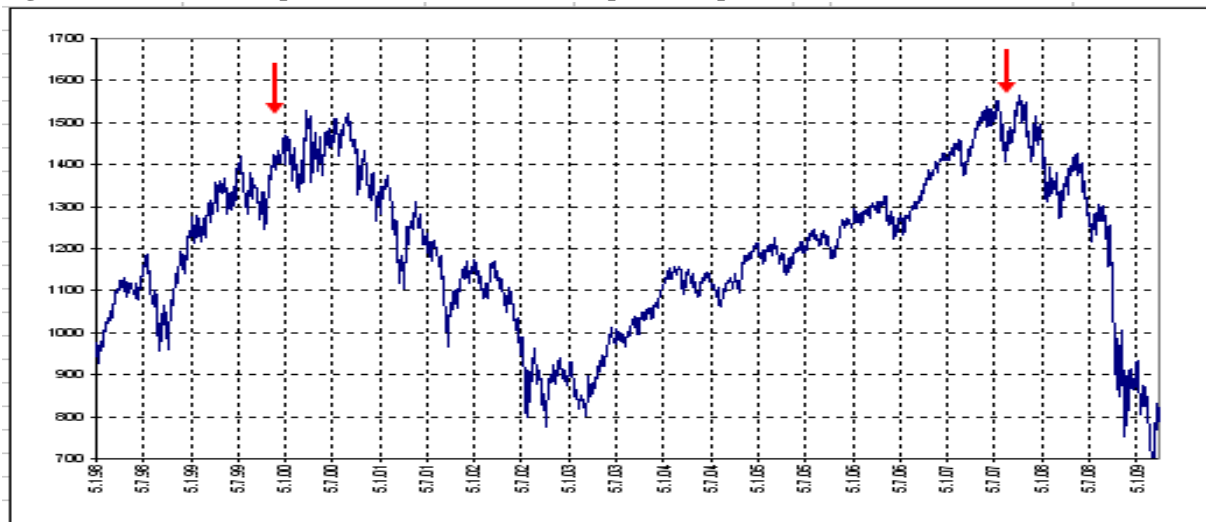
z období	na období	∑ signálů	skutečný trend	z období	na období	∑ signálů	skutečný trend
02/1999-10/1999	11/1999-12/1999	60%	↑	07/2006-04/2007	05/2007-06/2007	80%	↑
03/1999-11/1999	12/1999-01/2000	100%	↓	08/2006-05/2007	06/2007-07/2007	40%	↓
04/1999-12/1999	01/2000-02/2000	100%	↓	09/2006-06/2007	07/2007-08/2007	80%	↓
05/1999-01/2000	02/2000-03/2000	80%	↑	10/2006-07/2007	08/2007-09/2007	60%	↑
06/1999-02/2000	03/2000-04/2000	20%	↑	11/2006-08/2007	09/2007-10/2007	40%	↑
07/1999-03/2000	04/2000-05/2000	60%	↓	12/2006-09/2007	10/2007-11/2007	80%	↓
08/1999-04/2000	05/2000-06/2000	80%	↓	01/2007-10/2007	11/2007-12/2007	100%	↓
09/1999-05/2000	06/2000-07/2000	80%	↓	02/2007-11/2007	12/2007-01/2008	40%	↓
10/1999-06/2000	07/2000-08/2000	100%	↑	03/2007-12/2007	01/2008-02/2008	40%	↓
11/1999-07/2000	08/2000-09/2000	80%	↓	04/2007-01/2008	02/2008-03/2008	0%	↓
12/1999-08/2000	09/2000-10/2000	100%	↓	05/2007-02/2008	03/2008-04/2008	0%	↑
01/2000-09/2000	10/2000-11/2000	60%	↓	06/2007-03/2008	04/2008-05/2008	0%	↑

Source: own work with data from the program Statistica (Neural Networks)

The first part of the Tab.1. illustrates the results of each ANN predictions in the “Dot-com” period. The high probability of bursting the bubble in the beginning of 2000 was signalled. The “Dot-com” bubble burst in 8/2000 (see Fig.1) – this situation was validated by ANN also.

The second part of the Tab.1 illustrates the ANN predictions in the period of the Real Estate Speculative Bubble. The significant signals predicting the trend change (till that time mostly increasing trend) were generated from the end of 2007. The real burst of that bubble occurred in the same time.

Fig. 1 View of the development of the S&P 500 in the period in points



Source: own work with data from Reuters

CONCLUSION

The views of theorists and practitioners are all united in the idea that the creation and particularly rapid and dramatic bursting of speculative bubbles are negative and dangerous phenomenon that has recently been increasingly present in financial markets. In an effort to protect investors from the most tragic consequences of speculative bubbles it is still necessary to search tools that are able to predict the moment of speculative bubble bursting.

The aim of the empirical section of this paper was to check whether the selected method of technical analysis (applied to two selected speculative bubbles), the method the Artificial Neural Networks can serve as useful predictive tool when a speculative bubble bursting.

A long-term historical time series of the closing prices of S&P 500 were used for the future S&P 500 movements predictions. The circumstances of bursting two speculative bubbles (namely the “Dot-com” and Real Estate Speculative Bubble) were examined by means of ANN in the period of 1999 – 2008. The main goal of the analysis was the long-term trend prediction (in this case: two month’s trend). If the trend was predicted by more than 80% of ANNs and consequently confirmed, the trend generated by most of the ANNs was indicated as a moment of high probability of bubble bursting.

The sample studied two speculative bubbles and shown that ANN is able to predict a future significant decrease, which in turn may lead to the price bubble burst, with great precision and in advance.

Taking into account more mutually influenced financial and economic time series and using price-making information from media also can be eventually used to extend of this case study in future (by using some specific coefficients adjusting the probability of the bubble bursting). Likewise, some of the fundamental analysis method and indicators can be used for the analysis the period before, after and during the bursting bubble.

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European Financial Systems 2012

Edited by: Mgr. Petr Červinek

Editorial Board: R. Lukášová, L. Blažek, E. Hýblová, J. Maryáš,
M. Kvizda, J. Nekuda, D. Němec, V. Hynek

Published by: Masaryk University, 2012
1st edition, 2012, number of copies 90
Printed by: Tiskárna KNOPP, Nádražní 219, Nové Město nad Metují

ISBN 978-80-210-5940-5