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THE ASSESSMENT OF RISK MANAGEMENT SYSTEM'S ECONOMIC EFFICIENCY IN RETAIL BANKING

Aurelijus Cvilikas, Vaidas Paužuolis

***Abstract:** The banking risk management is always a relevant topic in financial sector's academic literature, but the detailed analysis of current studies showed that there is a lack of studies in risk management's economic efficiency assessment in retail banking, where the risk management system's administration cost may be a significant part of total credit institution's cost. The scientific problem of this article is: how the economic efficiency of retail banking risk management system could be defined and assessed? To reach the aim, the risk management's economic efficiency concept in retail banking is discussed and the risk management system development relevance in the context of economic efficiency is analyzed. The results of research allows concluding that the change of risk management system's economic efficiency might be expressed as net benefit of risk management, which shows the difference between the change of risk cost and the change of risk management system's administration cost. The research presented in the article allows stating that the gross and net benefit of the change of risk management system could be used as universal rates of the economic efficiency of the banking risk management that include all factors associated with banking risk management system.*

***Keywords:** Banking risk, Risk management, Retail banking, Economic efficiency, Risk assessment.*

***JEL Classification:** G32, G21.*

Introduction

The banking risk management is always relevant topic in banking sector and finance area in academic level. In this area the most popular research topics are related to the possibilities of banking risk measurement and assessment, by analyzing various risk minimization sources of statistical, legal, managerial or other nature [13; 16; 17; 18]. The banking risk management is widely analyzed in the context of risk level definition and risk minimization by various authors (i.e. [5; 21; 15] and lot of others), but only a small part of them (i.e. [21; 2]) paid attention to the economic efficiency of risk management system and its improvement. In banking sector the risk management relevance is based on the attitude that the properly managed risk guarantees the higher efficiency of bank's overall performance in the context of cost and common economic benefit. The most of authors analyzing the banking risk management, accent that the bank's risk management leads to higher level of performance efficiency, which may be characterized by bank's financial or economical results [3; 5; 16; 19]. Such the viewpoint highlights the topicality of bank's risk management and bank's performance efficiency interrelations analysis in academic publications.

If looking from the perspective of risk management in retail banking it can be noticed that academic space lacks of publication where the analysis would be concentrate exactly on the risk management in the credit institutions that perform in retail banking sector. The risk management in this sector is specific because of relatively high total cost, which exposes the relevance of risk management efficiency in cost context. The risk management

problems in retail banking were analyzed by [4; 1] but all these authors were more oriented to the specifics of risk assessment and the creation of risk management systems, and paid less attention to the researches of risk management efficiency in the context of cost management. So the assessment of relation between retail banking risk management cost and benefit in the context of economic efficiency is still open for discussion in academic and practical levels.

The review of scientific researches in banking risk management area revealed that, despite several publications in academic space where the question of banking risk management economic efficiency assessment in cost viewpoint is accented, the most of authors who analyze the banking risk management improvement possibilities use to treat the efficiency only as an ability of risk assessment model or risk management system to define risk events and to measure their expected loss. This viewpoint dominates in the researches of [6; 7; 9; 13]. These and most of other authors who perform researches the banking risk management, use not to detail the efficiency concept they use in risk management analysis. For this reason, the **scientific problem** can be described as follows: **how the economic efficiency of retail banking risk management system could be defined and assessed?**

The aim of this article is to define the possibilities to assess the risk management system's economic efficiency in retail banking.

The object of this article is the economic efficiency of risk management in retail banking.

Research methods. The methods of comparative analysis of scientific literature and systemization were used when performing theoretical studies of economic efficiency of retail banking risk management.

1 The risk management's economic efficiency assessment principles in retail banking

In economic literature the efficiency is characterized as ratio of "output" and "input", that indicates the size of value added, in relative expression, is generated experienced certain expenses and investments [11]. Considering [21; 2; 7] applied concept of output and input in context of efficiency valuation, the output of banking operations can be expressed as gross cost, and input – as gross income. The banking sector distinguishes with huge variety of operations, products and services which are quite problematic to structure properly. This was done by [5; 19; 22; 6; 15; 12]. Each of those authors distinguish different parts of banking activities, but, summarizing all of them, there can be defined three typical activities of retail banking, considering peculiarities of income gathering: crediting, investing and administrating (various technical-administrative banking services). Considering the above activities of retail banking, subject to specifics of elements of bank's profit, it is possible to distinguish these elements of bank's income in retail banking sector: (1) crediting income – income from crediting services (including credit lines, leasing, factoring, etc.), that bank usually gathers in for of interests; (2) investing income – income gathered through investment activities in form of interests or capital gain; (3) income of administrating – other income of operation fees (cash, transfer fees and so on), consulting services, and from non-banking activities (such as income of sold assets) gathered by banking institution. Considering the same logic of banking income structuring, based on [5; 19; 6; 15; 12] views, which are analyzed deeper by [10], the retail bank's gross expenses could be resolved into these main groups: (1) financing expenses – expenses, that

is associated with the financial resources, mainly such as interests for lent capital; (2) operating expenses – expenses that are necessary to ensure the major banking operations, which can be divided in (a) administrating costs that include all operations and administrating activities performed by the bank, and (b) risk management costs, that involve all expenses associated with risk management procedures; (3) the expenses of impairment – this is expenses associated with banking risk costs that in bank's financial accountability is recorded as a separate article.

The efficiency of banking on the whole could be assessed via bank's financial results that can be characterized with different rates, subject to the interests of managers: for the owner of the bank that most relevant rate is ROE, for the top executives of the bank – ROA and amount of assets, for the clients – cost of services and so on [14; 8]. Banking results are associated with the net profit that depends on many factors connected to bank's income and expenses. The major part of bank's income usually gathered through crediting and investing activities should have earned possessing sufficient financial resources, which determine certain financial expenses [12]. Assessing these two elements it is possible to calculate the net financial income, which define the gross result of retail banking major activity (crediting and investing), not including the expenses necessary for activity maintenance. The net financial income is directly associated with the market interest rate that determines the expenses of financial resources and profitability of crediting and investing. This means that net financial income is directly associated with the market risk that consists of interest rate risk and foreign exchange risk, as well as with the risk of equity and commodities price volatility [22]. The net financial income traditionally consists of income from crediting and investing – this income is the gross result of banking. To the gross result of banking is oriented to the whole policy and strategy of the bank. The third part of bank's income is administrating income, which is traditionally appointed to cover the administrating costs, in the same way to reduce the part of administrating expenses covered by the net financial income. The uncovered part of administrating expenses is calculated as a difference between the gross administrating costs and the income of administrating activities [20]. Analyzing the presumptions of banking risk management efficiency it is needed to identify two major banking risk cost elements: risk losses and risk management costs, these sum compose gross banking risk costs:

$$BRK = RN + RVK \tag{1}$$

where:

BRK – banking risk cost,

RN – risk losses (credit, market, operating),

RVK – risk administration costs.

The provided expression shows, that the result of implementation of banking risk management solutions depends on the relation between the change in risk losses and change in risk administration cost. If the structure of costs of banking risk management is defined clearly then it is simple to indicate the growth of these costs. But the identification of expected risk loss reduction is more complicated because of the two main reasons: (1) the risk losses quite often are more hypothetical (the losses in the future) than the actual ones, and (2) the changes in banking risk management may influence the banking income [2; 7]. The difference between the change in risk losses and change in risk administration cost may

be treated as the net benefit of risk management (GN), which clearly expresses the economic benefit the bank receives while changing its risk management system:

$$GN = \Delta BRK = \Delta RN - \Delta RVK > 0 \quad (2)$$

The net benefit of risk management system indicates the final result of the change of risk management system – the net benefit enables to indicate if the realized solutions of risk management system are useful economically: (1) if $GN > 0$, then the expected change of risk losses is higher than the change of risk administration costs, and that shows that the change of risk management system is useful economically for banking institution. The net benefit of the change of risk management system could be used as universal rate of the economic efficiency of the banking risk management that include all factors associated with banking risk management system and its changes in retail banking sector. Therefore, the net benefit of the change of risk management system could be treated as major rates that describe the economic efficiency of banking risk management changes in retail banking sector.

2 The methodic for empirical assessment of net benefit of banking risk management in the case of Lithuanian credit unions

The described principles of the net benefit of banking risk management assessment become important in case the bank is going to improve its risk management system and is interested in assessment the final economic results of expected changes. This question encouraged to test the usage of net benefit assessment principles in Lithuanian credit unions sector. The case study was made using the data of one credit union performing in Lithuanian financial sector. The chosen credit union “N” is the one that closely matches the average characteristics of Lithuanian credit unions: in 2011 its assets were 26.3 mio LTL, the loan portfolio 15.2 mio LTL. The credit union “N” together with fast growth of assets faces the need to improve risk management to avoid too high level of risk loses that may condition the long-term disorders in credit union’s development. For this reason the several solutions for credit union’s risk management system’s improvement are being implemented with the goal to reached not just the higher level of risk management, but, firstly, the higher economic efficiency of risk management system. To assess the net benefit of risk management system’s improvement, the five-step procedure was performed.

1. The portrait of credit union’s planned risk management system characteristics.

To identify all the planned changes in credit union’s risk management system, the portrait of credit union’s planned risk management system characteristics should be formed. This portrait is supposed to consists of three main parts: (1) the risk type; (2) the changes planned; (3) the effect expected. In the case study of credit union “N” the three risk types were identified: the credit, market and operational risk, which are treated as the main risks the credit union faces.

2. The impact of changes in risk management system on risk losses. The expected change in risk losses are assessed for credit and operational risk, while the market risk management improvement solutions are expected to have impact only on income. The expected changes of credit risk losses are expressed as the changes of ratio of written-off loans in loan portfolio and ratio of provisions in loan portfolio. To assess the expected changes of these two ratios the statistical analysis of historical credit union’s loans portfolio was performed. In case of ratio of written-off loans in loan portfolio, the aim of statistical research is to review the last 100 written-off loans in credit union “N” and to identify, if the written-off loan would be issued if the going-to-be-implement solution for credit risk

management were used at the moment then the loan was issued. Such analysis allows identifying the “negative” part of portfolio which can be projected in the future loan portfolio as the reduced losses after the implementation of credit risk management solution. Using the same logic the expected ratio of provisions in loan portfolio is calculated. In this case the changes of risk losses is calculated as the difference between factual provisions for loan portfolio and expected provisions for loan portfolio, which depends on the calculated expected ratio of provisions in loan portfolio. The expected changes of operational risk losses are identified using the method of experts’ survey, where the experts are the managers of Lithuanian credit unions. The expected changes of operational risk losses are based on the economy of salary because of improved risk assessment instruments.

3. The impact of changes in risk management system on credit union’s income. The impact of risk management system’s improvement on credit union’s income is expected for credit and market risks. The impact on credit union’s income in credit risk case is expected to appear because of changed policy of loans issuance, because the more thorough assessment of borrower’s credit risk would reduce the total loan portfolio and interest income. The impact on credit union’s income in market risk is expected to appear because of new instruments for efficient free funds management.

4. The impact of changes in risk administration cost. The risk administration cost in the research were identified using economic calculations and experts survey methods, which are not widely discussed in this paper because it falls out of the main topic line of the research. The method of economic calculations was used in cases when the factual data allows calculating the expected additional cost and the changes in total cost related to the changes in risk management system. The method of experts survey was used in cases when where are not enough factual data to identify the expected additional risk administration cost, such as the salary cost for new employees or additional salary for new functions, cost for training and internships and etc.

5. The net benefit of changes in risk management system. The net benefit was calculated using formula (2), which allows comparing the reduction of risk losses, assessed in the previous steps of this research, and the growth of risk administration cost, which depends on the specifics of the portrait of credit union’s planned risk management system characteristics. The net benefit is calculated for every risk type and this allows concluding if the presented solutions for credit union’s risk management system’s improvement are economically useful for credit union or not. Parallel the total net benefit is calculated including all the presented risk management systems’ improvement solutions for all types of risk.

3 The results of empirical assessment of net benefit of banking risk management in the case of Lithuanian credit unions

The research of net benefit of risk management assessment in credit union “N” is performed using the steps described in previous chapter.

1. The portrait of credit union’s planned risk management system characteristics. The first step is the formation of the portrait of credit union’s planned risk management system characteristics (table 1), which shows the planned changes in risk management system and the expected effect after the implementation of those changes.

Tab. 1: The portrait of credit union's planned risk management system characteristics

| The type of risk | The changes planned | The effect expected |
|-------------------------|--|--|
| Credit risk | To hire the professional credit risk assessor | The additional salary cost; The additional cost for training and internships |
| | To implement the business subjects' quantitative risk assessment methodic | The additional cost for training and internships; The additional cost for documentation and calculation forms preparation; The reduced ratio of written-off loans in loan portfolio; The reduced ratio of provisions in loan portfolio; The reduced income from interest |
| Market risk | To assign the function of active investment of free funds to the current employee | The additional salary cost; The additional cost for training and internships |
| | To implement the calculator for the planning of liquid funds usage | The additional cost for training and internships; The additional cost for documentation and calculation forms preparation; The additional income from investment |
| Operational risk | To assign the function of active operational risk management to the current employee | The additional salary cost; The additional cost for training and internships |
| | To implement the automated profitability management form | The additional cost for training and internships; The additional cost for automated forms creation; The additional cost for documentation preparation; The reduced salary cost |
| | To implement the automated business plan form | The additional cost for training and internships; The additional cost for automated forms creation; The additional cost for documentation preparation; The reduced salary cost |

Source: Author

Credit risk. The analyzed credit union “N” like the most of credit unions in Lithuania faces the problem of credit risk assessment in case of business crediting. This problem is related to the lack of practice in business crediting, low risk assessors' competence and primitive client's credit risk assessment instruments, which lead to the low quality client's credit risk assessment and faulty loans issuance decisions. The need to improve the assessment of business clients' credit risk and to reduce the credit risk in business loans' portfolio conditioned the creation of new methodic for business subjects' quantitative risk assessment. This methodic, based on the automated client's credit risk assessment, using specific software instruments, allows more precise assessment of business client's financial state using the results of the assessment of business project's pay-off, cash flow risk, business growth, financial structure and loan coverage ability. Such assessment reduces the possibility that loan will be issued for business client who will be unable to redeem the credit and to pay interest.

Market risk. Because of the need to raise the efficiency of free funds (the funds which cannot be invested in the loan portfolio because of the need to match the liquidity requirements) investment the calculator for the planning of liquid funds usage is prepared, which allow the modeling of the free funds allocation to maximize the profit. The calculator for the planning of liquid funds usage allows identification of credit union's current free funds and to determine the surplus free funds that can be invested in loans or fixed-term deposits, and the minimal free funds that can be invested in government bonds or current deposits. In such way the calculator for the planning of liquid funds usage creates the possibility to raise credit union's income because of more efficient investment of free funds.

Operational risk. For the operation risk two decisions are being implemented, which are oriented to the reduction of operational cost related to operational risk management and control. The management of operational risk usually is related to a high demand of working hours so it is important to find the solutions to reduce the non-automated operations. For this reason two instruments for more efficient operational risk management were prepared: (1) the automated profitability management form, which automatically calculates the prime cost of loans and allows defining the minimum level of loans' interest, which reduces the possibility of false calculations and mistakes and eliminates the need for secondary check of calculations; (2) the automated business plan form, which allows assessment of business subject's financial state and perspectives after the input of primary data, and in such way reduces the working hours for credit managers and reduces the probability of frauds.

The presented solutions for credit union's "N" risk management system's improvement have a dual impact on risk management economic efficiency: the solutions for credit and operational risk management have an impact on credit union's risk losses; credit and market risk have an impact on credit union's income.

2. The impact of changes in risk management system on risk losses. The impact on risk losses is expected from the solutions in credit and operational risk areas.

Credit risk. The implementation of the business subjects' quantitative risk assessment methodic is expected to have a positive impact on the ratio of provisions in loan portfolio and the ratio of written-off loans in loan portfolio. To measure the expected changes of above mentioned ratios, the statistical analysis of historical data was performed with an example of 100 written-off loans and, by analogy, with 100 loans having provisions formed. The analysis results showed that in case the business subjects' quantitative risk assessment methodic was used the 50 written-off loans would be identified as unacceptable for credit union. This allows concluding that in the future, the implementation of business subjects' quantitative risk assessment methodic could impact a reduction of written-off loans cost by 50.01 percent. In such case the ratio of written-off loans in loan portfolio could reduce from 0.50 percent to 0.25 percent and the average losses from written-off loans in credit union "N" could reduce from 76.0 to 38.0 thousands LTL. Using the same logic the impact of the business subjects' quantitative risk assessment methodic on provisions is measured. The calculations show that for the credit union "N" the usage of the business subjects' quantitative risk assessment methodic could cause the reduction of the ratio of provisions in loan portfolio from 1.30 to 0.91 percent and the cost of provisions could reduce from 197.6 to 138.3 thousands LTL.

Operational risk. To measure the impact of changes in risk management system on operational risk losses the expert survey was performed, where the managers

of Lithuanian credit unions were questioned. The results of this survey show that the implementation of the automated profitability management form could cause the reduction of salary cost by 7.4 thousands LTL, and the implementation of the automated business plan form could cause the reduction of salary cost by 13.7 thousands LTL. The implementation of both instruments could cause the total 21.2 thousand LTL cost economy and this would condition the reduction of total operational cost from 423.4 to 402.2 thousand LTL.

The results of the impact of changes in risk management system on risk losses (in both credit and operation risk cases) are summarized in table 2.

Tab. 2: The cost and economic efficiency indicators of credit union's risk management system

| Indicator | Value before | Value after |
|---|--------------|-------------|
| Ratio of provisions in loan portfolio, % | 1.3 | 0.91 |
| Ratio of written-off loans in loan portfolio, % | 0.5 | 0.25 |
| Provisions, 000' Lt | 197.6 | 138.3 |
| Written-off loans, 000' Lt | 76.0 | 38.0 |
| Operational expenses, 000' Lt | 423.4 | 402.2 |

Source: Author

3. The impact of changes in risk management system on credit union's income. The other important area of the impact of changes in risk management system is the changes in credit union's income caused by implemented solutions in case of credit and market risks.

Credit risk. In case of credit risk management improvement the presumption is made that the newly adopted business subjects' quantitative risk assessment methodic would cause in some cases the negative assessment result for the client who is capable in returning the credit, but who's financial data are weak. In such cases the credit union because of the new assessment methodic could lose some clients, and this means the reduction of loans portfolio, and consequent the reduction of interest income. The statistical analysis of historical loans data of credit union "N" showed that the expected loss of interest income could reach 2.0 percent which is equal to 28.9 thousands LTL. This loss of income in the performed research is included in the cost of planned credit union's additional risk administration (see table 2).

Market risk. The implementation of the calculator for the planning of liquid funds usage is supposed to guarantee a more efficient investment of free funds. The performed experimental adoption of this calculator in case of credit union "N" showed that credit union's free funds available for additional investment are equal to 1,530.25 thousands LTL, of which 732.80 thousands LTL might be invested in the loans, and 797.45 thousands LTL are available for investment in to the liquid assets. The efficient investment of these free funds could additionally generate the 45.60 thousands LTL income and this means that credit union's "N" income from investment could increase from 152.0 to 197.6 thousands LTL.

4. The impact of changes in risk administration cost. The implemented risk management solutions requires investment cost, which include the costs of training and internships, documentation and calculation forms preparation, and automated forms creation. Those costs in the performed research are amortized in 3 years with residual value

of 0 LTL. Also the changed risk management system requires additional maintenance cost, which includes the costs of salary and interest income reduction (table 3).

Tab. 3: The planned credit union's additional risk administration cost, LTL

| | Credit risk | Market risk | Operational risk | Total risks |
|--|--------------------|--------------------|-------------------------|--------------------|
| Investment cost | 52,500.00 | 17,400.00 | 63,233.33 | 133,133.33 |
| Annual amortization | 17,500.00 | 5,800.00 | 21,077.78 | 44,377.78 |
| Maintenance cost | 68,180.90 | 3,930.00 | 7,860.00 | 79,970.90 |
| Risk administration cost in total | 85,680.90 | 9,730.00 | 28,937.78 | 124,348.68 |

Source: Author

5. The net benefit of changes in risk management system. To determine if the proposed risk management solutions are economically reasonable for credit union "N" the net benefit of changes in credit union's risk management system should be calculated, using the results of analysis of impact of changes in risk management system on risk losses, credit union's income and risk administration cost. The assessment of net benefit of risk management systems improvement (table 4) allows identifying the economic benefit of planned solutions in risk management area of credit union in case of every risk type (credit, market and operational).

Tab. 4: The assessment of net benefit of risk management systems improvement

| | Credit risk | Market risk | Operational risk | Total risks |
|---|--------------------|--------------------|-------------------------|--------------------|
| Current profit, Lt | - | - | - | 81,725.90 |
| Profit after improvement, Lt | 179,008.93 | 142,525.49 | 109,950.87 | 268,033.48 |
| The change of expected risk losses, Lt | 97,283.02 | 60,799.58 | 28,224.97 | 186,307.57 |
| The risk administration costs, Lt | 85,680.90 | 9,730.00 | 28,937.78 | 124,348.68 |
| The net benefit of risk management, Lt | 11,602.12 | 51,069.58 | -712.81 | 61,958.89 |
| Is it useful to implement the risk management solutions? | Yes | Yes | No | Yes |

Source: Author

The calculations show that in case of credit risk, the net benefit is equal to 11.6 thousands LTL (14.2 percent of current profit). This means that the proposed solutions for credit risk management improvement cause the positive economic result, including the expected reduction in losses and growth in administration cost. This allows stating that the solutions for credit risk management improvement for credit union "N" would be economically useful and would increase the risk management's economic efficiency. The same conclusions might be done in case of market risk. As the presented calculations show, the net benefit of market risk management improvement is equal to 51.1 thousands LTL (62.5 percent of current profit), and it means the positive impact on credit union's "N" risk management's economic efficiency in case of market risk. The different results are generated in case of operational risk management. The research results show that the operational risk's net benefit is negative (-712.81 LTL) and this means that the increase in risk administration cost because of improved operational risk management is higher than the reduction in operational cost, caused by proposed operational risk management solutions.

The total net benefit of risk management in case of all risk types is equal to 62.0 thousands LTL or 75.8 percent of current profit. This shows the total positive effect for credit union's risk management's economic efficiency.

4 Discussion

The economic efficiency of banking risk management is highly related with the links between bank's financial statements, which conditions the size of bank's net profit, and the banking risk objects, which can be group in three forms: market, credit and operational risks. In retail banking market risk mostly impacts the size of net financial income, credit risk is mostly related to credit risk cost and the operational risk is mainly related to net administrating cost. Based on the analysis of various authors it could be stated that the banking risk management efficiency should be treated as banking risk quality ratio when the gross risk-free income and expenses are constants, defined in the time interval, and banking risk costs is the variable that determines the banking efficiency. In such context it can be presumed that the connection between the change of efficiency and banking risk variable enables to reveal banking risk cost influence on banking financial results and allow assessing the efficiency of banking risk management solutions in the economic view.

The analysis of presented calculations of economic efficiency improvement in case of credit union "N" allows identifying the economically reasonable risk management solutions for this credit union. But the analysis of the results from banking risk management perspective requires mentioning that the generated results are valid only in concrete case and might be different for other credit unions or in other time period, depending on factual results of credit union. The other important factor in the analysis of presented results is the viewpoint to the idea of risk management from supervision bodies. The main idea, usually accented by banking supervision bodies, is the safety and reliability of entire financial system and the trust from clients. For this reason in some cases the negative net benefit of risk management system's improvement might not be an issue in judging the acceptability of specific risk management solutions, because these solutions might be important for the stability of entire financial sector, while for individual banks or other credit institutions it might cause the decrease in performance and profits. The presented way to measure the economic efficiency of risk management improvement allows identifying the weak areas of bank's risk management system in cost – benefit viewpoint, and might be useful in deciding whether the risk management instrument is useful for the bank or not, and what impact on final results of the banks might be expected after the implementation of such instrument.

Conclusion

The change of risk management system's economic efficiency might be expressed as net benefit of risk management, which shows the difference between the change of risk cost (loss, default or similar), showing the gross benefit of risk management, and the change of risk management system's administration cost. Gross and net benefit of the change of risk management system allow assessment of overall risk management system, because they include all factors associated with banking risk management system and it's changes in retail banking sector. The assessment of changes in credit union's "N" risk management system's economic efficiency in the context of different risk types and risk management improvement solutions in the performed research allowed define useful and non-useful solutions in economic efficiency viewpoint. This confirm the statement that the presented

solutions for banking risk management's economic efficiency assessment create the conditions to assess the economic effect the changes in banking risk management system could have, considering the final bank's performance results and defining if the planned changes in risk management system are useful in economic viewpoint.

References

- [1] AKHAVEIN, J., FRAME, W. S. & WHITE, L. J. (2005). The Diffusion of Financial Innovations: An Examination of the Adoption of Small Business Credit Scoring by Large Banking Organizations. *Journal of Business*, 2, 577-596.
- [2] ALTUNBAS, Y., CARBO, S., GARDENER, E.P.M. & MOLYNEUX P. (2007). Examining the Relationships between Capital, Risk and Efficiency in European Banking. *European Financial Management*, 13(1), 49–70.
- [3] BARRIGA, L. & ROSENGREN, E. (2004). Innovations in Risk Management – Lessons from the Banking Industry. *Technical Paper*. Boston: Federal Reserve Bank of Boston, 41.
- [4] BERZ, K., CHIN, V. & MAGUIRE, A. (2009). Come Out a Winner in Retail Banking. The Boston Consulting Group, September, 46.
- [5] BESSIS, J. (2010). *Risk Management in Banking*. Chichester: John Wiley & Sons, 821.
- [6] BIKKER, J. & BOS, J.W.B. (2008). Bank Performance: A Theoretical and Empirical Framework for the Analysis of Profitability, Competition and Efficiency. USA: Routledge, 176.
- [7] BOYD, J.H. & DE NICOLO, G. (2005). The Theory of Bank Risk Taking and Competition Revisited. *The Journal of Finance*, 60(3), 1329-1343.
- [8] CHOWDHURY, M.H. (2011). Ethical issues as competitive advantage for bank management. *Humanomics*, 27(2), 109-120.
- [9] CHRISTODOULAKIS, G. & SATCHELL, S. (2008). The validity of credit risk model validation methods. *The Analytics of Risk Model Validation*, ed. Christodoulakis G., Satchell S. Oxford: Elsevier, 27-44.
- [10] CVILIKAS, A. (2010). The structure of decisions for banking risk management's economic efficiency assessment. *Economics and management = Ekonomika ir vadyba*, 15, 893-899.
- [11] CVILIKAS, A., BARŠAUSKAS, P. & ŠARAPOVAS T. (2006). Elektroninės komercijos modeliai verslo efektyvumui didinti. Monografija. Kaunas: ISM Vadybos ir ekonomikos universitetas.
- [12] DERMINE, J. (2009). Bank Valuation and Value-Based Management: Deposit and Loan Pricing, Performance Evaluation, and Risk Management. USA: McGraw-Hill, 432.
- [13] DUELLMANN, K. (2008). Measuring concentration risk in credit portfolios. *The Analytics of Risk Model Validation*, ed. Christodoulakis G., Satchell S. Oxford: Elsevier, 59-78.
- [14] FAYMAN, A. & HE, L.T. (2011). Prepayment risk and bank performance. *The Journal of Risk Finance*, 12(1), 26-40.

- [15] GARBANOVAS, G. (2010). Banko vertės ir rizikų portfelio sąveika ir valdymas: daktaro disertacija. Vilnius: Technika, 120.
- [16] GIESECKE, K. (2004). Credit Risk Modeling and Valuation: an Introduction. *Credit Risk: Models and Management*, 2.
- [17] GREUNING, H. & BRATANOVIC, S.B. (2009). Analysing banking risk: a framework for assessing corporate governance and risk management. 3rd edition. Washington: The World Bank.
- [18] HEMPEL, G. H. & SIMONSON, D. G. (2008). Bank management. Text and Cases. 5th ed. USA: Wiley, 700.
- [19] KOCH, T.W. & MacDONALD, S.S. (2000). Bank Management. 4th edition. USA: The Dryden Press.
- [20] MORGAN, D. P. & ASHCRAFT, A. B. (2003). Using loan rates to measure and regulate bank risk: findings and an immodest proposal. *Journal of Financial Services Research*, 2/3(24), 181-200.
- [21] PASTOR, J.M. & SERRANO, L. (2000). Efficiency, Endogenous And Exogenous Credit Risk In The Banking Systems Of The Euro Area: IVIE working papers. Valencia: IVIE.
- [22] VAŠKELAITIS, V. (2003). Pinigai: komerciniai bankai ir jų rizikos valdymas. Vilnius: Lietuvos mokslo redakcija.

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IS EARNINGS MANAGEMENT AFFECTED BY INTERNATIONAL FINANCIAL REPORTING STANDARDS?

Tereza Miková

Abstract: *International Financial Reporting Standards (IFRS) are considered to be instrumental for meeting requirements of comparability, relevance and transparency when examining companies' results globally. The idea of IFRS is rational and reasonable, though opponents, who disagree that IFRS might provide some benefit, exist. The information asymmetry between managers and stakeholders (especially investors) could potentially be decreased by using one set of accounting standards to ensure that all necessary information is available for decision making. However, managers might affect the reporting performance for their benefits.*

This paper examines the relationship between a single set of accounting standards—in this case IFRS—and earnings management. When looking at this relationship, the following question presents itself: can IFRS improve manager behaviour and decrease activities of earnings management? While some research (e.g. [10], [31], [23]) related to this topic has been conducted, results have not been conclusive. Some of the research has appeared to confirm the importance of IFRS, while other studies have demonstrated that mandatory IFRS adoption increases earnings management. IFRS may indeed influence earnings management, but not as an isolated issue. This relationship presents a fertile field for future research.

Keywords: *IFRS, Accounting standards, Earnings management, Income smoothing, Discretionary accruals.*

JEL Classification: *M41.*

Introduction

Transparency and comparability between reported financial positions and performance metrics of companies throughout the world are increasing, and International Financial Reporting Standards (IFRS) issued by International Accounting Standards Board (IASB) in London have played an important role in this shift. IFRS represent the international accounting standard—a standard with a growing influence around the globe. While the aims of IFRS appear useful and effective, opponents of the standards argue that IFRS provide little or no benefit.

Reported financial results, and the development of these results, are vitally important for both present shareholders and potential investors. The information asymmetry between managers and other users of financial statements could be decreased by using one set of accounting standards, as this would ensure that all necessary information for decision making is available. Managers, however, may try to mislead users of financial statements by increasing the company's earnings—a manipulation that would make them appear more successful. This behaviour, termed earnings management, can affect a firm's performance in a variety of ways.

This paper first presents a review of relevant research made in earnings management itself, and then analyses studies that examine IFRS influence on earnings management.

IFRS play a significant role within the field of accounting regulation, with their purpose being to ensure that users of financial statements receive high quality, necessary information. Beginning in 2005, IFRS have been mandatory for all European listed companies, and the goal of this paper is to review relevant research studies in order to determine whether or not these standards could reduce earnings management and—in doing so—enhance the quality of information available to stakeholders.

1 Methodology

The methodology of this paper involved searching relevant research studies that included different methods of detecting and measuring earnings management, and also examining IFRS impact on earnings management. A variety of models (see subsection 3.2.) of detecting earnings management exist, and research results broadly confirm the existence of earnings management. Relevant studies, which include both research of earnings management and research about IFRS impact into earnings management, are also evaluated within this paper.

Earnings management is an issue that has been researched for several decades in the United States of America, and for this reason most significant studies addressed U.S. environments. Today, earnings management has become a popular topic both in Europe and around the globe. Important research studies on earnings management, as well as models that detect and measure its existence, are evaluated below.

2 Problem solving

IFRS represent one set of accounting standards that is used worldwide to enhance transparency and comparability of reported financial statements. Because an increase in information quality is their “only” target, it is necessary to identify how this increase impacts manager behaviour in regard to reported earnings. Managers might do decision only to increase firm’s financial health because reporting results do not intent to be under budget. One popular definition of earnings management is given by Healy and Walhen [22]:

“Earnings management occurs when managers use judgement in financial reporting and in structuring transaction to alter reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”.

There are a variety of specifications (e.g. see Gunny in subsection 3.1.) as to what constitutes earnings management, as well as different methods for both carrying it out and for detecting and determining its existence. Nevertheless, detecting and measuring earnings management is not a simple issue, and therefore results and intents may vary. The key question is: Can one worldwide set of standards ensure comparability of statements while also preventing earnings management?

3 Discussion on Earnings Management

3.1 Methods of Earnings Management

Real earnings management occurs when managers undertake actions that deviate from the first best practice reported earnings [20]. Real earnings management is not attained by accounting methods, but instead through decisions that affect specific accounting operations such as Research and Development expenses (R&D expenses) and Selling, General and Administrative expenses (SG&A expenses). These decisions can include the

postponement or elimination of investments in fixed assets and the timing at which assets are sold. This can occur when managers wish to enhance operation income, avoid reported losses, etc.

R&D expenses play a considerable role in earnings management, largely because IFRS require specific criteria to be met for a company to capitalize on some R&D expenses. According to IAS 38, research expenditure is always charged as an expense when it is incurred, and development expenses can be capitalized only after they meet prescribed requirements (see paragraph 57 IAS 38). Development expense decisions create space within earnings management to cut R&D investments and enhance earnings in the current period. According to Dechow et al. [11], CEOs spend relatively less on R&D during their final years in office in order to enhance their short-term financial performance. SG&A expenses represent similar opportunities to mislead stakeholders, as they affect reported earnings. Intangible assets (such as customer database, brands etc.) can be recognized only when they meet prescribed criteria (e.g. intended for future sale) under IAS 38 Intangible Assets. Accounting of fixed assets also seems to be fertile ground for earnings management practices. The selling time of non-current assets affects the reported result because the gains from selling fixed assets are presented in income statements at time of sale. Managers sell long-term assets to avoid financial losses [6]. There is empirical evidence that earnings management exists. When attempting to detect and measure earnings management, we must consider all methods together in order to avoid having only a limited picture of the entire task.

3.2 Detecting and Measuring Earnings Management

As was mentioned above, there are a variety of ways in which the manipulation of reported results can occur, all of which must be taken into account when determining whether or not managers engage in earnings management. Detecting earnings management is not a simple task. According to Burgstahler et al. [7], recent studies (e.g. [27], [22], [13]) use four different proxies obtain a range of earnings management activities:

- “The tendency of firm to avoid small losses,
- the magnitude of total accruals,
- the smoothness of earnings relative to cash flows,
- the correlation of accounting accruals and operating cash flow.”

While these proxies are not perfect, Lang et al. [26] or Wysocki [30] state that they behave in an acceptable fashion. The first method, *the tendency of firm to avoid small losses*, is based upon the premise of hiding financial losses, and is calculated as income before extraordinary items (IBEX) scaled by lagged total assets or total sales (e.g. [24]). Because the mathematical formula for this method contains only three variables, the method tends to be relatively simple.

The test for *magnitude of total non-discretionary and discretionary accruals* is most typically used in academic research to detect earnings management (e.g. [7]). The base model was made by Healy [21] but does not incorporate non-discretionary accruals. According to Healy [21], total accruals (ACC) contain both discretionary (DA) and non-discretionary (NA) components and are estimated by the difference between reported accounting earnings and cash flow from operations.

$$ACC_t = NA_t + DA_t \quad (1)$$

$$ACC_t = -DEP_t + XI_t \times D_1 + \Delta AR_t + \Delta INV_t - \Delta AP_t - \{\Delta TP_t + D_t\} \times D_2 \quad (2)$$

Where:

- DEP_t = depreciation in year t ;
- XI_t = extraordinary items in year t ;
- ΔAR_t = account receivable in year t less accounts receivable in year $t-1$;
- ΔINV_t = inventory in year t less inventory in year $t-1$;
- ΔAP_t = accounts payable in year t less accounts payable in year $t-1$;
- ΔTP_t = income taxes payable in year t less income taxes payable in year $t-1$;
- $D1$ = 1 if bonus plan earnings are defined after extraordinary items,
= 0 if bonus plan earnings are defined before extraordinary items.
- $D2$ = 1 if bonus plan earnings are defined after income taxes,
= 0 if bonus plan earnings are defined before income taxes.

The limitation of the Healy model is that it does not incorporate any determinants of non-discretionary accruals. Jennifer Jones authored the model which considers the non-discretionary accruals in the year 1991. The changes in revenues and the level of gross property, plant and equipment (PPE) were determinants of non-discretionary accruals. Jones' model from 1991 was modified, and a later version provides more powerful tests of earnings management [12]. There are other relevant models that measure earnings management (e.g. [14]), but they essentially follow the base model with additional modifications in variables. The existing models that measure accruals-based management include both the simple one in which discretionary accruals are measured as total accruals and the more sophisticated one where accruals are separated into discretionary and non-discretionary components [12].

An important, innovative step forward in measuring earnings management was made by Dechow et al. [15] in the paper "Detection of Earnings Management: A New Approach," which introduced a model with improved specification and test power. Their new approach exploited an underlying characteristic of accrual-based earnings management that was not considered in previous research. The paper introduced a flexible procedure, and addressed problems associated with common text for earnings management by incorporating prior research concerning the reversal of discretionary accruals in tests. Using this procedure, the researchers identified the periods in which accruals were predicted to be managed and when they were predicted to be reversed. They were able to increase the test's estimation power to roughly 40% in typical earnings management studies. Furthermore, their model represents an important move forward in that it presents a dynamic process, and it relies on researchers to know exactly know the periods in accruals are managed and reversed [17].

Earnings smoothing involves intertemporal smoothing of reported earnings relative to economic earnings, with the purpose of making earnings look less variable over time [18]. If managers can choose which of two periods to recognize certain income, they might prefer the choice that expected to result in a smoother income stream [29].

4 IFRS Affect into Earnings Management

According to Paul Pacter [28], a former board member, IFRS profiles are completed for 122 jurisdictions including G20 countries. 101 jurisdictions (in total 83 %) require IFRS for most or all domestic listed companies. Ten of the remaining 21 jurisdictions permit IFRS for at least some listed companies (India, Japan), and the other jurisdictions are

in lower levels of IFRS adoption. The number of jurisdictions that have already adopted IFRS confirms the importance of the role IFRS plays. As a single set of global accounting standards, its adoption is leading to higher transparency and comparability of financial information¹.

Methods for detecting and measuring earnings management were mentioned in subsection 3.2. In order to determine the influence of IFRS on earnings management, a method that was used for a period both before and after the adoption of IFRS was examined. Research was conducted for both periods, and the results were compared. Some other empirical studies present more methods [8].

While the goals of IFRS are obvious, the actual benefit that is attained from mandatory adoption of IFRS is a subject of discussion among researchers and other relevant professionals. There are advantages of IFRS, as they contribute positively to the quality of reported results, but contrary arguments also exist. Many empirical studies (e.g. [24], [8]) have been published regarding mandatory IFRS adoption and the ways in which it affects earnings management improvements.

One supporting argument for IFRS is that a universal set of standards results in a lower number of discrepancies than could be achieved by a system containing many national GAAP (e.g. [16]). Under Ewert and Wagenhofer, tighter accounting regulation might improve reporting quality and decrease earnings management. Conversely, Ball [2], [3] argues that one single set of standards might not adequately account for the differences in national institutional features.

The requirement to maintain comparability between companies abroad is important for both stakeholders and potential investors. Armstrong et al. [1] assume that IFRS reduce costs for investors to evaluate companies across different countries and markets. Barth et al. [4] suggest that the cost to a country's investors is reduced when two local GAAP become more similar because the investors become accounting experts for another country. Adopting IFRS might reduce costs of international cross-border comparison, and it could decrease the cost of analysis for companies across the border [3]. According to Jeanjean and Stolowy [24], "even if the quality of corporate reporting does not improve, it is possible that financial information will become more useful to investors and a common set of accounting standards could help investors to differentiate between lower and higher quality firms, which in turn could reduce information asymmetries among investor and/or lower estimation risk". Zeghal et al. [32] examined whether the quality of financial reporting has increased or decreased after mandatory IFRS adoption within 15 European countries. Their results show that mandatory IFRS adoption leads to positive accounting-based changes, but that the market-based changes associated with IFRS are less favorable. Their other research [31] focused on a sample of 353 listed French companies with similar issues during the period 2003-2006. They emphasized the significant role of corporate finance in the enforcement process of IFRS, and results showed a positive contribution of IFRS. This was attributed to the fact that, assuming good corporate governance, mandatory IFRS adoption by French companies reduced the use of discretionary accruals. "What is the relationship between accounting standards and corporate governance? And what if the effect of IFRS on earnings management would not be so clear without good corporate governance?"

¹ Financial Accounting Standard Board (FASB) as a issuer of United States Generally Accounting Accepted Principles (US GAAP) together with IASB work on convergence of US GAAP and IFRS.

Regardless of IFRS research results, there are elements of a continuously changing worldwide economy that pose a threat to the standards' stated goals. Ball et al. [2] show only minor effects of accounting standards on reported quality. The research results argue that application of IFRS involves both significant judgment and the use of private information. The incentive of auditors or managers has greater influence than accounting standards. This and other arguments cast doubt on whether the simple adjustment and novelization of accounting standards can make a firm's financial statements more comparable and improve manager behavior. Houque et al. [23], in a study published at the University of Illinois, highlights the importance of investor protection in the field of financial reporting and strengthens the idea that higher quality earnings can be found within countries with strong investor protection regimes.

IFRS have only a limited impact on earnings management, and the net effect of their adoption is uncertain. Firstly, there are arguments that accounting standards strongly affect reported earnings. Also, a large number of studies fail to confirm IFRS's importance due to the existence of other explanatory factors (institutional factors or incentives) within economies. Due to increasing global connectedness, the mandatory transition to IFRS will lead to a harmonization of accounting standards across countries. Research conducted by Barth et al. [5] showed a reduction of earnings management, higher value relevance, and a more timely recognition of losses after reported financial statements under IFRS than under local GAAP.

As above evidence makes clear, earnings management itself represents a productive area of research. A variety of methods for detecting and measuring earnings management have been developed throughout history, but they are still imperfect, and there is room for improvement. IFRS were created with the goal of enhancing the quality of reported earnings in financial statements, and the importance of these standards, coupled with the popularity of earnings management in research, means that there are many possibilities for future empirical research and for improving statistical models.

Conclusion

An increased number of international businesses, along with increased cooperation across different markets, means that countries require a transparent environment that allows for easy comparison between financial statements. IFRS might be one instrument for improvement, as their purpose is to enhance both the quality of reported financial statements and the comparability and transparency of presented information. IFRS influence on earnings management represents one approach to evaluate and quantify the extent to which the standards are meeting their goals. In order to detect and measure the effect of IFRS, research must examine periods both before and after IFRS adoption. Prior research on this topic has yielded different results. While some research confirms that IFRS exert a positive influence on earnings management, some research finds that the effects are mostly negative. To summarize this research, IFRS might enhance the quality of reported earnings only if certain assumptions are met. IFRS themselves would not ensure higher transparency and comparability across companies worldwide, for there are many other factors (e.g. corporate governance, investor protection) that have indisputable influence as well. Still, IFRS may enhance the quality of reported earnings in certain circumstances.

Nevertheless, studies focusing on the impact of IFRS on earnings management have some limitations—limitations that can largely be attributed both to the short time horizon following the adoption of IFRS (e.g. [24]) and also to the limitations of statistical models

themselves, e.g. the behaviour of discretionary accruals is difficult to estimate (e.g. [8]). This paper contributes to the current debate over the effectiveness of IFRS and its ability to increase the quality, comparability and relevance of accounting information reported in financial statements. The relatively small amount of studies that have been conducted on IFRS following its adoption period, coupled with the importance of the relationship between IFRS and earnings management, means that there are many opportunities for future academic research in this area. Future research could concentrate on attributes such as earnings volatility, timelines, etc.

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References

- [1] AMSTRONG, C. S., BARTH, M. E., JAGOLINZER, A. D., et al. *Market Reaction to the Adoption of IFRS in Europe*. [cit. 2014-02-16]. Available at WWW: <<http://ssrn.com/abstract=903429>>
- [2] BALL, R., ROBIN, A., WU, J. S. Incentives versus standards: Properties of accounting income in four East Asian countries. *Journal of Accounting and Economics*, 2003, vol. 36, no. 1-3, pp. 235-270, ISSN: 0165-4101.
- [3] BALL, R. International Financial Reporting Standards (IFRS): Pros and Cons for Investors. *Accounting & Business Research*, 2006, vol. 36, no. special, pp. 5-27, ISSN: 0001-4788.
- [4] BARTH, M. E., CLINCH, G., SHIBANO, T. International accounting harmonization and global equity markets. *Journal of Accounting and Economics*, 1999, vol. 26, no. 1-3, pp. 201-235, ISSN: 0165-4101.
- [5] BARTH, M. E., LANDSMAN, W. R., LANG M. H. International Accounting Standards and Accounting Quality. *Journal of Accounting Research*, 2008, vol. 46, no. 3, pp. 467-498, ISSN: 0021-8456.
- [6] BARTOV, E. The Timing of Asset Sales and Earnings Manipulation. *The Accounting review*, 1993, vol. 68, no.4, pp. 840-855, ISSN: 0001-4826.
- [7] BURGSTAHLER, D. D., HAIL, L., LEUZ, CH. The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms. *The Accounting review*, 2006, vol. 81, no. 5, pp. 983-1016, ISSN: 0001-4826.
- [8] CALLAO, S., JARNE, J. I. Have IFRS Affected Earnings Management in the European Union. *Accounting in Europe*, 2010, vol. 7, no. 2, pp. 159 – 189, ISSN: 1744-9480.
- [9] CHRISTIE, A. A., AND ZIMMERMAN, J. L. Efficient and Opportunistic Choices of Accounting Procedures: Corporate Control. *The Accounting review*, 1994, vol. 69, no. 4, pp. 539-566, ISSN: 0001-4826.
- [10] DASKE, H., HAIL, L., LEUZ, CH., et al. *Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences*. ECGI – Finance Working

Paper No. 198/2008, [cit. 2014-02-15], Available at WWW:
<<http://ssrn.com/abstract=1024240>>

- [11] DECHOW, P. M., SLOAN, R. G., Executive incentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economics*, 1991, vol. 14, no. 1, pp. 51-89, ISSN: 0165-4101.
- [12] DECHOW, P. M., SLOAN, R. G., SWEENEY, A. P. Detecting Earnings Management *The Accounting Review*, 1995, vol. 70, no. 2, pp. 193 – 225, ISSN: 0001-4826.
- [13] DECHOW, P. M., SKINNER, D. J. Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators. *Accounting Horizons*, 2000, vol. 14, no. 2, pp. 235 – 250, ISSN: 0888-7993.
- [14] DECHOW, P. M., DICHEV, I. D. The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. *The Accounting Review*, 2002, vol. 77, pp. 35 – 59, ISSN: 0001-4826.
- [15] DECHOW, P. M., HUTTON, A. P., KIM, J. H. et al. Detecting Earnings Management : A New Approach. *Journal of Accounting Research*, 2012, vol. 50, no. 2, pp. 275-334, ISSN: 0021-8456.
- [16] EWERT, R., WAGENHOFER, A. Economic Effect of Tightening Accounting Standards to Restrict Earnings Management. *The Accounting Review*, 2005, vol. 80, no. 4, pp. 1101-1124, ISSN: 0001-4826.
- [17] GERAKOS, J. Discussion of Detecting Earnings Management: A New Approach. *Journal of Accounting Research*, 2012, vol. 0, no. 0, ISSN: 0021-8456.
- [18] GOEL A. M., THAKOR A. V. Why Do Firms Smooth Earnings? *Journal of Business*, 2003, vol. 76, no. 1, pp. 151 – 192, ISSN: 1075-6124.
- [19] GRAHAM, J. R., HANLON, M., SHAVLIN, T. Real Effects of Accounting Rules: Evidence from Multinational Firms' Investment Location and Profit Repatriation Decisions. *Journal of Accounting Research*, 2011, vol. 49, no. 1, pp. 137-185, ISSN: 0021-8456.
- [20] GUNNY, K. *What Are the Consequences of Real Earnings Management?* University of California, Berkeley, [cit. 2014-02-11], Available at WWW:
<http://w4.stern.nyu.edu/accounting/docs/speaker_papers/spring2005/Gunny_paper.pdf>
- [21] HEALY, P. M. The Effect of Bonus Scheme on Accounting Decisions. *Journal of Accounting and Economics*, 1985, vol. 7, pp. 85 – 107, ISSN: 0165-4101.
- [22] HEALY, P. M., WAHLEN J. M. A Review of the Earnings Management Literature and Its Implication for Standard Setting. *Accounting Horizons*, 1999, vol. 13, no. 4, pp. 365 – 383, ISSN: 0888-7993.
- [23] HOUQE, M. N., VAN ZIJL, T., DUNSTAN, K. et al. W. The effect of IFRS Adoption and Investor Protection on Earnings Quality Around the World. *International Journal of Accounting*, 2012, vol. 47, no. 3, pp. 333-355, ISSN: 1094-4060.
- [24] JEANJEAN, T., STOLOWY H. Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption. *Journal of Accounting and Public Policy*, 2008, vol. 27, no. 6, pp. 480-494, ISSN: 0278-4254.

- [25] JONES J. J. Earnings Management During Import Relief Investigations. *Journal of Accounting Research*, 1991, vol. 29, no. 2, pp. 193 – 228, ISSN: 0021-8456.
- [26] LANG, M., READY, J. S., YETMAN, M. H. How Representative Are Firms That Are Cross-Listed in the United States? An Analysis of Accounting Quality. *Journal of Accounting Research*, 2003, vol. 41, no. 2, pp. 363 – 386, ISSN: 0021-8456.
- [27] LEUZ, CH., NANDA, D., WYSOCKI, P. D. Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 2003, vol. 69, no. 3, pp. 505 – 527, ISSN: 0165-4101.
- [28] PACTER, P. IASB, Global Accounting Standards – From Vision to Reality. *CPA Journal*, [cit. 2014-02-15], Available at WWW:
<<http://www.ifrs.org/Alerts/Publication/Documents/2014/CPA-Journal-Global-Accounting-Standards-January-2014.pdf>>
- [29] TREUMAN, B., TITMAN, S. An Explanation for Accounting Income Smoothing. *Journal of Accounting Research*, 1988, vol. 26, ISSN: 0021-8456.
- [30] WYSOCKI, P. D. Discussion of Ultimate Ownership, Income Management, and Legal and Extra-Legal Institutions. *Journal of Accounting Research*, 2004, vol. 42, no. 2, pp. 463 – 474, ISSN: 0021-8456.
- [31] ZEGHAL, D., CHTOUROU, S. M., SELLAMI, Y. M. An analysis of the effect of mandatory adoption of IAS/IFRS on earnings management. *Journal of international accounting, auditing and taxation*, 2011, vol. 20, no. 2, pp. 61-72, ISSN: 1061-9518.
- [32] ZEGHAL, D., CHTOUROU, S. M., FOURATI, Y. M. The Effect of Mandatory Adoption of IFRS on Earnings Quality: Evidence from the European Union. *Journal of International Accounting Research*, 2012, vol. 11, no. 2, pp. 1-25, ISSN: 1542-6297

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RECENT TRENDS IN THE REGIME OF TRANSFER TAX IN THE CZECH REPUBLIC AND SELECTED EU MEMBER STATES

Eva Daniela Růžičková, Radka MacGregor Pelikánová

***Abstract:** The taxation of the transfer of immovable assets is a typical feature of tax systems of the majority of EU member states. However, each of them uses its rather large power to select its own approach and to project it into the national (intrastate) law. The massive re-codification of the Czech Private law offered an opportunity to re-evaluate and to change the setting of the famous Czech tax triad, included for over two decades in the Act No. 537/1992 Coll., on the inheritance, gift and real estate transfer tax. Taking effect as of 1st January 2014, this Act was cancelled and its agenda was split, specifically the provisions about the tax on the transfer of real estate were incorporated in the brand new statute, namely the legal measure of the Senate No. 340/2013 Coll., on the real estate acquisition tax. These dramatic changes in the Czech transfer tax scenery need to be described and critically analyzed while using an assessed domestic questionnaire search and providing comparative comments regarding other EU member states.*

***Keywords:** Tax, Transfer, Tax return, Real estate, Guidelines value, Comparative value, Expert appraisal.*

***JEL Classification:** C18, H21, K34, R31, R38.*

Introduction

Most developed countries tax the change of the ownership of real estate, and thus the inheritance tax, gift tax and transfer tax regarding real estate are included in the majority of national tax systems [4]. Although the yield from the transfer tax is only 1% of the total state budget revenues in OECD countries, it is considered critical and is the subject of an intense debate involving economic, legal, and social arguments [4].

The taxation of immovable assets transfers is a typical feature of tax systems of the majority of EU member states. Nevertheless, there are significant differences in the perception of their foundation and function, and since the European integration is rather less pronounced in this arena, it basically devolves upon each and every member state to select its own approach to the transfer taxation and how it projects into the national (intrastate) law. Since the current (or just freshly passed) crisis has had a definitely punishing impact on the EU, the EU concepts, fundamentals and goals are undergoing a serious scrutiny influenced by practical and pragmatic considerations [7]. Thus, unlike regarding special ad hoc projects, a much more intense and stronger integration in national tax fields of EU member states in general does not seem to be at the top of the list of desired near future events [5]. In addition, there is an ongoing debate and many involved aspects are sensitive because they touch a number of social priorities which are not easy to be reconciled. This inherent dynamic makes this field prone to national legislation changes.

On 1st January, 2014, there took effect the Act No 89/2012 Coll., the New Civil Code (“New Civil Code”) which was created within a framework of a robust re-codification of the Czech national Private law. This re-codification of the Private law has an impact in the

arena of the Public law and consequently the former system of the Czech triad tax based on the Act No. 537/1992 Coll., on the inheritance, gift and real estate tax was changed and the agenda was split. Newly, the modified regulation of the inheritance and gift tax is added into the Act No. 586/1992 Coll., on the income tax, and the regulation of the former real estate transfer tax is included in the new legal measure of the Senate No. 340/2013 Coll., on the real estate acquisition tax (“Legal measure”). The new regulation of the real estate acquisition modifies the regime of the setting of the tax duty, allows the selection of the taxpayer of the real estate acquisition tax and brings new forms and templates. Thus, it is highly instructive to analyze and evaluate this new scenery from various perspectives and comparatively confront it with the *status quo* in several other EU member states and consider related legal as well as economic aspects.

1 Goals and methods

The first goal of this article is an analytic description and critical evaluation of the new regime of the real estate acquisition tax in the Czech Republic, based on the Legal measure and its comparison with matching regulations in selected EU member states. The second goal is the evaluation of the awareness about it, based on a questionnaire search assessed by the analysis of categorical data, i.e. whether individuals are sufficiently informed about the legal changes in the field of the real estate acquisition tax and, more specifically, whether the newly regulated possibility of an agreement between the seller and buyer about the determination of who pays the real estate acquisition tax will have any influence on the price of the real estate. The poll of questionnaire respondents consists of individuals currently selling or buying real estate in Prague and the questionnaire covers both, the issue of the level of the awareness and the issue of the possible influence of the possibility to determine the taxpayer on the sale price.

Therefore the hypotheses are set as follows:

- H1 – individuals are not sufficiently informed about changes in the field of the real estate acquisition tax;
- H2 – the newly regulated possibility to determine the taxpayer by the agreement of the seller and buyer will have an influence on the price.

At the outset, there was employed the method of the literate research including former and new legislation and then followed an evaluation by the comparison techniques. The analytical assessment of the cadastre of real estate and its data had deductive features and was closely linked to the prior literate research and its results. Hypotheses were set based on the professional search and its assessment while employing the categorical data analysis. The data extracted from the completed questionnaires was assessed by a categorical data analysis with the employment of the software program STATISTIKA and there was employed the statistic method of the dependency quantitative signs of Pearson’s chi-quadrante. The quantitative methods and meta-analysis could not be fully employed due to the extent of the research, but at least the discrepancy of the primary knowledge of respondents, while addressing the second hypothesis was reduced by an appropriate instruction provided before answering the second part of the questionnaire.

2 Real estate acquisition tax

2.1 Characteristic features of the real estate acquisition tax and of the Legal measure

European integration represents a concept perceived as a complex unification procedure entailing an abundance of complicated processes in various fields [9] and with a variable level of conferral competencies. The real estate transfer tax field is, and probably will stay in the near future, in the sphere of national competencies, i.e. out of a massive EU unification stream. Thus, the real estate transfer is taxed according to national laws of EU member states which are partially similar and this is more a result of the recognition of a similar value and tradition, practicability and global economy than due to Brussel's legislation.

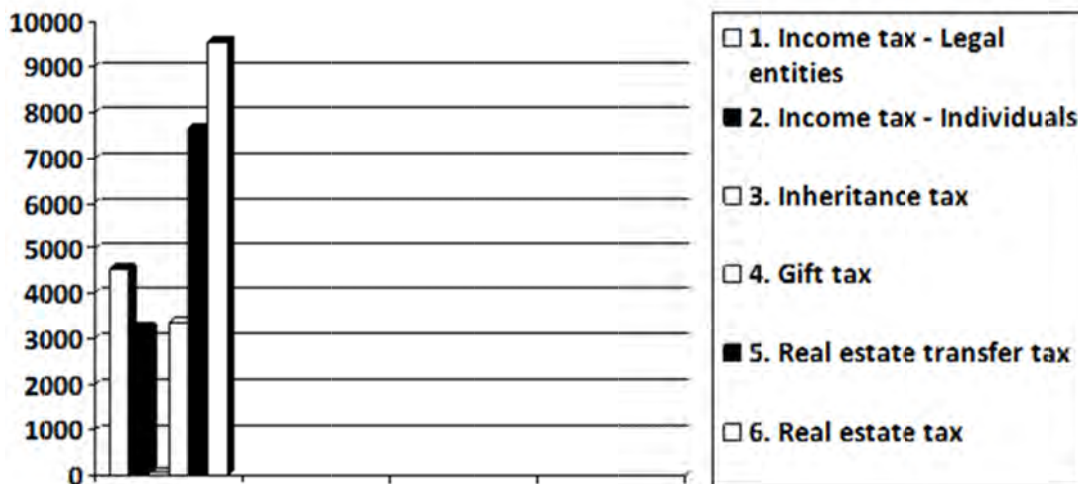
On 1st January, 2014, there took effect the New Civil Code, which emerged within the massive project of the re-codification of the national Private law of the Czech Republic. Hence, a large section of the Private law sphere is newly regulated by the New Civil Code and this gives a much stronger, noticeable and widely applicable importance to the contractual freedom and the concept of good morals, which are becoming automatically an integral part of the public order mandate [6].

Along with it took effect, as well, the Legal measure regarding the tax duty to be paid in the event of the transfer of the ownership of real estate which is neither through inheritance or gift. Real estate as the underlying object is newly defined by the New Civil Code in Art. 498 al.1 as land, under-terrain buildings with an independent purpose designation as well as real rights, i.e. *in rem* rights, to them, and rights designated to be real estate by the law. If the law states that an item is not a part of a piece of land and if such an item cannot be transferred from one place to another, then even this item is considered real estate. Hence the former definition of real estate by Act No. 40/1964 Coll., Civil Code including only houses, buildings, flats and land was newly expanded. Furthermore, newly the taxation will extend to the acquisition of real estate by possession during the prescription period and by expropriation. On the other hand, the Legal measure does not cover the real estate acquisition by land adjustments and by providing a compensation for expropriation.

The reason for the enactment of the Legal measure was the need to assure the continuity of the legal regulation of real estate transfer taxation, since the Act No. 357/1992 Coll, on inheritance, gift and transfer tax was cancelled.

The real estate acquisition tax is, as other taxes, the income of the state budget. The satisfaction of this duty is controlled by the relevant financial administration, according to the location of the real estate.

Fig. 1: Overview of various type of tax income into the state budget in 2012 in millions of CZK

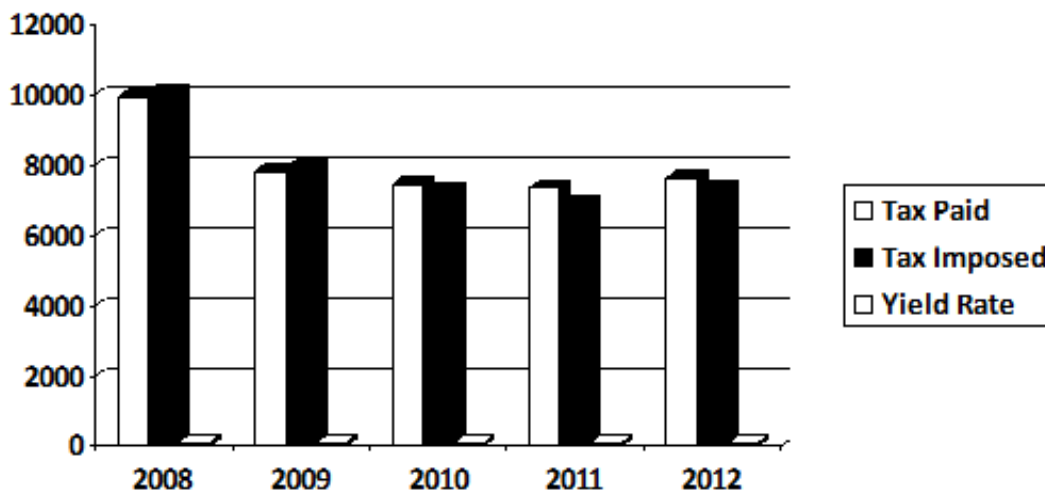


Authors Note: values are sorted from left to right

Source: [3]

In 2012, the biggest income in the state budget was generated by the real estate tax, totaling 9.541 million of CZK, followed by the real estate transfer tax of 7.660 million of CZK and by the income tax of legal entities in the amount of 4.538 million of CZK. The smallest contribution to the state budget came from the gift tax in the amount of 3.368 million of CZK and the income tax of individuals in the amount of 3.261 million of CZK [3]. Fig. 1 demonstrates the potential for the importance of the real estate acquisition tax for the income part of the state budget.

Fig. 2: The evolution of the payment of the real estate transfer tax in 2008 – 2012 in millions of CZK



Source: [3]

Fig. 2 shows the drop in 2009 due to the economic crisis, and it indicates the following stabilization at a rather lower level due to the general decrease of the price of real estate, as well as the volume of transactions. Furthermore, it demonstrates a moderate increase of 4% of the transfer tax in 2012, i.e. by 298 million of CZK and reached 7.660 million of CZK [3]. It suggests a partial revival of activities on the real estate market, perhaps even the winding-down of the world economic crisis.

2.2 The payer of the real estate acquisition tax

According to the former, as well as new, regulation, the payer of the real estate acquisition tax is the seller and the guarantor for the tax payment is the buyer, but the new regulation offers an option to the buyer and seller to agree that the buyer is the taxpayer and thus the guarantee-ship for the tax payment is eliminated [2]. This option should increase the certainty of the buyer that the tax duty will be timely and duly satisfied. However, the impact of this option and of its use on the amount of the sale price of the real estate is so far unclear.

The time limit to file the tax return regarding the real estate acquisition tax remains the same in the Legal measure as it was under the former legislation, i.e. the tax return needs to be filed on or before the last day of the third month following the month during which the cadastre registered the title change. For the real estate not registered by the cadastre or another public registry, the three month period starts to run from the date of the signature by the last party.

The locally competent tax administration is the tax administrator from the place of the pertinent real estate and in the above deadline applies for both, filing the tax return and paying the tax (down-payment on the tax). If the real estate acquisition tax does not exceed CZK 200, the tax is not to be paid.

2.3 Tax basis and rate for the determination of the tax duty

A real estate transfer tax is calculated as a rate applied on the tax basis. The Czech tax rate for the real estate acquisition tax is 4% of the tax basis. Interestingly, there is a large difference between developed countries in the amount of the transfer tax rate. Even more interestingly, the differences are matching on the both sides of Atlantic, i.e. 20% of the states in the USA and 20% of the EU member states have this rate as 0 or close to 0 and thus the real estate tax is not collected or collected in a symbolic amount. The remaining 80% of states charge at a rate 1-5% for the USA and at a rate 1-15% in the EU member states. Namely, certain regions in the EU which are considered as “wealthy” and with a strong drive for social re-distribution do not hesitate to set the rate way over 10%, e.g. regions in francophone countries or rich German towns such as Berlin or Hamburg [1]. It is worthy to observe that the rate is not flat in all EU member states and e.g. in the UK a strong tax rate progression applies with respect to real estate transfer tax rate going from 0% to 15%.

All EU member states struggle to some extent to the establishment of the tax basis to which the real estate transfer tax rate is to be applied. More generally, the valuation of real estate is a central tenet for all businesses, since land and property are factors of production [8] and at the same time have a strong social impact. There is a wide range of purposes for which valuations are required, including the real estate transfer tax, and many traditional (regression models or comparable, cost, income, profit method, etc.) as well as advanced (ANNs, hedonic pricing method, special analysis methods, ARIMA models, etc.) valuation methods can be used [8].

In the Czech Republic, the basis for the calculation of the real estate transfer tax is the so called acquisition value of the real estate reduced by the in the tax returned indicated recognized expenses, typically the costs of the expert appraisal. The acquisition value of the real estate is the agreed price, comparative tax value, the price according to an expert appraisal or a special price of the real estate. Hence, the Legal measure offers four methods

for the determination of the acquisition value of the real estate for the purpose of the real estate acquisition tax.

The first is the agreed price, and it is understood as the agreed and paid price. The second is the comparative value and it amounts to 75% of the guidelines value or the price according to an expert appraisal, and, if both are available, then the choice between these two belongs to the taxpayer. The guidelines value is calculated by the tax administration itself, based on data provided by the taxpayer about the real estate, such as the size, type, age, etc. and included in the tax return as a price of such real estate in the pertinent location. The calculation of the guidelines value does not require any expert appraisal and pursuant to the Explanatory Report to the Legal measure [2] this should reduce the administrative burden. Hence, the taxpayer pays only a down-payment in the amount of 4% from the acquisition value and after the calculation of the final tax duty by the tax office, this down-payment is transformed in the payment of the tax and if the calculation of the tax administration leads to a higher amount of the guidelines value, i.e. comparative value, the taxpayer thereafter must pay the difference. The third is the price according to an expert appraisal, and it is further regulated by the Act No. 151/1997 Coll., on the propriety assessment and its regulation. The fourth is the special price as a real estate acquisition price as set in the auction within bankruptcy or execution proceedings.

3 General information on the questionnaire search

Based on the questionnaire search and its assessment by the categorical data analysis, there was examined whether individuals are sufficiently informed about the changes in the field of the real estate acquisition tax and whether the newly regulated possibility to determine the taxpayer by the agreement of the seller and buyer will have any influence on the price. The questionnaires were presented to a pre-selected category of respondents, namely individuals selling or buying real estate in Prague. Two important and well-known real estate companies assisted in the process.

A two-phase filling of questionnaires was applied, i.e. the respondents answered the first part about their awareness, then they obtained information about the changes and thus the inequality of their original knowledge level was minimized and thereafter completed the second part about the possible impact of the contractual option to identify the taxpayer on the price.

In total, 50 questionnaires were distributed and all were correctly completed and returned. The obtained information, and extracted data, was assessed by categorical data analysis with the employment of the software program STATISTIKA. The importance level was set as $\alpha=0,05$ and the assessment itself occurred based on the statistic method of the dependency quantitative signs of Pearson's chi-square. The conditions for the use of the chi-square were met ($n>40$).

3.1 Results of the questionnaire search

H₁ – individuals are not sufficiently informed about changes in the field of the real estate acquisition tax

H₀ – there is no dependency between the indicated signs, i.e. individuals are sufficiently informed about the changes in the field of the real estate acquisition tax.

Tab. 1: Contingency table for H1

| | Sufficiently informed | Insufficiently informed | Total |
|---------|-----------------------|-------------------------|-------|
| Buyers | 8 | 17 | 25 |
| Sellers | 16 | 9 | 25 |
| Total | 24 | 26 | 50 |

Source: Authors

The value of the Pearson's chi-square is $X^2 = 5,12$. The importance level is $\alpha=0,05$ thus $X^2_{0,05 (1)} = 3,841$. Since $X^2 > X^2_{0,05 (1)}$, H_0 is rejected. This means that there is a dependency between the indicated signs, i.e. individuals are not sufficiently informed about the changes in the field of the real estate acquisition tax.

H2 – newly regulated possibility to determine the taxpayer by the agreement of the seller and buyer will have an influence on the price.

H₀ – there is no dependency between the indicated signs, i.e. the newly regulated possibility to determine the taxpayer by the agreement of the seller and buyer will not have an influence on the price of the sold real estate.

Tab. 2: Contingency table for H2

| | Influence on the value of the real estate | No influence | Total |
|---------|---|--------------|-------|
| Buyers | 6 | 19 | 25 |
| Sellers | 11 | 14 | 25 |
| Total | 17 | 33 | 50 |

Source: Authors

The value of the Pearson's chi-square is $X^2 = 2,22$. The importance level is $\alpha=0,05$ tzn. $X^2_{0,05 (1)} = 3,841$. Since $X^2 < X^2_{0,05 (1)}$, H_0 is confirmed, i.e. there is no dependence between the indicated signs and thus the newly regulated possibility to contractually determine the taxpayer will not have any impact on the sales price.

4 Discussion regarding the results of the questionnaire search

According to the questionnaire search and its assessment by the method of dependency of quantitative signs of Pearson's chi-square, individuals are not sufficiently informed about changes in the field of the real estate acquisition tax and the newly regulated possibility to determine the taxpayer by the agreement of the seller and buyer will have not an influence on the price of the sold real estate. In other words, respondents suffered by a lack of information, nevertheless even after having being informed they still stated that the contractual freedom to determine the taxpayer would not have any impact on the amount of the negotiated price. These quantitatively measured self-statements do not reflect qualitative aspects and should be reassessed in the future. It will be instructive to see if the parties, despite proclaiming the insignificance, will at least intuitively reflect the positive effect of the contractual possibility to determine the taxpayer, i.e. to make sure that it will be

the buyer. The result may be either that the new possibility will not be employed and remain without an impact on the price, or that the new possibility will be employed. In such case, either again it may either not dramatically impact the structure of real estate deals or it may increase the security of the transaction and decrease their complexity and ultimately generate a moderate change in real estate prices.

Conclusion

The intent of the legislature was to facilitate real estate transactions and to provide a more suitable and modern legal framework based on the recognition of the freedom of parties to determine how they will satisfy their public law duties, namely the determination of control of the tax basis and the payment of the real estate acquisition tax. The questionnaire search suggested that individuals are not sufficiently informed about these changes, and even after they became informed, they designated them as insignificant. These outcomes clearly demonstrate a deficiency in the informative and awareness campaign. Further, they indicate a rather questionable refusal of the fact that the legislative changes have a strong potential to simplify real estate transactions, to reduce the transaction costs by eliminating the expert appraisal costs, or to avoid payment for security deposits with respect to the part of the real estate price “frozen” for the payment of the tax duty.

A mere observation of the future praxis along with further research including qualitative aspects and the employment of meta-analysis methods should bring more light in this, so far, rather unclear and confused arena, and help with the final answer whether the intent of the legislature becomes materialized.

References

- [1] CINNAMON, Allan. Fiscal Odyssey – The diary of an international tax consultant. *Tax Journal*, 2008, 921:13.
- [2] Explanatory Report to the legal measure of Senate No. 340/2013 Coll., on real estate acquisition tax – *Důvodová zpráva k zákonnému opatření č. 340/2013 Sb., o dani z nabytí nemovitých věcí* [online] 2013 [accessed on 22nd March, 2014]. Available at WWW: <<http://www.mfcr.cz>>
- [3] Financial administration: 2013 - *Finanční správa: 2013* [accessed on 22nd April, 2014]. Available at WWW: <<http://www.financnisprava.cz/cs/financni-sprava/financni-sprava-cr/vyrocnizpravy-a-souvisejici-dokumenty/2012>>
- [4] JAPALLI, Tullio, PADULA, Mario, PICA, Giovanni. Do transfer taxes reduce intergenerational transfers? *Journal of the European Economic Association*, 2014, 12(1): 248-275. ISSN 1542-4774.
- [5] MacGREGOR PELIKÁNOVÁ, Radka. And the best top level domain for European Enterprises is ... *International and Comparative Law Review*, 2012, 12(1): 41-58. ISSN 1213-8770
- [6] MacGREGOR PELIKÁNOVÁ, Radka, CÍSAŘOVÁ, Jarmila. An overview of the concept of good morals in Czech Codices. *AA Law Forum*, 2014, 3-12. ISSN 1804-1094
- [7] MacGREGOR PELIKÁNOVÁ, Radka, PACLÍK, Miroslav. European Integration Odyssey – the Ship Sails on ... but Where? *Journal on Legal and Economic Issues of Central Europe*. 2013, 4(1): 40-48. ISSN 2043-085X

- [8] PAGOURTZI, Elli, ASSIMAKOPOULOS, Vassilis. Real estate appraisal: a review of valuation methods. *Journal of Property Investment and Finance*, 2003, 21(4): 383-401. ISSN 1463-578 X.
- [9] VEČEŘA, Miloš. The Process of Europeanization of law in the context of Czech law. *Acta universitatis agriculturae et silviculturae Mendelianae Brunensis*, 2012, LX(2): 459-464. ISSN 1211-8516.

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LIMITS OF USAGE OF COST-BENEFIT ANALYSIS BY EVALUATION OF PUBLIC PROJECTS

Lucie Sobotková

Abstract: *The article deals with the issue of evaluation of public projects which is based on the method of Cost-benefit analysis. The future social benefits and costs of public projects (financed especially from funds of the European Union) are evaluated by means of this method. We can practically meet the approach of set of social benefits and costs which arise from the assessment of present relevant economies. These economies are consequently predicted on the whole time of life cycle of the project. At the same time we simplify when we assign the present benefits to the particular years of lifetime of the project (we only respect the discount rate). This article proposes to involve the approach of system dynamics in the prediction. The system dynamics searches the reality as the system when the particular items of system are mutual influenced. The feed backs are raised when the result of the activity influences the original cause by return. The integration of the system dynamics into the evaluation of social benefits and costs could improve the prediction. Because the efficiency allocation of public resources is the aim of evaluation of public projects, the usage of system dynamics could support the process of allocation.*

Keywords: *Cost-benefit analysis, Methods of evaluation, Public projects, Simulation, System dynamics.*

JEL Classification: *H43, R58.*

Introduction

Any human activities in private and public area as well are confronted with the fact of limited sources. This limitation relates to all of sources (financial, capital and human sources). Therefore it is important to evaluate their using. On the basis of the evaluation we can make the decision about the final allocation of sources that way in order to the result of the human effort brings the required solution. Nevertheless e.g. in the area of public sector may deal with the effort to support the development, assess the suitability of provided public services etc. with the aim to identify the territorial impacts of these activities.

We can use various methods and approaches for evaluation above mentioned activities. These methods are represented by cost minimization analysis (CMA), cost-effectiveness analysis (CEA), cost-utility analysis (CUA) and cost-benefit analysis (CBA). The evaluation of projects in the area of public sector is just most often linked to these methods. Firstly the attention will be paid to the method of CBA, which is recommended e.g. by the European Union to the evaluation of projects which call for the grants from the European Funds (see e.g. [2]). However, this method is often criticized by a lot of authors. These authors often stress the weaknesses and inaccuracy which this method produces. The aim of this article is not only to describe these weaknesses by its application. The steps which are using the theory of the system dynamics are suggested in the conclusion of this article. The theory of system dynamics may be the instrument for specification of criteria designed for the decision making about the realization of public projects.

1 Cost-Benefit analysis method

1.1 Characteristics of the method

The cost benefit analysis (CBA) represents the practical way of evaluation of suitability, especially of public projects. This method evaluates from the point of view of the long term projects and the point of view of wide of their impact (we can insert the impact on the specific groups of inhabitants, chosen industries or relevant regions, cf. e.g. [9]). This analysis becomes an instrument in the hands of government. The aim of this analysis is to support the decision making process about the realization of public projects. Namely, the ensuring the efficiency by usage of public sources is the aim of the analysis. The essential decision-making criterion is based on the principle according to which the benefits of the project have to exceed the costs expended on the project. Benefits and costs are expressed in financial units. This fact enables to compare the projects with different time of life cycles. We can include the factor of time in the analysis in the discount form.

The decision on the choice of suitable variant of project should be determined on the basis of difference between benefits and costs (accordingly on the basis of the net present value) or on the basis of the benefit-cost ratio. Then it has to stand:

$$PV(B) > PV(C) \quad (1)$$

or

$$NPV > 0 \quad (2)$$

whereas:

PV – present value,
 B – benefits,
 C – costs,
 NPV – net present value.

In the case of the benefit-cost ratio the project (variant of project) is accepted under these conditions:

$$PV(B) / PV(C) > 1 \quad (3)$$

It is possible to set the rank of projects (variants of project) on the basis of result of the net present value or the benefit-cost ratio. After, we can choose the project (variant) with the highest calculated value for the realization.

1.2 The basic evolutionary stages of the method

The evolution of the CBA is mainly linked with the requirement of so called the efficiency in government. This concept especially begins to enforce in the phase after the World War II. Prest and Turvey [9] describe that this method started to invoke in the United States over the 20th century. Stepwise, the method is deepened and the principles are codified. According to Adler and Posner [1] the modern concept of the CBA is the result of three historical evolutionary phases. In the historical concept we can see the first at the turn of 19th and 20th century when the idea of usage of expertise in public administration on the scientific basis is established. The main phase of practical usage of CBA relates to strengthening the influence of central government of the USA in other countries during the 20th century. The method is especially linked with the programme the New Deal which in the United States in 1936 initiated the usage of the CBA. In this stage the Congress instructed to agencies to weight the costs and benefits of projects related to flood-protection

actions. The popularity of this method begins to grow from these times. The third phase relates to the enforcement of modern concept of the welfare economics. This situation relates to 1950s and 1960s when the U. S. government and other countries found the technical support for application of this analysis. In this period the techniques for evaluation of investments developed by private sector diffuse to the public sector. Pearce, Atkinson and Mourato [8] remark that in this period the method of the CBA especially struggles in the area of environmental policy, transport or health care. Furthermore, e.g. the OECD struggles for its distribution in terms of economic analyses which facilitate the decision-making process.

In the following years the principles of the CBA become a part of other additional analyses. E.g. presently we can meet this method in valuation of required by the European Union for the Applications Form to obtain the grants from the EU Funds. The method of the CBA is the part of the Feasibility Study which is required e.g. in applications for financing from Regional Operational Programmes when the relevant the Regional Council of Cohesion Regions.

1.3 Limits of the Cost-Benefit Analysis Method

The method of CBA was often the subject of criticism over the years. The criticism was pointed at the philosophic-moral aspect, theoretical principles or practical application. Adler and Posner [1] mention that many of research workers in the area of law, but also economics and philosophy refer to poor moral foundation of evaluation and assessment in the area of natural sources or human life and other hardly valuable products. The relevancy of obtaining information for further decision making is very low. In addition, it is argue against according to economic point of view that the CBA does not allow the comprehensive and consequent ranking of projects because we are in the area of normative economics. Therefore, the results cannot be always neutral and scientifically well-founded.

The European Commision [2] refers to other limitations. The CBA is used in the area of social sciences which are not the exact sciences. These sciences are based on the approximations, working hypotheses or certain simplifications. The reason relates to the often lack of data, limitation set by the used methods of assessment etc.

We can meet in the case of the method of CBA the quite a number of critical reservations which relate to the theoretical foundation and its application as well. Pearce, Atkinson and Mourato [8] attend to limited usage of the CBA in the theoretical level where the CBA is based on the neoclassical economics of welfare especially linked to the Pareto approach. Pareto principle says that made changes are successful only in the case if nobody suffers the loss of welfare and at least one person improves (the Pareto improvement). However, the Pareto principle cannot evaluate in the certain situation the fruitfulness of the changes. Therefore the CBA uses as the theoretical basis the Kaldor-Hicks compensation principle as well. The aim of this principle is to overcome the limits of Pareto approach. The compensation principle moves towards the evaluation the policy as fruitfulness when the subjects, which increased the level of their welfare, will compensate those subjects, which lost a part of their welfare in consequence of realization of the policy. Nevertheless, it was achieve of the certain improvement compared to previous conditions.

In relation with the CBA more critical acceptances occur pointing the theoretical fixation. E.g. Prest and Turvey [9] set four basic critical questions:

- Which costs and which benefits are to be included?

- How are they to be valued?
- At what interest rate are they to be discounted?
- What are the relevant constraints?

The first question refers the determination of subjects which will directly be injured and determination of benefits and costs which will come into the analysis. Vodáková [17] e.g. mentions that the impacts of projects affect a wide range of subjects (beneficiaries). Therefore, it is important to decide which subject will be included into the analysis as the relevant beneficiary and which subject will not be included. It is the normative approach again when the decision on appropriate beneficiaries (the choice of the suitable deciding criterion for their determination) can influence the output of the analysis.

Hereto, these subjects (beneficiaries) are able to be specified, the next question appears which is related to their utility. The question is, if we can aggregate the individual curves of utility into the one utility function, or how the social function reflects the interests of all individuals. This social function is a certain consensus.

The next critical point according to the point of view of the comparison of benefits and costs relates to the probability of occurring of partial benefits and costs. While the probability of realization of future expenditures of the project is high, the probability of realization of partial benefits can move quite arbitrarily. The benefits of the projects are rather illusory. If we compare the various alternatives, we can claim the alternative with the highest “net profit” cannot be the best solution at the same time (cf. e.g. [3]). This consists in the completeness of involvement of all benefits and costs into the analysis. Sen [12] notes that the CBA is the method of maximization, but it is not the optimization method. According to this point of view it is not important to compare all of available alternates and to choose the optimal solution. According to the principle of maximization the solution is sufficient if the decision-maker chooses the alternative which is not worse than the other compared variant.

Close to the solution of the question of assessment of social benefits highly depends on the used technics of their valuation. At monetization of partial benefits (and costs as well) we can use the direct assessment on the basis of market price in the case, that the market of the product exists. Sieber [14] points out that we cannot use this technique in the case of a lot of benefits and costs of public projects. The projects create the effects which is possible to designate as public goods and services. If we cannot set the market price than we can use following possibilities:

- Analogical markets,
- shadow prices.

In the case of usage of analogical markets we can try to assess the effect by means of the derivation from the price of other asset for which the market exists. This possibility has the condition that the logical relation exists between the both of goods, e.g. we can evaluate the level of noise in the municipality by means of difference of market prices of real estates in the relative noiseless area and in the area with noise pollution.

The shadow price is according to Sieber [14] one of the possibilities to evaluate the good which does not pass through the market. The principle of shadow prices consists in the existence of opportunity costs of production or consumption of valuated commodity. Nevertheless, we expect if we do not obtain the valuated benefit instead of it we consume

the other product or service. The saved costs for this product represent the price of valuated benefit. The valuation of increasing of road safety by means of decreasing of costs for healing wounds caused by traffic accident is the suitable example.

The usage of non-market evaluation methods is based on the using the approach of willingness to pay or willingness to accept (for details see e.g. [8]). The increment of individual welfare can be valued by the maximum amount which the individual is willing to forego to reach the change. In the case of decreasing of the individual welfare we can use the amount which the individual requires as the compensation to accept this decreasing. In principle, we can measure four basic variants (according to [7]):

- Willingness to pay to secure a benefit,
- willingness to accept to forego a benefit,
- willingness to pay to prevent a loss,
- willingness to accept to tolerate a loss.

Although, both of technics are essentially based on the same idea, they can provide different evaluation of attained benefits (or losses). This reality was in many times empirically confirmed. The difference among the results is especially evident in the case of the revealed preference method (for details see e.g. [8]).

The choice of the used discount rate can influence the resulting decision. Many public projects are long-run character. Then it is important by the valuation of benefits and costs to take into account the time factor. The question consists in the choice of the height of the discount rate which is suitable for evaluating of public projects. The European Commission [2] recommends to use in the case of so called cohesion countries the social discount rate 5.5 %. The Commission sets in other countries this rate in value 3.5 %. Further, e.g. Kubíček and Vitek [4] deal with the issue of the social discount rate. They refer to the absence of favorable methods for set the social discount rate for long-term projects. With increasing of the discount rate we will rather prefer the short-termed projects. These authors suggest two possible methods for the set of the social discount rate (for evaluation of social benefits of public projects). They recommend in both of cases to choose different height of discount rate during the lifetime of valuated projects. In the long run the height of the discount rate should be decreasing.

The next issue relates to the choice of criteria for decision-making on the realization of the policy or the project. The decision on the suitable variant of the policy or the project can be made on the basis of differences (also on the basis of the net present value) or the quotient of benefits and costs. However, Pearce, Atkinson and Mourato [8] refer that the choice of the decision criterion can affect the choice of resulting variants (the difference or the rate of benefits and costs). Nevertheless, it is not possible to set which of the criteria gives reliable results and to the better support of the decision.

2 Limits during application of the Cost-Benefit Analysis as a tool for evaluation of public projects

Beside the above describing limits of the method of the CBA we can meet other limits linking to a practical application. These limits can affect the final decision on the evaluated project. In this case the access of the evaluator is the source of constrain, e.g. Marešová [5] designates the author of the analysis as the significant factor. We can commit many

mistakes in particular steps of the CBA. The author describes the example of error of the evaluator who can monitor the subjects by unequal ways in terms of projects. We can pay higher attention to some subjects (their benefits or costs) than others.

As it was mentioned above, the European Union requires at the application for financing of projects from the Funds to create the Feasibility Study. The CBA is a part of this study. This study is oriented at a comprehensive describing all of realization aspects of investment including their taking into an account in financial flows. The CBA is focused on the resulting effects of the project, on all of subjects and on the valuation of meaningfulness (cf. [15]). The project is evaluated by the criteria, which are contained in the Feasibility Study. These criteria should be clearly identified by their content, by their task in the system, by determination of the way of their measurement and determination of “transformation” of measured and assessed values into the integrated scoring scale, or, eventually, it must determine the conditions of acceptability or unacceptability of the project (for details see e.g. [6]).

In the methodical materials (see e.g. [11]), and in the projects studies (see e.g. [10]) the evaluated benefits are predicted and assessed for the appointed durability life of projects. We can mention as an example the Feasibility Study “Bicycle Path Bezpráví – Choceň” (The project of the bicycle path between two concrete municipalities in the Czech Republic) [10], where the benefits are evaluated in the form of time savings (saved time of employees and students which can use the bicycle path during the commuting to the job or to the school) or costs savings (savings of travelling expenses for buses or cars if they use the bicycle path instead of these vehicles). The savings are counted on the basis of expected usage of the bicycle path. The next criteria (e.g. reduction of air pollution or noise pollution) are only enumerated (considering their difficult quantification – see [10]). As indicated above, the method of the CBA is not understood as the optimization method. Therefore, we can the quantified benefits of the project regarded as sufficient. Further, this article deals with the way of criteria of saving applied in the method. The time savings are related to the users of the bicycle path. The number of users is estimated on the basis of the real population in the region and on the basis of the estimate of the number of potential users from the inhabitants. This estimate of users is taken as constant throughout the lifetime of the project. We come to the question whether this chosen approach is fully suitable (also whether with respect to the previous mentioned notice, it is really the question of the correct application of method or the fault of the method).

3 System dynamics as a tool for the limit restriction in the use of the Cost-Benefit Analysis

We use the above mentioned project of the bicycle path for the evaluation of limits of the application the CBA. As was mentioned above, the project of the bicycle path is evaluated according to the criteria of impacts of the project on the region and its inhabitants. The benefits entering the CBA are expressed by means of savings of time and savings of costs beside the unused the bus or the car as transport vehicles. Thus, these benefits have the direct connection with the project. The probability of the realization of these savings is not valued in this study. Because the CBA in a principle does not value the probability of realization of benefits, their application is accepted in this sense.

The improvement of predicative abilities rather relates to the access of evaluator to express future benefits (and costs as well) of the project. All savings are, as was above mentioned, related to the real number of the inhabitants in region. The number of potential

users is set according to the estimation. This number is essentially valid for the moment of the creation of the Feasibility Study. It is predicated in unchanged form (only with taking into account of the time factor in the form of discounting) for the next year of the estimated life cycle of the project. We can denominate this approach as static. We only reflect the one-way causality between the usage of the bicycle path and the mentioned savings. We can set the question whether we can expect the change in the number of users of the bicycle path in the relation to its usage (e.g. worsening of the bicycle path condition) or in the relation to the other factors which will influence the attitude of users to its utilization (e.g. the growth of a price of bus tickets or growth of a price of fuel). These causalities express simultaneously in reality. Moreover, we can perceive so called feedbacks as well when the result of the certain process influences the initial causal factors (e.g. the worsening condition of bicycle path due to increasing interest in its utilization can discourage a part of potential users). Thereby, we come to the so called system thinking which also enables to us to perceive relations among events which are distant in space and time (for details see e.g. [13], [16]). We designate the scientific approach utilizing the system thinking for modelling of complex structures of the world as the so called system dynamics. And this approach is already used in this paper for supplementation of the CBA. We use the above mentioned project of the bicycle path and we simulate numbers of users and their reached savings. We can try to improve the evaluation of the project.

3.1 Dynamic model of the bicycle path project

The dynamic model was constructed in this paper for introducing the system dynamics as a possible and suitable instrument for the elimination of the limits along with the application of the CBA method. This model enables to predict the users of the bicycle path and the savings of the users. The model is created in a graphical form which uses the causal loop diagrams and the stock and flow diagrams. This graphical form enables to search the structure of the model and to perceive the linkages among the particular components of the drawing system. The model describes the above mentioned project “Bicycle Path Bezprávi – Choceň” and the model is based on information of the Feasibility Study of the evaluated project. This study was submitted in 2008 to the Regional Council of NUTS II North-East. This project fulfilled the required evaluating criteria and was approved on the basis of this study. The realization of the project took place in 2009 and 2010 and was co-financed from the European Regional Development Fund and from the Regional Operational Programme NUTS II North-East.

The impact on local community is evaluated by means of following groups of inhabitants:

- Employees which commute now or they are going to commute in future to work,
- students of secondary and primary schools,
- inhabitants of all age categories which commute to the Offices and to other services to catchment municipalities Ústí nad Orlicí, Brandýs nad Orlicí and Choceň,
- families with children and tourists of all age categories seeking the sport activities and cycle touring,
- specific groups of inhabitants – disabled people with reduced mobility.

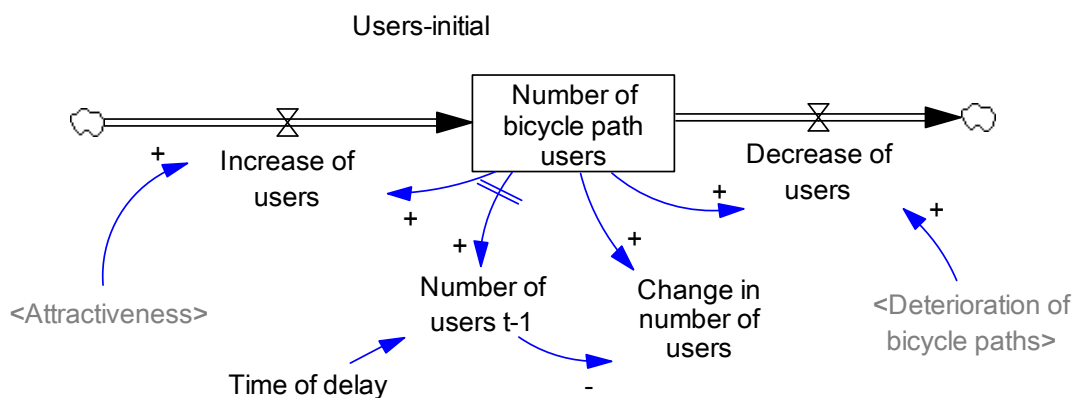
The following data of the Feasibility Study are taken as the input into the model. The group of employed people was only chosen for purposes of this paper. According to the

Study the 40 % of employees (also 1 387 persons) commute to work. The Study supposes that this target group will regularly use the bicycle path (however, just the half of these persons will use the bicycle path according to this Study). The searched employees save time (thanks to flexibility of the bike as the means of transport without necessity to wait for the bus service; moreover, according to the Study the frequencies of bus service are weak). The savings for bus ticket or costs related to the car are in the Study considered as well. However, we will not take into account these savings in the dynamical model with respect to focusing of this article. The time saving is evaluated by means of the average value of one hour in the Study (one hour is assessed as an average net wage per one working hour in the month). The saving amount is 100 CZK per hour. Furthermore, the Study operates with 253 working days in a year and the usage of bicycle path only in 30 % of cases. The annual amount of savings is estimated at 2.6 mil. CZK in the Study. This value is used within whole lifecycle of project (expressed in the form of the present value).

All the above mentioned data will be used in this article as input data into the dynamic model as well. The introducing of the possibility of utilization of the dynamic model by the application of the CBA is the aim of this paper. Therefore, the model is simplified in a such way that a discount rate is not used in the model. Furthermore, the model estimates the certain lifetime of the bicycle path. However, we can expect that the real lifetime of the bicycle path will be longer. The possibility to let the discount rate relates to the paper of Kubíček and Vitek [4] which suggest using the social discount rate approaching to the zero in the limit.

The dynamic model for the evaluation of benefits of the bicycle path is shown in the Figure 1. This model displays only the time savings of users of the bicycle path.

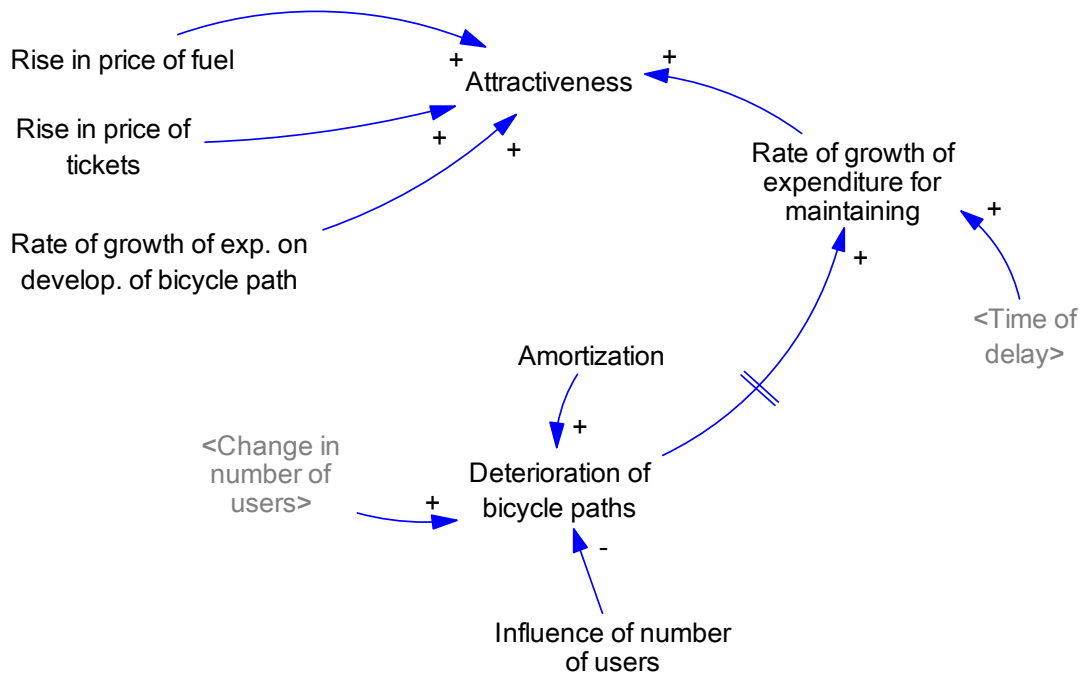
Fig. 1: Model of users of bicycle path



Source: Author

The model supposes that the number of users of the bicycle path is influenced by two basic factors which the Attractiveness of the bicycle path and worsening of the bicycle path. The construction of these two coefficients is displayed in the Figure 2.

Fig. 2: Model of factors influencing the number of users of bicycle path



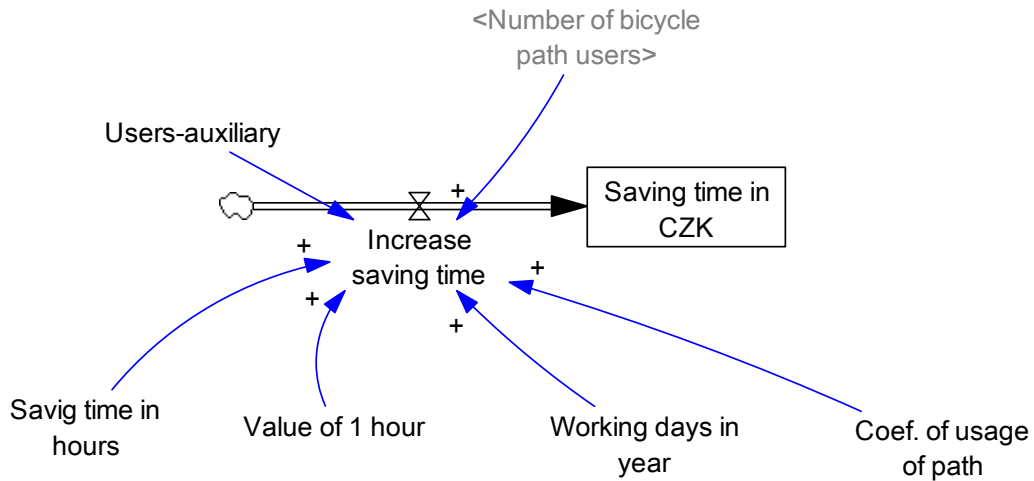
Source: Author

The coefficient of attractiveness of the model consists of four partial factors in this case. The number of users of the bicycle path will grow if prices of fuel will grow, prices of bus tickets will grow and expenditure for maintaining and development will grow as well. Nevertheless, the expenditure for maintaining and development of the bicycle path are realized with an annual delay.

Also the supposed coefficient of this model which expresses the deterioration of the bicycle path depends mainly on the number of users. This dependence between the growth of users and the relevant deterioration of the path is not linear. We suppose that the rate of deterioration of the bicycle path will grow faster than growth of number of users. The next factor which decreases the number of users of the bicycle path is the rate of an amortization. For simplification is considered that the amortization will express after five years since the introducing.

The last model already summarizes the reached time savings. The calculation procedure of the savings is displayed in the Figure 3 (according to the calculation procedure used in the Feasibility Study). We can expect that on the basis of the approach of the system dynamics, the limiting linear approach to the determination of the time savings will be replaced with the new values according to the simulation of the dynamic model.

Fig. 3: Model of the financial evaluation of the savings of time



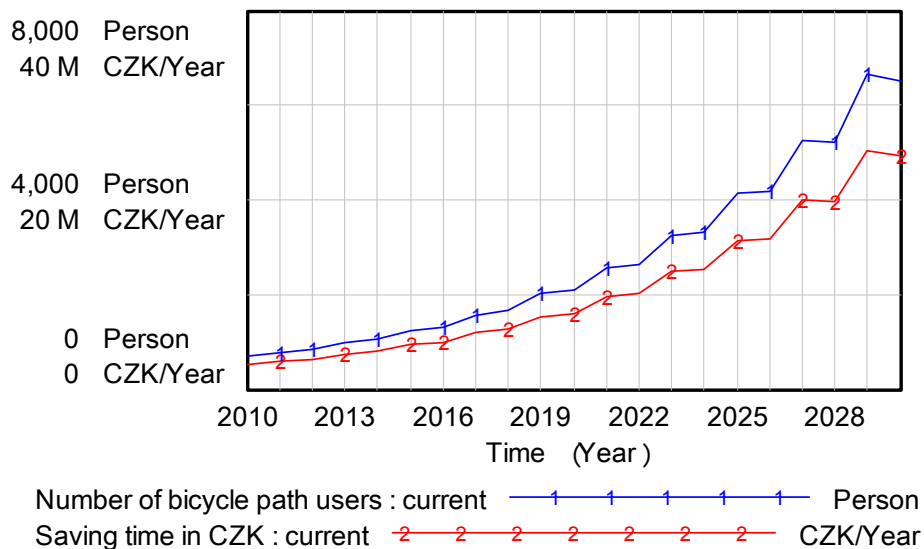
Source: Author

3.2 Simulation of dynamical model of usage of bicycle path

For assessment of savings of time in searched years the period of twenty years was chosen (this period represents the supposed lifetime of the bicycle path as it was set in the project). The Study considers that the benefits can be evaluated up from putting of the bicycle path into use (it means since 2010). The model was consequently simulated in the programme of Vensim PLE 5.1.

As it was mentioned above the input data were taken from the Feasibility Study. The result of simulation is shown in the Figure 4. This figure captures the number of users of the bicycle path within the tested horizon of twenty years and captures the achieved savings in the monetary expression. The indicator called “the saving time in CZK” is accordingly to the point of view the CBA very important one. The number of persons is observed as the auxiliary criterion in the figure.

Fig. 4: The simulation of the bicycle path users and their achieving time savings



Source: Author

The number of users of bicycle path will not be constant during the analyzed period (see the Figure 4 and the result of the simulation). We can compare with the Feasibility Study the situation which considers the constant number of users. This constant number of bicycle path users causes that the reached savings are constant throughout the lifecycle of the project as well (e.g. the Study enumerates the savings of commuting work forces as 7.532 mil. CZK). The input data from the Study were influenced partly by the growing attractiveness and partly by the supposed physical conditions. The number of users does not grow smoothly as we can see in the Figure 4. It is caused (in certain years) by predominated negative factors which decrease the number of users. Moreover, the savings proceed together with the number of users. The simulation of model displays that the social savings cannot always be constant throughout the lifecycle of the project. The usage of the system dynamics in the CBA enables to set the benefits (and costs) more precisely in both of evaluated situations. Even, it is possible in the specific situation when the negative factors that decrease the attractiveness outweigh the positive factors. We reach the limits in this approach by this procedure. Each model is dependent on the assumptions, on the input data and on the rate of simplification of reality. The accuracy of estimation depends on the precision of creator of model and the ability to record just the main linkages among the partial elements of the modeled system.

Conclusion

The economic evaluation of benefits and costs of public projects is required in certain cases (especially it is valid in the case of projects financed by the Funds of the European Union). The reason consists in the effort to support the efficient projects (also the projects with minimal costs and with maximum effects). The public projects should not bring the profit but their aim relates to the increasing of the social utility. Therefore, it is important to well-evaluate all of benefits. The evaluation of the suitability of projects (special projects which are financed by the Funds of the European Union) is done by the Feasibility Study. The CBA is usually the part of this Study.

The method of CBA is already used for evaluation of public projects for many years. However, many of authors highlight the weaknesses of this method in the theoretical foundation. They stress different simplifications linked to the assessment of the benefits and costs of public projects as well. On the other side, we can meet the plea, e.g. some warn of the fact that this method is not the optimization method. Therefore, the certain simplification of the searched reality is acceptable.

The article deals with limits of the CBA by its application. The real projects of the bicycle path were chosen for the documentation of these limits. The estimation of future benefits of project is the basic application limit. The system dynamics is used for overcoming these limits of the CBA. Because, the forecast of the evolution should provide the most faithful picture of the future situation of the world, the system dynamics recommends to look at the valuated object as at the system and notice the mutual causalities among the elements of this system. The model is the result of this approach. We can simulate this model and this simulation can precise our forecasts of the future benefits.

References

- [1] ADLER, M. D., POSNER, E. A. Rethinking Cost-Benefit Analysis. In *The Yale Law Journal*. 1999. vol. 109, No. 2, p. 165 – 247. ISSN 0044-0094.

- [2] EUROPEAN COMMISSION *Guide to Cost-Benefit Analysis of Investment Projects*. 2008
- [3] JONES, Ch. *The „Boadway Paradox“ Revisited*. Canberra: The Australian National University, 2002. 7 p. ISBN 086831-421-8
- [4] KUBÍČEK, J., VÍTEK, L. Hodnocení veřejných projektů z hlediska společenské míry diskontace. In *Politická ekonomie*, 2010, No. 3, p. 291 – 304. ISSN 0032-3233
- [5] MAREŠOVÁ, E. *Měření ve znalostním managementu – aplikace metody Cost Benefit Analysis*. Hradec Králové: Gaudeamus, 2012. 126 p. ISBN 978-80-7435-229-4.
- [6] MINISTERSTVO PRO MÍSTNÍ ROZVOJ *Průvodce ekonomickým hodnocením projektů, programů a politik*.
- [7] PEARCE, D. W., TURNER, R. K. *Economics of Natural Resources and the Environment*. Baltimore: The Johns Hopkins University Press, 1990. 378 p. ISBN 0-8018-3987-4.
- [8] PEARCE, D., ATKINSON, G., MOURATO, S. *Cost-Benefit Analysis and the Environment*. Paříž: OECD, 2006. 315 p. ISBN 92-64-01004-1
- [9] PREST, A. R., TURVEY, R. Cost-Benefit Analysis: A Survey. In *The Economic Journal*. 1965, vol. 75, No. 300, p. 683 – 735. ISSN 1468-0297.
- [10] REGION ORLICKO - TŘEBOVSKO *Cyklostezka Bezprávi – Choceň. Studie ekonomického hodnocení projektu*. 2008. [on-line], [cited 2013-08-20]. Available from WWW: <<http://paak.cep-rra.cz/>>
- [11] REGIONÁLNÍ RADA MORAVSKOSLEZSKO *Manuál k aplikaci Cost-benefit analýza*.
- [12] SEN, A. The Discipline of Cost-Benefit Analysis. In *The Journal of Legal Studies*. 2000. vol. 29, No. S2, p. 931 – 952. ISSN 1537-5366.
- [13] SENGE, P. *Pátá disciplína*. Praha: Management Press, 2007. 439 p. ISBN 978-80-7261-162-1
- [14] SIEBER, P. *Analýza nákladů a přínosů. Metodická příručka*. Praha: Ministerstvo pro místní rozvoj, 2004. 45 p.
- [15] SIEBER, P. *Studie proveditelnosti (feasibility study). Metodická příručka*. Praha: Ministerstvo pro místní rozvoj. 2004. 43 p.
- [16] STERMAN, J. D. *Business Dynamics: Systems Thinking and Modeling for a Complex World*. Boston: Irwin/McGraw-Hill, 2000. 982 p. ISBN 978-0-07-231135-8.
- [17] VODÁKOVÁ, J. *Nástroje ekonomického řízení ve veřejném sektoru*. Praha: Wolters Kluwer, 2013. 207 p. ISBN 978-80-7478-324-1.

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CONSUMER MANAGEMENT CAN BE OVERCOME!

Karel Šatera, Zdenek Dytrt

***Abstract:** Responsible management strives to think creatively, respecting the principles of responsibility and ethics, the objective of which is to establish long-term stability within the business environment. A manager's scope of activities mainly includes decision making related to changes (stimulating innovations) in order to react to dynamic development in the field of science, technology, and the needs and interests of the company. It is extremely important to stimulate employee motivation. Thus it is very logical to speak about leadership as the management process, and its innovations depend on people and their ethical allegiance to the management of the particular system. Opinions vary on the content of leadership. Leadership is most often associated with human resource management. That distorts and simplifies its content, such as innovation management theory and practice. For this reason, the text indicates some significant differences between the still applied management and leadership.*

Simplifying this concept or misunderstanding its meaning contributes to reducing the effectiveness of innovation and thus to a further deepening of consumer way of thinking of the society.

In this text certain differences between management and leadership are indicated.

***Keywords:** Consumerist thinking and behaviour, Creative and ethical thinking, Responsibility and ethics, Responsible management, Corporate culture, Complexity of management.*

***JEL Classification:** M54, D03, L29.*

Introduction

At present, it is quite obvious that in order to stop the continuing ethical decline in business management it is necessary to promote responsible management and develop creative and ethical thinking, not only at all levels of the management vertical line of society, but in each of us, both privately and at work. The aim of responsible management is to build a relatively long-term stability within the business environment. This is a rather challenging goal, which is associated with considerable effort.

1 Statement of the Problem

The prerequisite for responsible management is to change the way we think. We must begin to strive for creative thinking in a way which will respect responsibility and ethics. [8] **"Each author approaches business ethics in their own way, but they have several core topics in common. For instance the relation between ethics and the law, codes of conduct, ethics and the environment, working relations including discrimination or whistle-blowing, ethics in advertising and so on."**[14]. If we agree with the view that only the responsible and ethically thinker can be an asset to the company and its sustainable development, then our reward will be the satisfaction originating from the success which has developed from our decision, not only for our own benefit, but also for that of others. One should bear in mind that achievements at work and in our personal life only brings satisfaction if they are reached transparently, based on an ethical attitudes and approaches.

Numerous theoretical attitudes exist that examine sustainability by means of more exact tools. *“Some authorities have declared that a model should make it easy to identify possible ways for improvement. It is a great advantage of clarity in the use of graphically interpretable mathematical modelling tools”*. [11] In direct contrast to this view is the deepening consumerist thinking, which is harmful both for individuals and for society. Consumerist thinking and behaviour is widely accepted at the moment, because unfortunately, it is more pleasant than responsible business. This kind of thinking seems to be well-established in a certain area of society, often in the people who should be leaders or models in terms of ethical and responsible business. Some of the authors mention different tools contributing to the enhancement of testing of such phenomena. In regard to the difficulty of grasping them exactly, it seems that mathematics-oriented attitudes play an important role in the process, however, mostly as a means of the support and optional verification of the decision-making processes in context of sustainability. **“In the model we result from the fact that there are set inputs, outputs and activities which a certain subject, for example region, can perform. Outputs are determined by inputs and activities which transform inputs to outputs; each activity corresponds to a set of inputs and a set of outputs”**. [12]. The consumerist life-style is developing dynamically, constantly deepening and intensifying, thus driving both individuals and society towards life and existential problems. Consumerism is alluring and therefore manifests the constant growth of claims for the elective needs of society. According to the general consensus of opinion, the current legislation does not stimulate preventive thinking. The concept of responsible management is based on ethical thinking and requires a creative and systematic approach to management activities, particularly in the field of human resources. The reason is that in terms of success, the decision-making process and its implementation depends on people and their motivation. It is also important to view an organization as a system. **“The system is generally characterized as an organized unit or a set of objects and their mutual relations that, as a complex, show certain behaviour described by e.g. the system functions. Information systems are open, they can form a part of other system or they are surrounded by other systems where information exchange occurs. Each system presents certain dynamism in terms of communication between the objects and systems, but also in terms of mutual influence of the system structure and its development.”** [9]. At its outset it is only seen as a more comfortable life, however, it gradually increases the demand for growth in living standards. This is a rather non-transparent development, as it is not associated with responsibility and increasing labour productivity. When the level of consumerist behaviour in society spawns, the return to ethical thinking and responsible management may be drastic. The current state of the economy and the present social situation quite clearly indicate how harmful the absence of ethics in management actually is.

It confirms the fear of further development of the market environment, since the development of globalisation greatly intensifies international cooperation. Our economic dependence on international commercial relations not only needs to enhance ethics in relation to domestic organisations, but also with those abroad. We need to link our growing prestige with improvements in the field of our corporate culture. **“It is necessary to realize what is the object of professional ethics attention when forming ethical viewpoints in corporate culture. In particular it is the area of morals which is connected with conscience and personal persuasion of a staff, and the area of social rules which are applied to correct and incorrect behaviour. At the same time one cannot miss good manners, social standing and politeness which play a key role in corporate culture.”**

[13]. Our organisations are even evaluated as to whether their cooperative relations can be considered for a reliable partnership. Imbalances of this kind are reflected in an undesirable way through the lack of accountability in interpersonal relationships and eventually through consumer way of thinking and behaviour.

The opposite side of responsible management is manifested by consumerist thinking, which in turn adversely affects the work of individual organisations and the business climate within companies. The dynamics of consumerist **factors stimulating consumer way of thinking**

- Formalness – the manager thinks and works "like", the attention is focused on the rhetoric rather than on creative management. The importance of ethics is recognized, but ideas are not clear about its content and form of the consistent application in practice.
- Routine and lack of creativity in management - the manager assumes that if he/she has once succeeded, then it always be like that, expecting specific instructions from the theory on how to manage their organization. Management theory is a general method of work - not a specific guide (cookbook) to manage a particular organization.
- Organizations behave as absolutely isolated systems – they do not admit their responsibility for the process of sustainable development of the society. They are systems with inputs, outputs, internal structure and feedback.
- Decision-making is solely based on measurable properties and values of the phenomena managed (indicators), the importance of the quantitative values tends to be overestimated and their qualitative features and capabilities are not respected.
- Imbalance in the relationship between stimulation and motivation of workers. Not every manager is a leader - not stimulating motivation of the staff. Concentrating on the physical form of stimulation overrates quantitative forms of management. Underrated is the importance of leadership that promotes the win-win method in the negotiations.
- If stimulation of the manager is higher than that of the staff = necessary to deepen leadership (staffing, communication, higher qualifications...) If motivation of the staff is higher = necessary to increase the quality of the manager's work.
- Managers do not act as leaders – they are not role models for their subordinates, requiring behaviour that they do not observe themselves, negotiations are not transparent, and agreements are not honoured. Actions Speak Louder Than Words.
- It is the "I" before "We" that wins in management, selfishness and envy is the opposite of modern human resource management and teamwork - creating conflicts and deepening consumer behaviour.
- Organizations are working in short terms - their strategic goal is not to win and keep a good name. The strategy is to create long-term goals and ways to achieve them. It is implemented by means of tactical targets [5, 9, 19].

Consumer behaviour can be prevented through:

- Education and training:
 - In the family;
 - continuous and lifelong learning;
 - be both a synthesist and analyst - both types of workers are needed;
 - in business and social organizations - employers are responsible for activities of its employees;
 - stabilization of the staff - minimizing undesired fluctuations.
- Deepening of ethical thinking and behaviour:
 - Ethics-based system of sustainable of management;
 - concretization and application of ethics in management, monitor the development of ethics in management and apply in the organization;
 - monitor the benefits of ethics in the organization and penalize implications of non-ethical management;
 - promote ethical thinking in strategic decision making.
- Overcome adverse effects inside us, in the company and in the society
 - not to admire consumption and not to consider non-ethics to be "hard business";
 - publish ethical attitudes of managers and their achievements;
 - prevent unethical decisions – precisely identify the problem, consider the decision based on knowledge of own capabilities;
 - partnership is responsibility (win-win);
 - develops teamwork, association of thought, human resources management;
 - deepens the identity of workers to the organization.
- Stabilizes quality workers - undesirable turnover is expensive
 - the management implements innovative process of organization;
 - observe the rules of the innovation process - continuity, comprehensiveness, consistency, implement innovation at an appropriate time;
 - respect the uniqueness of the controlled object and its surroundings (specific conditions to be understood as a reserve of the business);
 - managed phenomena have both measurable and immeasurable qualities (ethical decision respects both qualities of the phenomena).
- Dynamics of the development impacts on the effectiveness of all (routine in the management destroys creative work)
 - not evaluate the success of a decision (innovation) in short terms, because even economic innovations have 3 stages: enforcement, boom wear;
 - corporate culture provides goodwill to the managed organization;

- short-term profit maximization is associated with consumerism;
- goodwill of the organization results from prosperity, ambitious innovations, long-term and stable market position and ethical satisfying of the needs and interests of the economic and social neighbourhood.

Responsible and ethical management requires not only a change in thinking, but also in legislation that should provide space for creating ethical conditions for equal application of innovation in the current management practice. What kind of conditions there should be and who and to what extent should start them so that ethics in management and business begin to develop across the board. Most often we hear the answer that everyone should start immediately and with themselves. But how to ensure such a situation so that an individual who begins with themselves does not lose money after applying ethics in the business and, on the contrary, the other one does not benefit if starting slowly with the application and variously strategize in the process.

Or, if the opposite of ethical management and business is the consumer society, till when we can consider meeting the needs and interests of the market to be ethical and in which stage of development it begins to be unethical, undesirable and consumer. It is when the pace of production and effort after quick profit maximization is associated with, for instance, a reduction in quality or debt overhangs of the company.

Responsible management must monitor not only the benefits but also the pace of the dynamics of past trends in the disciplines of science and technology to decide well on strategic changes in the managed object under the current conditions. Thus is the development of management associated with conditions of the innovation process management, and vice versa.

Technical sciences also increase their effectiveness when connecting the application of their own results in practice together with adequate development, e.g. economics and management, legislation and public administration, etc.” ***It should be noted that ethic management requires both quantitative as well as qualitative attributes of economic, social, technical and political aspect managed.***”[15]. Only if cooperation is good, effective development of the company is developing. Of course, the practice will not manage to ensure that the development and application of new knowledge in the practice run in parallel in all sectors, to which a particular solution applies. It would definitely be better, however, if the retardation of other fields of science behind the development of technical sciences shortened than vice versa.

2 Management and Innovation

A new direction in management philosophy promotes a systematic understanding of managed entities that cannot exist without the active cooperation with their own economic, social and political environment. This brings us to the system seeking the causes of the current development of the business and social environment that has been shaped by the theory and practice of the management implementation.

In terms of the present state of our economy, politics and social levels of society, a significant cause lies in the very philosophy of management. The currently applied management philosophy has already passed two centuries of existence and does not reflect the dynamic development and current needs of society.

The imbalance in the development of technology and management theory gives the possibility of different interpretations. Although the company is considered to be a system, we would prefer it to act as if it were independent of its surroundings, i.e. as an isolated system. If you do not respect the dependence of your surroundings, you risk achieving sustainable development.

Another drawback of current managerial work is the routine. It is most visible in small and medium-size enterprises, which are not affected by the management of foreign companies. Using routines within management work results in a number of issues.

Conditions have been developing dynamically so our good decisions from the past may no longer be effective in the present. Therefore, routines in management may bring a good experience, however, with all the imperfection of the past.

The dynamic development of the company requires creativity that corresponds to the present level of the scientific and technological development. The management of the controlled entity should therefore be considered as a management tool in the innovation process, which requires compliance with innovative rules. Every manager's decision should be based on a thought-provoking innovation, with relevant importance and impact upon the controlled entity.

We are aware of the fact that the results of each organisation's managerial practices not only influence both the controlled entity, but also the surroundings. The absence of ethics and accountability in management is always associated with decreased transparency, and consumerist thinking not only deepens the thinking of employees, but also their surroundings. Because it is people who bear ideas, create ideas and implement them, we need to pay utmost attention to leadership.

The impact of humans on the development of companies has a dominant influence. We must therefore make every effort not to be influenced by projects that are based on negative innovation. Negative innovation, as a result of unethical thinking, begets consumerist thinking, which is reflected negatively in management work as well.

Management = Control Over the Innovation Processes in the Company

Managers are often lacking any respect to specific conditions in the company. The uniqueness of the controlled entity results from the disposition of its internal structure and the influence of the needs and interests of its economic and social environment. If the managers are able to intensively perceive and verify the uniqueness of the controlled entity and the effects of external influences, they are able to gain a more successful position within a competitive environment. It is important to link the uniqueness of the controlled entity with ethically applied marketing to respond to the dynamic development of science, technology, fashion, ecology, etc. The management must react to new trends flexibly and operatively. The role of the manager is to make competent and creative decisions in a timely manner. It is up to the manager how the dynamics of flexibly changing needs and interests around the organisation respond.

Through deciding on the strategy and tactics of the controlled entity, the manager is also involved in the creation of the economic, social and political environment. Therefore, they bear their share of responsibility in the development of the business environment. The manager's decision-making process is therefore considered as a dominant role of strategic and tactical management within the organisation.

Thus, if you take the general changes in the evolution of the current conditions for innovation, the role of the manager changes in the management innovation process.

It is a matter of fact that innovations differ in order, importance, as well as in their positive and negative impacts. Innovation, like any change in a particular phenomenon, does not develop in isolation. If the manager effectively decides that they cannot evaluate the development of company phenomena in isolation, they have to include all connections and relationships involved in this development. The output of the decision-making process is therefore a decision that changes the current events in the development of the internal structure of the controlled entity and, depending on their hierarchical order and importance, affects the environmental influence as well. Within this context we should mention sources of information, as they are closely linked to the decision-making process.

- This refers to information obtained through personal communication. Even the most objective source must reckon with the possibility that the information provided is marked by the informant. The form of communication or even the informant's tone may modify the quality of the content or the importance of the meaning. This does not mean that we should avoid personal communication, however, it is worth verifying the information and comparing it with the opinions of other people, with information outputs from analyses, from statistical examinations, and not least in the ethical attitudes of the informant.
- Indispensable information for executive decision making are internal resources within the company. They are largely financial and statistical evidence, which is methodologically controlled by legislative regulations. Furthermore, additional written information may be processed according to the user's instructions and needs. This type of information follows from internal documentation or surveys focused on opinions, interests and needs for external sources of the company. The information collected in this way is rather quantitative, as it only covers measurable features of the company phenomena, and is therefore incomplete.

We still have to keep in mind that the quality of information as an input into the decision-making process determines the quality of the decisions. Just by chance, it may happen that on the basis of incorrect or incomplete information a manager comes to an effective decision. Thus, the information about the development and needs of the internal structure and the surroundings of the controlled entity is the input in the manager's decision-making process. This involves examining, reviewing, processing, and transmitting the output of their work to their surroundings, usually in the form of an order or decision.

The innovation process begins at the stage of a manager's idea, which represents a stimulating innovation. It is usually presented as a specific instruction and should work as a stimulating innovation.

Therefore, the output from the manager's decision-making process should be taken as the stimulating innovation. It stimulates formation induced innovations that support the implementation of the manager's stimulating innovation in related areas and the particular levels of the company management structure. Stimulating and derived innovations together create an innovation network. Its aim is to ensure comprehensive executive decisions implemented in an adequate quality, time and scope.

The stimulating innovations are communicated from the top manager to medium or subordinated company management vertical levels in order to stimulate the creativity

of the people at this particular management level. The results from the developed stimulating innovation should further stimulate the subsequent management level within the company management vertical line.

Participation in the decision-making process of the top manager is an effective result of teamwork that enables the complexity of the manager's thought-provoking innovations within real conditions at the particular company organisation levels. The effectiveness of the innovation process is enhanced by teamwork at particular management levels and the collaboration of all employees during active implementation of the innovation process of the strategic development of their company. It may happen that a specific management level fails, which results in an undesirable decision with negative consequences within the innovation chain, in other words, a poor quality (adverse) innovation process is developed. The cause may be, for example, poor processing and evaluation of collected information, incomplete information, or wrong methods applied during the decision-making process. Of course we do not want to think about of intention. Application of ethics in management overcomes the growth dynamics of the development of consumer attitudes and demands of companies. Requirements begin to exhibit for growth of remuneration without being associated with an increase in its productivity. That is reflected in efforts of producers to maximize quick profits in order to satisfy their own ambitions and requirements of certain employees or partners. If efforts to maximize and accelerate profits of producers and their workers are not associated with the efficiency of labour productivity, there arises a spiral of undesirable effects and intensity of adverse impact on the business and social climate of the society.

The application of ethics in management and business hampers:

- Insufficient awareness about the content and importance of ethics in business;
- ignorance of the importance of ethics as a system of thought and work. The content of ethics is restricted in practice, most often morale that is associated with religion;
- if families, schools, the media and even laws do not sufficiently lead to ethical thinking, thus programmatically leading the company to deepening of consumer thinking and behaviour, which is a source of enrichment for some entrepreneurs;
- if ethics is associated with etiquette;
- if business is not associated with strategic thinking and decision-making.

Ethics increases demands of management.

- Post-war economic development is increasingly focused on measurable values and quantitative evaluation of results of the work. On the other hand, ethical management demands the respect of not only quantitative but also qualitative values of the managed phenomena;
- It is not believed that ethics can pay off if, conversely, non-ethics bring success to some. Some even admire and promote unethical methods in business and the society fails to prevent it sufficiently;
- Instability of internal and external business conditions restricts management to operative work and hinders strategic and tactical decision-making that is a source of stability;

- Amendments to the legislation and implementation of comprehensive reforms does not corresponds with the rate of dynamics of the development of new methods of business activities;
- Justice system fails to resolve disputes quickly enough, thus reducing the educational effects of the law [7, 10, 11].

3 Problem Solving - Responsible Management

It is important to overcome the established routines and methods of a deformed management style. Routine in management requires promoting innovation of the highest order, both in theory and in practice. To be able to design and implement such a high number of innovations, all responsible workplaces within the company management vertical line must be involved. It is vital to stimulate adequate motivation in the people in management positions who strive to design and implement their corporate strategy. The organisation's management is therefore considered as an innovation process with the active participation of all its employees.

Speaking about the management, we usually mean the business management, and often neglect public administration management, whose activities need to be systematically innovated in compliance with the needs and interests of society as well. As regards the theory of public administration management, the same content and the same management rules apply. However, both in company management and in public administration management, we have to respect the uniqueness and the specific conditions, which are present in both areas.

It should be emphasised that when speaking about management, we mean innovative management, which is more like leadership. Until recently, the term "leadership" was related to the management of people. In fact, it means projecting innovations in the management process as such. Thus, we may call this process the "management - management", which sounds rather awkward.

Therefore, it is very logical to introduce the concept of leadership as both the management process and its innovation depends on people and their ethical allegiance to the management of the particular system [2, 8, 14].

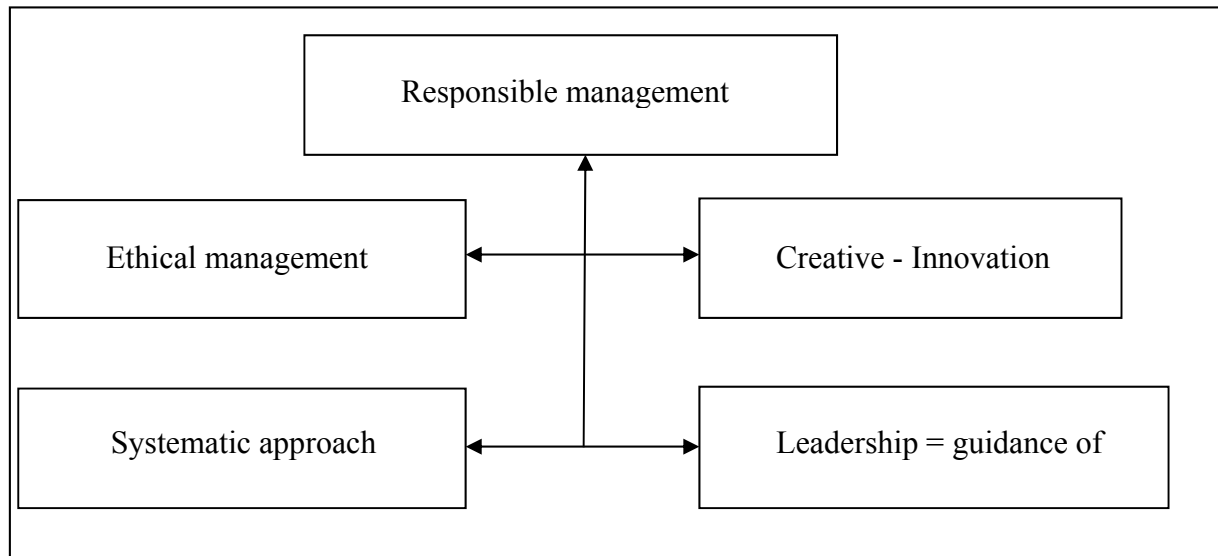
Let us, therefore, suggest some differences between management and leadership (Tab 1):

Tab. 1: Leadership and management differences

| LEADERSHIP | |
|---|---|
| NO leadership | management YES |
| * every manager is a leader | * leadership does not follow from the function |
| * leadership is the goal | * leadership is the process |
| * focused on technology and management organisation | * fosters corporate culture |
| * short-time solutions (tactics) | * long-term solutions (strategy) |
| * management is the experience from the practical work | * leadership is creativity and innovation |
| * management is a reaction to issues | * leadership anticipates issues, examining their causes and relationships between them |
| * contradiction between words and actions | * example both at work and in personal behaviour |
| * evaluation based on quickly measurable | * evaluation based on complex thinking, taking results (quantitative) into consideration benefits resulting from qualitative – non-measurable results |
| * issues solved for immediate effect | * decision-making for the future |
| * thinking in the sense of "ME, MYSELF" | * thinking in the sense of "WE" (teamwork) |
| * profit at every cost | * respect to the ethics in management and business |
| * to be the leader, it is not a definite professional status | * leadership responds to changes in the development |
| * stimulation of employees does not mean them effective ethical stimulation | * motivation is the adequate reaction to corrupting |

Source: own

Fig. 1: Structure of Responsible Management



Source: own

4 Discussion

Until recently, partial innovations have been implemented within management work, mostly focused on the management techniques and technologies. This focus has contributed to the acceleration of communication of company information and analysis of the information about the results of the companies, but has not included complex monitoring of the organisations' effectiveness and efficiency. We used to focus only on monitoring and evaluating measurable parameters of economic and social phenomena, which are shown by means of company indicators. This does not provide relevant information about the quality and ethics of the measurable parameters of the implemented activities, and it does not provide much information about the ways in which the results had been achieved.

If we evaluate the performance of a company or an organisation, following from information about the management development of both qualitative and quantitative characteristics of each particular activity, we get comprehensive factual information about the real success or failure of the management. At the same time you protect the organisation against unethical development, contributing to the anticipation of crisis conditions within the organisation and society. Effectiveness of the results of technological development can be, to a considerable extent, relatively successfully quantified and evaluated. In the field of management, this situation is much more difficult, since it is limited to measurable, thus quantifiable results. In addition to quantitative dimensions, comprehensive evaluation also depends on the philosophy and methods to achieve the results. Therefore, monitoring quantitative achievements of management tells only a part of the story of the success achieved, because we do not monitor their qualitative contribution that increases or decreases the contribution of quantitative results.

Conclusion

To increase the efficiency of management, decision making and its efficiency in the current practice, we must again speak of complexity. Assuming that each executive decision should be an innovation, or a stimulating innovation, it is necessary to stimulate creation and operation of induced innovation with subordinates so that such a management system is

implemented in the various subsystems of the managed object that meets this requirement. We are talking about the responsible management system.

The reality of the development shows that when we talk about connecting the science and technology development with other scientific disciplines, we stress the need not to restrict the success of technical sciences, but to pay attention to the dynamics and complexity of developments in other fields of science. Comprehensive development of the company is achieved when the dynamics of development of the related fields of science seeks to approximate the dynamics of technology as close as relatively possible.

At present, we are well-aware of the fact that the reach of interpersonal relationships has considerably grown. We need to keep in mind that it is people that represent the managerial ethics and responsible management. Therefore the impacts of unethical conduct are spreading over local boundaries much faster, which may adversely affect not only the corporate reputation or corporate culture, but the whole of society as well. On the other hand, without integration into the global structure, it would not be possible to generate sufficient quality and quantity of the production to meet the required needs of people.

References

- [1] ARMSTRONG, M., STEPHENS, T. *A Handbook of Management a Leadership*. London: Kogan Page Limited, 2005. ISBN 07494-4344-8
- [2] ARMSTRONG, M., STEPHENS, T. *Management a leadership*. First Issue. Praha: Grada Publishing, 2008. 272 pp. ISBN 978-80-247-2177-4
- [3] DYTRT, Z. *Dobré jméno firmy*. First Issue. Praha: Alfa Publishing, 2006. 137 pp. ISBN 80-86851-45-1
- [4] DYTRT, Z., STRŽÍTESKÁ, M. *Efektivní inovace: odpovědnost v managementu*. First Issue. Brno: Computer Press, 2010. 150 pp. ISBN 978- 80-251-2771-1
- [5] DYTRT, Z. a kol. *Manažerská etika v otázkách a odpovědích*. First Issue. Brno: Computer Press, 2011. 208 pp. ISBN 9788025133446
- [6] DYTRT, Z. a kol. *Odpovědný management v podnikání a veřejné správě*. First Issue. Georg Žilina. 205 pp. ISBN 978-80-89401-75-8
- [7] HARVEY, S. J.: *Business Dilemmas and Responsibilities*, In: Kolektiv autorů *Manažerská etika-inspirace 21. stol.* WAMAK, Hradec Králové, ISBN 978-8086771-33-5
- [8] KORNFELDOVÁ, M., MYŠKOVÁ, R. Application of CSR in Construction Industry. *Proceedings of the 1st International Conference on Economics, Political and Law Science (EPLS '12)*. 2012 (September 20-22), Czech Republic, Zlin p. 189-194. ISBN 978-1-61804-123-4, ISSN 2227-460X1792-6653
- [9] MYSKOVA, R. Company Information Systems Used in Decision-Making Processes of Financial Managers. *In WSEAS Transaction on Systems*. Issue 4, Volume 8, April 2009, p. 532-542. Available at WWW: <www.worldses.org/journals/systems/systems-2009.htm ISSN: 1109-2777>
- [10] SEDLÁČEK, T. *Ekonomie dobra a zla*. First Issue. Praha: 65. pole. 2009. 272 s. ISBN 97880-903944-3-8

- [11] SEKERKA, B., BATA, R. Linear Models in Regional and Interregional Modeling. WSEAS Transactions on Mathematics. January 2011, vol. 10, Iss. 1, s. 32 - 46. Print ISSN: 1109-2769, E-ISSN: 2224-2880. Available at WWW: < <http://www.wseas.us/e-library/transactions/mathematics/2011/52-659.pdf>>
- [12] SEKERKA, B., BATA, R. Modeling of regional and interregional relations. In: *International Conference on Development, Energy, Environment, Economics (DEEE '10) - Proceedings*. Puerto de la Cruz, Spain: WSEAS, Nov. 30 - Dec. 2, 2010. S. 160-176. ISBN: 978-960-474-253-0, ISSN: 1792-6653. Available at WWW: <<http://www.wseas.org/multimedia/books/2010/Tenerife/DEEE.pdf>>
- [13] SEMRÁDOVÁ, I. *Ethical aspect of corporate culture*. In: E M. *Ekonomie a Management: Economics and Management*. Liberec: Hospodářská fakulta Technická Univerzita, 2011, Vol. 2. ISSN 1212-3609.
- [14] SEMRÁDOVÁ, I., KACETL, J. *Ethics in the future manager's professional training*. In: E M. *Ekonomie a Management: Economics and Management*. Liberec: Hospodářská fakulta Technická Univerzita, 2009, Vol. 4. ISSN 1212-3609.
- [15] STŘÍTESKÁ, M. *Balanced scorecard as an instrument for responsible management*. In: *Scientific Papers of the University of Pardubice - Series D*. Pardubice: Univerzita Pardubice. 2009. Vol. 15. 242 s. ISBN 978-80-7395-234-1. ISSN 1211-555X
- [16] VALENTA, F. *Tvůrčí aktivita, inovace, efekty*. Praha: Svoboda, 1969. 258 s.
- [17] VALENTA, F. *Inovace v manažerské praxi*. Praha: Velryba, 2001. 153 s. ISBN 80- 85860-11-2
- [18] VALENTA, F. *Etický aspekt funkce manažera* In Kol. *Manažerská etika II. - inspirace pro 21. století*. Praha: ECONOMIA, 2001. ISBN: 80-85378- 19-1
- [19] VLČEK, R. *Hodnota pro zákazníka*. Praha: Management Press, 2002. 444 s. ISBN 80-7261-068-6

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FOREIGN EXCHANGE RATES IN CONSOLIDATED FINANCIAL STATEMENTS UNDER IFRS

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Abstract: *Companies which carry out foreign operations can perform transactions in foreign currency. In addition, companies can provide financial statements data in a foreign currency. IAS 21 - The Effects of Changes in Foreign Exchange Rates establishes a procedure for performing transactions in foreign currencies and foreign operations for financial reporting, as well as translation of financial statements into the presentation currency. The task of the standard is to disclose information about the exchange rate usage and to reflecting the impact of changes in exchange rates in its financial statements. For reporting under IFRS such currency should be selected, which is actively used and has significant influence on it. This paper summarizes just some aspects of the influence of the exchange rates change effects on the consolidated financial statements according to IFRS.*

Keywords: *IFRS, Foreign Exchange Rates, Consolidated financial statements, Functional currency, Reporting currency.*

JEL classification: *M41.*

Introduction

International Financial Reporting Standards reflect the traditions and conditions of the developed market economies. Development of international standards contributes to the consistency of the whole world of financial information through the harmonization of accounting standards. Fundamental principle of the harmonization of accounting and financial reporting in the world is that the financial system from different countries has to be in accordance with the principles of International Financial Reporting Standards.

Transparency in the fields of national economy is very important because the market value of equity consists of two key factors: the future earnings and future risks. Lenders and investors are willing to get less profit, but they want to be sure that correct and accurate information will reduce their risks.

History of accounting currency transactions according with IFRS is rooted from December 1977, when the E11 was released as a draft of the future standard, "Accounting for Foreign Operations and Conversion of Financial Statements in Foreign Currency." This draft was not to become a full standard. It was processed and released on a new draft E23, "Accounting for the Effects of Changes in Foreign Exchange Rates" in March 1982. After five years of debate in July 1983, the revised draft has gained its final version and was published as an IAS 21 effective from 01.01.1985. In May 1992, a new draft standard E44 "The Effects of Changes in Foreign Exchange Rates", which completely replaced IAS 21 in December 1993 and became obligatory for execution on 01.01.1995. In 2003, the standard was revised and re-integrated from the 01.01.2005 having absorbed the additional changes. There are such main changes: the standard has brought a new term - the functional currency, the combined concepts of foreign entity and a foreign subsidiary in foreign business entity, foreign exchange derivatives were taken outside the scope of IAS 21

and were included in IAS 39 "Financial Instruments: Recognition and Measurement." Subsequently, through adjustments and other changes of IAS 21 has been edited. In 2005, the requirements have changed accounting of net investments in foreign household's unit (April 1989). In 2007, IAS 1 has changed the terminology used in the most of IFRS (effective from 01.01.2009). In 2008, IAS 27, IFRS 3 changed description assess investments in subsidiaries controlled by the parent company, which resulted in changes to IAS 21 (effective from 01.07.2009). During 2009-2011 were also minor amendments to the standard due to change IAS 1 and the new standards IFRS 9, 10, 11, 13 (effective from 2010-2015). We can state that every ten years the standard undergoes a radical processing. This is caused by the current situation of the world economy and by the current requirements for financial reporting system.

History of Consolidated Financial Statements according with IFRS is rooted from September 1987, when the E30 was released as a draft of the future standard, "Consolidated Financial Statements and Accounting for Investments in Subsidiaries". This draft become a full standard IAS 27 in April 1989 and become effective from January 1990. In December 1998 IAS 27 was amended by IAS 39 "Financial Instruments: Recognition and Measurement", effective 1 January 2001. In 2003, 2005, 2008 were also minor amendments which become effective from 2005, 2008, 2009. In 2003 standard change the title to "Consolidated and Separate Financial Statements". In May 2010 IAS 27 amended for transitional requirements for consequential amendments and become effective from July 2010. May 2011 reissued as IAS 27 "Separate Financial Statements" as amended in 2011. Consolidation requirements previously forming part of IAS 27 have been revised and are now contained in IFRS 10 "Consolidated Financial Statements", effective for annual periods beginning on or after 1 January 2013.

The order of transactions in foreign currencies and foreign operations for financial reporting of an organization, as well as translation of financial statements into the presentation currency is set to IAS 21 "The Effects of Changes in Foreign Exchange Rates". This standard is as follows:

- Taking into account transactions and balances in foreign currency;
- The reflection of results and financial performance of foreign operations are to be included into the financial statements of the organization methods of consolidation, proportionate consolidation or the equity method;
- The reflection of the results and financial performance of organizations in reporting currency.

However, this rule has some exceptions:

- In respect of derivative (financial instruments), which are proceeding according to under the IAS 39 "Financial Instruments: Recognition and Measurement". In particular, IAS 21 does not apply to hedge accounting of articles in foreign currencies, including the hedging of net investments in foreign operations;
- In respect of the statement of cash flows which arise from transactions in foreign currency or converting cash flows from foreign operations.

In this paper we will discuss the most typical mistakes made by Czech enterprises in consolidated financial statements. It often occurs pertains to different or foreign currencies between mother and subsidiary entities. To overcome these problems let's try

to find the rationale between the functional currency and exchange rate. As Mr. Revsine Lawrence wrote in his famous paper in 1984, statement manipulation via the functional currency choice does not appear to be a major threat since firms have a built-in motive to make the “correct” choice. For example, firms would be ill-advised to select the dollar as the functional currency in order to gain some near-term income enhancement [7]. Unfortunately in our days it has become a major threat since exchange rates on the world financial markets are not stable during the last 10 years. Companies use this situation to gain income enhancement. And often “close eyes” for philosophy of IAS 21 and just use formal requirements. Unfortunately the paper is not to be longer than 12 pages, so we can discuss just some of the typical problems and use illustrative cases for every example.

Scientific methods which the author use in preparing the paper. Thus, to achieve the goal, the scientific methods of analysis, synthesis, abstraction and deduction will mainly be used. The paper is based not only on theoretical grounds, but primarily from empirical research that has been linked to the theoretical possibilities of business processes. The paper lies in the analysis of the state of facts, the way they are currently recognized and how exchange rate differences are currently reported in financial statements. The analysis conducted on the basis of 35 consolidated financial companies’ statements. These data were summarized and verified. Using empirical induction and logical deduction author will be made an attempt which method is feasible and can be applied in the current situation.

1 Different reporting dates of the financial statements of parent and subsidiary companies

1.1 Statement of a problem

In multi-national companies (owning subsidiaries, controlled entities in different countries) there often happens a situation when the dates of the financial statements of parent and subsidiary are different. This situation can arise when the national legislation establishes the mandatory date of the financial statements of enterprises, or a company itself establishes the date of the financial statements basing on economic or some other feasibility of each entity. If the companies are located in different countries, obviously this leads to the preparation of financial statements in different functional currencies. Then, the financial statements must be translated into the reporting currency of the parent company for consolidating financial statements.

1.2 Problem solving

In order to consolidate the financial statements, companies must abide the following rules. As required by IAS-27 "Consolidated and Separate Financial Statements" subsidiaries should be preparing the financial statements of the parent using of the same date. If a subsidiary has a different reporting period, the subsidiary prepares an additional financial statement for the same date as the parent. In this case subsidiaries use the same date for exchange rate as it is used by the parent's financial statements to translate the subsidiaries statement.

According to IAS-27 a subsidiary is also allowed to use a different reporting date than the date of the parent's financial statements date. The difference between the end of the reporting period of the subsidiary and that of the parent should be no more than three months [IAS 27 para 23]. It means a different reporting date which is not more than three months before or after the reporting period of the parent's financial statements date. In this case the exchange rate ruling at the foreign operation financial statements date will be used

to translate the foreign subsidiaries statement. If a subsidiary uses a different reporting date, it should show all material transactions and events occurred between the dates of financial statements of the parent and subsidiary in its financial statements. Thus we have the following options:

- A subsidiary should prepare the financial statements of the parent's using the same date. In this case a subsidiary uses the exchange rate at the parent's financial statements date to translate the subsidiaries statement.
- A subsidiary should prepare the financial statements of the parent's which shall be no more than three months and should view all material transactions and events. In this case the subsidiary uses the exchange rate the same as at the subsidiary financial statements date to translate the subsidiaries statement.
- A significant event that can only be a reason for translation (retranslation) of financial statements in connection with a major change of the exchange rate. The exchange rate ruling at the foreign operation financial statements date will be use to translate the foreign subsidiaries statement.
- A subsidiary doesn't do anything in the absence of any significant transactions or events.

Let's try to translate a subsidiary financial statement in to foreign currency with a different reporting date of the parent's consolidated financial statements.

Conditions: A parent company prepares its consolidated financial statements for March 31, 2XXX+1. Subsidiary company, according to the season production period prepares its financial statements for December 31, 2XXX. The exchange rate between EURO and Czech crown was: 1Euro: 25CZK on December 31, 2XXX, 1Euro: 25.25CZK on March 31, 2XXX+1.

In the first place the following to the season production in agriculture between January -March subsidiary company did not have any activity in its main field. In the second place: if some significant event happens it would be time to decide which exchange rate we need to use in that case. The subsidiary net assets were 25 million CZK in the financial statements. According to the exchange rate on December 31, 2XXX, net assets in EURO value are 1 million EURO. According to the exchange rate on March 31, 2XXX+1, net assets in EURO value are 990 099.00 EURO. The difference is **9 901.00 EURO** or **1 percent** of net assets. Is it significant or not? The company chief staff has to justify the economic expediency of the solution and to take the decision of making or not making the retranslation of financial statements.

1.3 Discussion

During the analysis of the consolidated financial statements there happens a typical situation. When the dates of the financial statements of the parent and subsidiary companies are different, the foreign subsidiaries prepare the financial statements of the parent used for the same date. And they do it quite often, when these changes are not economically feasible. The analysis conducted on the basis of 35 consolidated financial statements indicates that only 7 subsidiaries out of the 35 consolidated financial statements had different reporting dates. In all these consolidated financial statements, all statements of subsidiaries were prepared on the date of the financial statements of parent companies. After making analysis of the consolidated financial statements, the usefulness of the new

statements of subsidiaries due to significant changes in the structure of assets for 3 entities has been recognized. For two consolidated financial statements, statements of subsidiaries should only translate according to the major change of exchange rate. In the last two consolidated financial the statements of subsidiaries shouldn't change. It was not economically feasible to draft new subsidiaries statements for the two remaining consolidated reports, since the activities of the subsidiaries were seasonal in nature and in the period of difference between reporting dates the main economic activities of subsidiaries were missing and any events affecting the operations of subsidiaries did not occur.

2 Profit and loss from intra-group transaction in assets

2.1 Statement of a problem

A foreign currency in financial statement can be presented as a transaction and / or an investment. Transactions in a foreign currency include: buying, selling, cash, passive investing. Investments in a foreign currency include: the equity method, and the consolidation method. IAS 21 does not use term "Investments", it uses the term "Translations". In cases of intra-profits/losses at the sale/purchase of assets between companies within a group and if this asset is not purchased outside the group (this asset is on the balance sheet on the date of the consolidated financial statements) IFRS requires the exclusion of it's the profit/loss of consolidated financial statements, [IAS 27 para 21]. This requirement is to prevent speculative image of fictitious profits/losses. When data transactions a being displayed a problem arises on what exchange rate this profit/loss should be eliminated. Unfortunately IAS 21 does not contain any requirements on the subject.

2.2 Problem solving

Problem solving is based on the theoretical possibilities that are known to the author.

We can use the following options:

- The exchange rate valid on the date of the transaction (the emergence of profit / loss),
- the average exchange rate for the reporting period,
- the exchange rate valid on the date of the consolidated financial statements.

The choice of a particular option should be implemented on the base of economic feasibility. Not every option may be used for example, in a hyperinflationary economy. These examples show us the impact of exchange rate changes on the company's share capital. Let's try to eliminate profit in consolidation financial statement using different methods. We'll see how the exchange rate affects the consolidated financial statements.

Conditions: A parent company buys / sells assets (inventory) from / to the Czech subsidiary company for 2.55 million CZK or 100 000 EUR at November 25, 2XXX and these assets are stay on the parent / subsidiary balance sheet at December 31, 2XXX. Assets cost **70 000 EUR** or **1.785 million CZK**. The exchange rate between EURO and Czech crown was as following: 1Euro: 25.5CZK at November 25, 2XXX, 1Euro: 25CZK at December 31, 2XXX, average year rate 1Euro: 26CZK.

Option One: The exchange rate valid on the date of the transaction (the emergence of profit). The parent company buys assets from the Czech subsidiary company for 2.55 million CZK. At the transaction day value of the assets for parent company

in balance sheet will be 100 000 EUR (2 550 000/25.5). According to IAS 27 the profit of this operation is to be eliminated from a consolidation financial statement. The assets cost 1.785 million CZK. According to the actual rate exchange ruling at the transaction date 30 000 EUR (2 550 000/25.5 - 1 785 000/25.5) of profit will be eliminated. The value of the assets will be **70 000 EUR** (100 000 - 30 000) in the consolidated financial statement. This method does not reflect the impact of exchange rate fluctuations in the financial statements. In this example it is a positive factor.

Option Two: the weighted average exchange rate for the reporting period. The parent company buys assets from the Czech subsidiary company for 2.55 million CZK. At the transaction day value of the assets for parent company in the balance sheet will be 100 000 EUR (2 550 000/25.5). According to IAS 27, profit of this operation is to be eliminated on a consolidation financial statement. The assets cost is 1.785 million CZK. According to the average exchange rate prevailing on the fiscal year 29 423 EUR ((2 550 000 - 1 785 000) / 26) of profit will be eliminated. The value of the assets will be **70 577 EUR** (100 000 - 29 423) in the consolidated financial statement. The exchange rate presents the difference of **577 EUR** arising on the consolidation financial statement using average rate method.

Option Three: the exchange rate valid on the date of the consolidated financial statements. A parent company sells assets to the Czech subsidiary company for 100 000 EUR. On the transaction day the value of the assets for subsidiary company in the balance sheet will be 2.55 million CZK (100 000 * 25.5). For the consolidated financial statement the subsidiary company must translate its own financial statement to the presentation currency EURO. It will use current rate method. The value of the assets will be **72 000 EUR** (2 550 000 / 25 minus profit 30 000). The exchange rate presents the difference of **2 000 EUR** arising on the translation to the presentation currency using the current rate method.

2.3 Discussion

During the analysis of the consolidated financial statements we have to deal with the fact that companies tend to use the weighted average exchange rate. The analysis conducted on the basis of 35 consolidated financial statements indicates that out of 35 consolidated financial statements 32 had unrealized intra-group profit and / or loss. Out of the 32 consolidated financial statements the three reports were used by the weighted average exchange rate for the reporting period, 28 the exchange rate valid at the date of the consolidated financial statements, 1 the exchange rate effect on the date of the transaction. In the analysis of the consolidated financial statements, the author believes it is appropriate to use the exchange rate valid on the date of the transaction (the emergence of profit), although it is not the easiest from the methodological point of view. But at the same time, exchange rate differences do not affect the company's share capital. This method is appropriate in the case when you do not need further translation of financial statements in the presentation currency for the consolidated financial statement. The current rate method in the third option has a significant impact of exchange rate changes on the company's share capital. This method is due to the requirement of IAS 21, which in the edition of 2005 annulled the remeasurement method, leaving no choice to the enterprise.

3 Dividends in consolidated financial statements

3.1 Statement of a problem

Entities which generate a profit usually are part of the profits paid to their shareholders. Their shareholders that had having made a decision regarding the payment of a dividend, a subsidiary must to pay dividends to their parent company. If a subsidiary pays dividends in a currency rather than the functional currency of a foreign subsidiary (currency such as used by the parent company) and at the accrual and payment dates are different, as well as exchange rate changes, then the exchange rate differences are arising. At the parent company, the situation is opposite. If the subsidiaries pay dividends in the functional currency, while the parent company uses a different currency, and thus the date of calculation and payment are different, as well as exchange rate changes, the exchange rate differences are in the parent company. The problem of accounting data exchange differences on consolidation of financial statements is very relevant today.

3.2 Problem solving

Considering what situations may arise, provided that the functional currency of the parent and subsidiary are different, the date of calculation and payment are also different, the exchange rate is unstable and changing.

Problem solving is based on the theoretical possibilities that are known to the author.

We can use the following options:

- A subsidiary pays dividends in the functional currency, while the parent company uses a different currency,
- a subsidiary pays dividends in the currency used by the parent company (other currency, rather than the functional currency of a foreign subsidiary),
- a subsidiary pays dividends in a currency, rather than the functional currency of the subsidiary and the parent company (in practice the author hasn't met such as example).

Let's try to eliminate gain or loss of exchange rate in consolidation financial statement using different situations. We'll see how the exchange rate affects the consolidated financial statement.

Conditions: A Czech subsidiary company (Czech crown is a functional currency) decides to pay dividends to the parent company (EURO is a functional currency) at November 25, 2XXX. The dividend was paid on February 1, 2XXX +1. The exchange rate between EURO and Czech crown was such: 1Euro: 25.5CZK at November 25, 2XXX, 1Euro: 25CZK at December 31, 2XXX, average year rate 1Euro: 26CZK.

Option One: the Czech subsidiary company declared a dividend in Czech crown 2.55 million CZK. Let's see how this amount will be displayed in the financial statements of subsidiary company, the parent company and the consolidated financial statement.

The Subsidiary Statement of Financial Position current rate method is used to the presentation currency EUR

Dividend payable – 102 000 EUR (2 550 000 / 25)

The Parent Statement of Financial Position current rate method is used for the closing date

Dividend receivable – 102 000 EUR (2 550 000 / 25)

The Parent Statement of Comprehensive Income

Dividend earning – 100 000 EUR (2 550 000/25.5)

Currency earning – 2 000 EUR (2 550 000/25-2 550 000/25.5)

Total earning – 102 000 EUR

The Consolidated Statement of Comprehensive Income

Dividend earning – 100 000EUR

Currency earning – 2 000 EUR

Option Two: a Czech subsidiary company declared a dividend in EURO 100 000. How will this amount be displayed in the financial statements of subsidiary company, the parent company and the consolidated financial statement?

The Subsidiary Statement of Financial Position current rate method is used to the presentation currency EUR

Dividend payable – 100 000 EUR (2 500 000/25)

The Subsidiary Statement of Comprehensive Income

Dividend – 100 000 EUR (2 550 000/25.5)

Currency earning – 2000 EUR ((100 000*25.5-100 000*25) /25)

The Parent Statement of Financial Position current rate method is used for the closing date

Dividend receivable – 100000 EUR

The Parent Statement of Comprehensive Income

Dividend earning – EUR 100 000

The Consolidated Statement of Comprehensive Income

Dividend earning – EUR 100 000

Currency earning – 2000 EUR

3.3 Discussion

The analysis of the consolidated financial statements shows that companies are constantly creating a situation where the date of accrual and payments are not the same and usually carried out in different periods. It is a usual practice nowadays because, as between the date of decision of the shareholders' regarding the payment of a dividend and the actual payment take several months. The author is aware of the case where the delay in payment of the dividend reached 2 years. The payment was blocked by one of the shareholders to influence on other shareholders. The analysis conducted on the basis of 35 consolidated financial statements indicates that all parent companies received dividends. Out of the 35 consolidated financial statements of parent companies 33 received dividends in functional currency and two parent companies received dividends in the functional currency of the subsidiary. Thus, the parent company's shifted currency risks in the payment of dividends on subsidiaries. As the author believes, these are common mistakes.

In case of dividend payments in the functional currency of the parent company from 33 subsidiary's income statements in 5 of them was found incorrect reflection of the dividends on the last date of reporting. So, as no dividends were paid, subsidiaries this amount of accrued dividends reflected the exchange rate on the date of the financial statement. Arguing that fact that the accrued dividends subject to foreign exchange risks and the equivalent in local currency debt of the subsidiary is not a constant. This statement is erroneous. Reflecting the amount of the dividend is not a monetary obligation, it is a transaction which reduces capital subsidiary. Therefore, when displayed in the income statements using the historical exchange rate at the date of the transaction. Monetary obligation is payable dividend to the parent company which subjects to recalculation of the balance sheet date.

In the consolidated financial statements of enterprises the most controversial, and for the author's opinion erroneous, is to display an exchange difference from the debt dividend. Of the 35 consolidated incomes statement at 12 companies this income statements exchange rate differences with relates to dividend reclassified to equity (because dividends belong to equity) and removed from income statement. The author believes that this exchange rate difference is the income / loss of monetary nature. So, it's a direct impact on cash flows. Therefore, this exchange difference should be included in the gain or loss of the Statement of Comprehensive Income. The author does not find the information that this situation is governed by IFRS standards. The author think that in this example, we must be guided by economic expediency and reflect the real economic substance of transactions.

Conclusion

Nowadays International Financial Reporting Standards are an effective tool to improve the transparency and clarity of information that reveals the activities of operators, creates a reliable basis for recognition of revenues and expenses, assets and liabilities, which allows to publish and objectively reflect the current financial risks, the entity and to compare the performance to ensure adequate assessment of their potential and make appropriate management decisions. In addition, IFRS has an impact on the quality management capabilities to manage the organization and provide significant advantages over its competitors. For individuals who are reporting under IFRS it is even better opportunity to attract other sources of capital and business partners to help to generate economic growth and prosperity. On the other hand, entities using IFRS have access to the information about the financial situation of potential partners, which serves as another tool of their choice.

The major goal of the paper was to describe the real process and the effects of changes in foreign exchange rates, establishes a procedure for perform transactions in foreign currencies and foreign operations for consolidated financial statements in Czech entities which act under IFRS and are trying to find economic expediency option to use IFRS demands. The issue of reporting of consolidated financial statements pointed out where problems arise with a variety of functional currencies of the consolidated entities, different reporting dates, profit and loss from intra -group transaction in assets and dividends. From the research of the 35 enterprises it was obvious that the current world trend, focusing on abused while reporting method allowed but unacceptable from an economic point of view, take place in Czech Republic. The author tried to create all possible theoretically reporting capabilities in individual cases described the problems and then evaluate it and comes to the conclusion that the company must evaluate the selected methodology of reporting in each individual case in terms of economic expediency. As shown in each

chapter of the article in each methodology used companies use incorrect procedures. As for example in chapter “different reporting dates” 7 statements of subsidiaries were prepared on the date of the financial statements of parent companies and just usefulness of the 3 new statements of subsidiaries due to significant changes has been recognized. In the view and experience of the author, these bugs usually occur of formal approaches to a reporting methodology (that facilitating the reporting of enterprises) or purposeful use of authorized methodologies (that skew the results in favor of the company). Question arises, what is to do to avoid this possibility. This is the topic for the next discussion/paper. The research results can be used to verify how Czech companies have possibility of adapting their statements under IFRS to reflect real situation of the company. At the same time we may discuss if IASB must to make more restrictive and/or circumstantial demands for IAS 21. It should be noted. The paper was presented only part of the research results because of the size restrictions of a paper.

Sometimes IFRS doesn't give answer for some specific situation. Mr. Revsine came to opinion in his paper that making the selection clearly understands the theory underlying the choice, an incorrect selection is very likely using a straightforward tally of the indicators in each direction [7]. For this reason and to my opinion the entity management must be ready to prove a methodological point of view that it subtle philosophy of IAS 21 that underlies the functional currency and the exchange rates which the entities used in financial statement. The transition to international standards should certainly be a gradual and deliberate process. The importance of this process lies in the fact that gaps and inconsistencies in national accounting system are solved gradually in accordance to the needs of the market economy without disrupting the system. Moreover, the transition to IFRS requires time to practice, try new techniques and procedures for collecting and processing the information.

References

- [1] Alfredson, Keith. *Applying International Accounting Standards*. UK: Wiley, 2007. ISBN 9780470808238
- [2] Cairns, David. *Understanding International Financial Reporting Standards A Guide for Students & Practitioners*. UK: Prentice Hall Pearson, 2007. ISBN 9780273679004
- [3] Epstein, Barry J. and Eva K. Jermakowicz. *IFRS Policies & Procedures Guide*. USA: Wiley, 2008. ISBN 9780471699583
- [4] Krupová Lenka, *IFRS Mezinárodní standardy účetního výkaznictví*, Vox, 2009, ISBN: 978-80-86324-76-0
- [5] Mirza, Abbas Ali; Graham Holt; Magnus Orrell; Liesel Knorr. *International Financial Reporting Standards (IFRS) Workbook Standard Outlines, Multiple-Choice Questions & Case Studies with Solutions*. USA: Wiley, 2006. ISBN 9780471697428
- [6] Robinson, T. R.; H. Van Greuning; E. Henry; M. A. Broihahn. *International Financial Statement Analysis*. USA: Wiley, 2009. ISBN9780470287668
- [7] Revsine Lawrence, *The Rationale Underlying the Functional Currency Choice*. *Accounting Review*, 59:3, p. 505, July 1984

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FINANCIAL BEHAVIOUR IN THE V4 COUNTRIES USING THE GLOBAL FINDEX DATABASE

Alžbeta Thiessen

Abstract: *A person's financial literacy as well as their values, attitudes and beliefs all impact their financial behaviour, thus influencing their financial well-being. Our aim is to evaluate the situation in the V4 nations with respect to the financial behaviour of adults who own credit cards and have savings. We compare results from the different V4 countries using the Global Findex Database of 2011 from the World Bank. The relationship between the individual variables is examined using the binary response model Logit. Our results reveal that owning a credit card and having saved money within the past 12 months have significant relationships to the owning of an account at a financial institution, having borrowed money from any number of various lenders, as well as the demographic characteristics such as age, within-economy income quintile, education level and country of residence. People who borrowed money from a financial institution, or another private lender, are more likely to own a credit card and less likely to have saved money within the past 12 months. This work defines financial literacy and education from several authors' viewpoint. It describes the Global Findex Database and the binary response model, finishing with the results and their review.*

Keywords: *Financial Literacy, Financial Behaviour, Credit Cards, Savings, Global Findex Database, V4 Countries.*

JEL Classification: *G210.*

Introduction

The importance of financial education has increased in recent years as a result of financial market development, demographics, economic changes as well as policy changes. Today consumers have better access to a variety of credit and saving instruments provided by a range of different entities from banks, to brokerage firms to community-based groups [13].

Many people have a problem orienting themselves in the area of finance, banking and dealing with their personal budget. This means that it is necessary to address the financial education of people, thus raising their level of financial literacy.

Financial literacy is related to financial behaviour and consequently to the saving, borrowing, spending and investing decisions of individuals [12]. Financial behaviour is affected by financial literacy and other influences such as values, attitudes to risk, beliefs, experiences, etc. [10]. The way in which a person behaves will have a significant impact on their financial well-being.

Our aim is to evaluate the situation in the V4 nations with respect to the financial behaviour of adults who own credit cards and have savings. We then do a comparison of the results from the different V4 countries.

To accomplish this aim we use the Global Findex Database of 2011 from the World Bank to make our own V4 countries dataset. We look at the probability that a person may or may not own a credit card as well as the probability that they have saved money in the

past 12 months. For examining these probabilities we use the binary response model Logit, and have created two specific models. With our regression model results we are better able to understand and evaluate financial behaviour in the V4 nations.

1 Statement of the problem

1.1 Defining financial literacy and financial education

The term “financial literacy” has, like its relatives such as computer, statistical, visual, electronic and political literacy, become familiar. Like them, is a term that has an unclear meaning. For many users of these terms, “literacy” seems to be a synonym for “awareness” or “ability” or “mastery” or “skill”, and for others, “literacy” means only the ability to read and write, and they reject the use of the word as a metaphor for any other kind of ability. Reading and writing are skills necessary for the attainment of literacy, but they do not constitute literacy itself. To be literate is not only to be able to read and write, but also to understand that which has been read or written [3].

Many authors, such as Cackley [4], Houston [11] and Atkinson [1], understand the meaning of financial literacy and financial education and define them in different ways. Listed here are some possible definitions of these terms.

Financial literacy is defined as the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being. Individuals need to be equipped not only with a basic level of financial knowledge but also with the skills to apply that knowledge to financial decision making. Thus, financial literacy covers both financial education as well as consumers’ behaviour as it relates to their ability to make informed judgments [4].

Financial education is the process of improving consumers’ understanding of financial products, services, and concepts as well as consumers’ behaviour as it relates to their ability to make informed judgments [4]. Their understanding is improved through information, instruction, and objective advice which help them develop the skills and confidence to [13]:

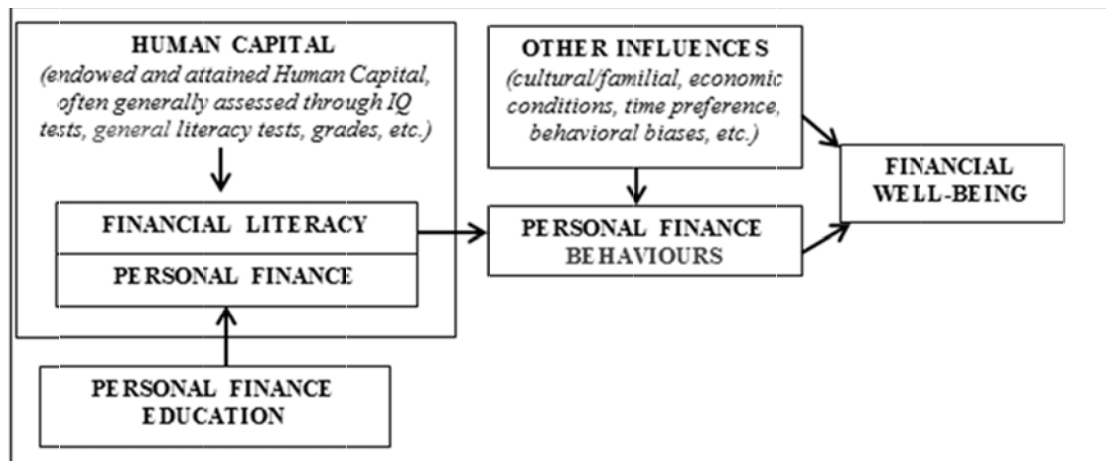
- Become more aware of financial risks and opportunities,
- make informed choices,
- know where to go for help,
- take other effective actions to improve financial well-being.

Other definitions of financial literacy affirm that it is “a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being [1].”

From another perspective, both financial literacy and financial knowledge are considered part of human capital, however they have different constructs. Financial literacy has two dimensions: understanding (personal finance knowledge) and use (personal finance application). While financial knowledge is an integral part of financial literacy, it is not equivalent to financial literacy, and has only a knowledge dimension (personal finance knowledge). Thus, financial literacy could be defined as measuring how well an individual can understand and use personal finance-related information [11].

Fig. 1 shows the relationship between financial knowledge, education, literacy, behaviour and well-being. This implies that financial behaviour is affected by financial literacy and other influences.

Fig. 1 : Relationships between Financial Literacy, Knowledge, Education, Behaviour and Well-Being



Source: [11]

Financial knowledge is basic knowledge of key financial concepts. Questionnaires test the level of financial knowledge covering a range of financial topics and varying in difficulty. These mathematical and logical questions have one correct answer [1].

All behaviour, including financial behaviour, is formulated and developed over a long time-period and is affected by many factors besides education, such as one's values, beliefs, attitudes, family environment, experience and personality [10].

The way in which a person behaves will have a significant impact on their financial well-being. It is therefore important to capture evidence of behaviour within the financial literacy measure. The surveys use different types of questions to determine behaviour, such as: thinking before making a purchase, paying bills on time, budgeting, saving and borrowing [1].

Financial education efforts are effective when participants start to demonstrate some or all of the following financial behaviours [10]:

- They keep track of their expenses and know how much they spend on various items such as food, transportation, housing, personal effects, entertainment, etc.
- They start building an emergency fund.
- They start saving regularly to meet their goals.
- They develop and keep current their cash flow and net worth statements to become fully aware of their overall financial situation.
- They pay credit card bills in full (not minimum payments) and carry no balance.
- They understand the basic principles of investing and make safe investments.
- They understand basic principles of risk management and take steps to protect themselves from various risks.
- Over time, the household financial statements show positive cash flow/net worth.

- They estimate financial retirement needs and develop a plan to meet those needs.
- They feel satisfied and in control of their finances.

Just because an individual is financially literate does not necessarily mean they will demonstrate good financial behaviour [15]. This means that a financially literate person could be influenced by other factors such as attitudes to risk, beliefs, values, etc.

To improve the financial behaviour of consumers it is necessary to set objectives for financial literacy programs to not only educate them about financial products and markets, but also to highlight the psychological biases and limitations that they, as humans, cannot easily avoid [15].

Based on the above mentioned definitions, we are inclined to accept the definition of financial literacy by Atkinson [1] which states that a mix of awareness, knowledge, skill, attitude and behaviour are necessary to make sound financial decisions and eventually achieve individual financial well-being. On one hand we focus on financial behaviour as an important part of financial literacy. On the other hand, we must not forget that financial behaviour is affected by financial literacy and other influences.

1.2 Global Findex Database

The Global Findex (Global Financial Inclusion) Database was initiated by the World Bank's Development Research Group using a 10-year grant from The Bill & Melinda Gates Foundation. It is the first public database of indicators that consistently measure how people around the world manage their day-to-day finances and plan for the future.

The 2011 database contains the first round of Global Findex indicators, measuring how adults in 148 economies, representing more than 97% of the world's population, save, borrow, make payments and manage risk, as well as use formal and informal financial services. The indicators are constructed using survey data from interviews by Gallup, Inc., with more than 150 000 nationally representative and randomly selected adults over the 2011 calendar year. The questionnaire was translated into 142 languages, and interviews were conducted face-to-face or via telephone. The complete set of Global Findex indicators will be collected again in 2014 and 2017. The target population includes the entire civilian, non-institutionalized adult population, age 15 and older. The individual-level data are publicly available online and include over 40 indicators related to account ownership, payments, saving, borrowing, and risk management.

Indicators that we think are particularly important for understanding the financial behaviour of adults include owning a credit card and an individual's saving behaviour.

From a list of economies included in the Global Findex survey, we use the V4 (The Visegrad Group) countries of Slovakia, the Czech Republic, Hungary and Poland to investigate the relationships of our chosen indicators and compare the differences.

Surveys were conducted face-to-face and interviews were conducted in the national language of each country. The collection period was approximately between April and May, 2011. Areas with a disproportionately high number of interviews in the sample are Bratislava, Prague, Budapest and Warsaw. The sample size in Slovakia is 1 012 individuals, in the Czech Republic 1 012, in Hungary 1 014 and in Poland 1 014 [7], [8].

2 Methods

Generally, regression models are used for examining the relationship between variables, but they are not suitable for every type of modeling. In particular, they should not be used when the dependent variable is discrete or limited [5]. Our dataset of the V4 countries, based on the Global Findex Database, contains mostly variables which are discrete and binary.

For this reason, we use a binary response model, Logit, in which the dependent variable y_t is binary. This means it can take on only two values, coded as either 0 or 1. Let P_t denote the probability that $y_t = 1$ is conditional on the information Ω_t , which consists of exogenous and predetermined variables. A binary response model serves to model this probability. Since the values are 0 or 1, it is clear that P_t is also the expectation of y_t conditional on Ω_t :

$$P_t = P_t(y_t = 1 | \Omega_t) = E(y_t | \Omega_t). \quad (1)$$

Thus a binary response model can also be thought of as modeling a conditional expectation, which must lie in the interval $\langle 0, 1 \rangle$, because $E(y_t | \Omega_t)$ is a probability. In order to prove that $0 \leq P_t \leq 1$ the models used are specified as:

$$P_t = E(y_t | \Omega_t) = F(\mathbf{X}_t \boldsymbol{\beta}), \quad (2)$$

while $\mathbf{X}_t \boldsymbol{\beta}$ is an index function, which transforms the values of variables \mathbf{X}_t into one real number (\mathbf{X}_t denotes a row vector of length k of variables that belong to the information set Ω_t) and $F(x)$ is a transformation function, which has the properties:

$$F(-\infty) = 0, \quad F(\infty) = 1 \quad \text{a} \quad f(x) = \frac{dF(x)}{dx} > 0. \quad (3)$$

These properties are, in fact, just the defining properties of the CDF (cumulative distribution function) of a probability distribution. The transformation function transforms a value (real number) of the index function into a value that lies in the interval $(0, 1)$ [5].

Binary response models are probability models in which estimates of coefficients of unknown parameters are estimated using a specific method. The Ordinary Least Squares method, however, is not the best choice. The mainly due to the fact that an estimate of the true (real) value \hat{y}_t may or may not lie within the interval $\langle 0, 1 \rangle$, which is a necessary condition of probability. By far, the most common way to estimate binary response models is by use of the method of Maximum Likelihood [9].

One of the available binary response models which fulfills the required condition $0 \leq P_t \leq 1$, is the Logit model. Its transformation function $F(x)$ is a logistic function

$$\Lambda(x) = \frac{1}{1 + e^{-x}} = \frac{e^x}{1 + e^x}, \quad (4)$$

which has the first derivative

$$\lambda = \frac{e^x}{(1+e^x)^2} = \Lambda(x)\Lambda(-x). \quad (5)$$

This first derivative is evidently symmetric around zero, which implies that $\Lambda(-x) = 1 - \Lambda(x)$. The Logit model is most easily derived by assuming that

$$\log = \left(\frac{P_i}{1-P_i} \right) = \mathbf{X}_i\boldsymbol{\beta}, \quad (6)$$

which states that the logarithm of the odds (that is, the ratio of the two probabilities ($P_i/1-P_i$)) is equal to $\mathbf{X}_i\boldsymbol{\beta}$. If we let $\Lambda(\mathbf{X}_i\boldsymbol{\beta})$ play the role of the transformation function $F(\mathbf{X}_i\boldsymbol{\beta})$ in the formula (2) when solving for P_i the result is [5]:

$$P_i = \frac{\exp(\mathbf{X}_i\boldsymbol{\beta})}{1 + \exp(\mathbf{X}_i\boldsymbol{\beta})} = \frac{1}{1 + \exp(-\mathbf{X}_i\boldsymbol{\beta})} = \Lambda(\mathbf{X}_i\boldsymbol{\beta}). \quad (7)$$

3 Problem solving

Our aim is to evaluate the situation in the V4 nations with respect to the financial behaviour of individuals owing credit cards and having savings. This is an important part of financial literacy. We then do a comparison of the results from the different V4 countries.

For solving this problem we use the Global Findex Database from 2011 to make our own dataset for the V4 countries. For examining the relationships between the individual variables we use the binary response model Logit. The specific dependent variables we have chosen for our two models are: ownership of a credit card and having saved money in the past 12 months. In both models there also exist independent variables from the general demographic characteristics of each individual which include: their age, gender, within-economy income quintile, education level, as well as country of residence. Other variables include: ownership of an account at a financial institution, using store credit, borrowing money from a financial institution, from family or friends, from an employer or from another private lender in the past 12 months.

The **first model** with a binary dependent variable examines the probability that a certain individual would own, or not own, a credit card. Meanwhile, additional independent variables used in this model include: the ownership of a debit card, saving money in the past 12 months and having a loan for a home or flat/apartment purchase.

Tab. 1: Logit model for dependent variable: Has a credit card

| Coefficients | Estimate | Std. Error | z value | p value | LCB | UCB | Odds ratio | LCB | UCB |
|-------------------------|----------|------------|---------|----------|--------|--------|------------|-------|-------|
| account at FI | 1,323 | 0,188 | 7,050 | 0,000*** | 0,964 | 1,701 | 3,754 | 2,623 | 5,481 |
| debit card | 0,602 | 0,121 | 4,976 | 0,000*** | 0,368 | 0,842 | 1,827 | 1,444 | 2,322 |
| saved money | 0,007 | 0,093 | 0,078 | 0,938 | -0,175 | 0,189 | 1,007 | 0,840 | 1,208 |
| borrowed FI | 0,930 | 0,126 | 7,398 | 0,000*** | 0,683 | 1,176 | 2,535 | 1,980 | 3,242 |
| borrowed store credit | 0,975 | 0,145 | 6,706 | 0,000*** | 0,690 | 1,260 | 2,651 | 1,993 | 3,527 |
| borrowed family/friend | -0,153 | 0,125 | -1,224 | 0,221 | -0,402 | 0,090 | 0,858 | 0,669 | 1,094 |
| borrowed employer | 0,290 | 0,399 | 0,726 | 0,468 | -0,506 | 1,067 | 1,336 | 0,603 | 2,908 |
| borrowed private l. | 0,980 | 0,442 | 2,219 | 0,027* | 0,105 | 1,850 | 2,665 | 1,111 | 6,357 |
| loan for home purcha. | 0,265 | 0,140 | 1,897 | 0,058. | -0,011 | 0,538 | 1,304 | 0,989 | 1,712 |
| gender_female | -0,169 | 0,088 | -1,918 | 0,055. | -0,342 | 0,004 | 0,844 | 0,710 | 1,004 |
| income_bottom | -0,534 | 0,145 | -3,689 | 0,000*** | -0,819 | -0,252 | 0,587 | 0,441 | 0,778 |
| income_second | -0,589 | 0,141 | -4,166 | 0,000*** | -0,868 | -0,313 | 0,555 | 0,420 | 0,731 |
| income_third | -0,391 | 0,130 | -3,015 | 0,003** | -0,646 | -0,138 | 0,676 | 0,524 | 0,872 |
| income_fourth | -0,416 | 0,128 | -3,258 | 0,001** | -0,667 | -0,166 | 0,660 | 0,513 | 0,847 |
| log (age) | -1,444 | 0,132 | -10,908 | 0,000*** | -1,708 | -1,189 | 0,236 | 0,181 | 0,305 |
| completed prim./less e. | -1,447 | 0,233 | -6,221 | 0,000*** | -1,922 | -1,007 | 0,235 | 0,146 | 0,365 |
| secondary educ | -0,406 | 0,106 | -3,822 | 0,000*** | -0,613 | -0,197 | 0,666 | 0,542 | 0,821 |
| Czech | 0,509 | 0,115 | 4,421 | 0,000*** | 0,284 | 0,735 | 1,663 | 1,328 | 2,086 |
| Hungary | -0,355 | 0,134 | -2,653 | 0,008** | -0,618 | -0,094 | 0,701 | 0,539 | 0,911 |
| Poland | 0,176 | 0,128 | 1,376 | 0,169 | -0,075 | 0,427 | 1,293 | 0,928 | 1,533 |

Source: [Author]

Signif. codes: '***' p < 0,001, '**' p < 0,01, '*' p < 0,05, '.' p < 0,1, ' ' p < 1

Binary dependent variable: adult does not have a credit card = 0, adult has a credit card = 1. LCB: lower confidence bounds, UCB: upper confidence bounds.

Pseudo R2: Mc Faden = 0,211, 237 observations deleted due to missingness

The results in Table 1 (Tab. 1) reveal that the odds ratio for an individual who holds an account at a financial institution is 3.754 times more likely to possess a credit card than an individual who does not hold an account at a financial institution, where all the other variables are constant.

People who have debit cards are more likely to have credit cards than those who don't have debit cards. This may be due to the fact that banks are familiar with their own customers and offer them not only a debit card, but also a credit card. Today banks also offer credit cards to those in the lower income groups, but as our results show, the richest clients have a higher chance of having a credit card than those from lower income levels.

Moreover, the significant results of our analysis show that the likelihood that an adult will have a credit card is higher if they have borrowed money from a financial institution, used a store credit card or borrowed money via another private lender in the past 12 months. One explanation for this may be that people who have credit cards, and use them, are shown to have a greater chance of taking advantage of other forms of borrowing funds using various lenders. For this reason, it is very important that they properly manage these funds and avoid the complications associated with not making their payments on time.

Furthermore, adults who currently have a loan/mortgage taken to purchase their home are more likely to own a credit card than adults who do not have a mortgage. It is, therefore, essential that people that have both mortgages and credit cards are financially literate, and that they understand the consequences of the decisions they make concerning their household budget. They need to make their payments on time, keep from getting deeper into debt and reduce the chance of overextending themselves, then losing their place of residence.

In comparing the different groups of people that have credit cards, the results reveal that there are other significant variables that also influence the chances that a particular person will have a credit card. They include age, gender, income and level of education.

The odds for women having a credit card, are about 15,6% lower than the odds for men. For adults who have completed only primary school or less education, their odds of having a credit card versus not having a credit card, are 76,5% lower than the adults who have completed tertiary or more education. However, the odds for an adult who has completed a secondary education having a credit card, versus not having credit card, are only 34% lower than the odds for an adult who has completed their tertiary or more education. This means that the higher the education level an individual reaches, the higher the probability is that they will have a credit card. On the other hand, the older they are, the lower the probability is that they will have a credit card.

In high-income economies, 50% of the adults report having a credit card [6]. All the V4 countries are found among these high-income economies. However, only 19% of average adults report having a credit card, with the largest group being the Czech Republic (26,5%), followed by the Slovak Republic (20%), Poland (17,7%) and Hungary (15%).

When comparing the different V4 countries with Slovakia, the country effect reveals that the probability of owning a credit card in the Czech Republic is higher, and in Hungary it is lower, than in Slovakia. However, when comparing Slovakia to Poland, the results from this research on the country effect do not show Poland to be statistically significant.

The **second binary response model** examines the saving behaviour of adults and tries to explain the probability that they saved or set aside money in the past 12 months. This explanation explores which independent variables affect their saving behaviour. Additional independent variables included are: the ownership of a debit card, a credit card and/or mortgage/loan for a home or apartment. These results are displayed in Table 2 (Tab.2).

In reviewing the independent variables we see that the odds that an individual saved money in the past 12 months are 2,296 times higher if they borrowed money from an employer vs. not having borrowed money from their employer.

However, adults who borrowed money from a financial institution, from family or friends, or from another private lender are less likely to have saved money in the past 12 months. Of these three options, those who borrowed money from their family or friends are the least likely to have saved money. In general, we can then say, that the financial behaviour regarding borrowing of money has a significant relationship to the ability to save money.

People more likely to have saved money in the past 12 months are either individuals who have an account at a financial institution or those who are older. Financial institutions, for example banks, usually offer a package of services to those willing to open an account. A client is offered a variety of options for saving money using certificates of deposit or savings accounts along with their original account [2]. This implies then, that those with an account at a financial institution have a higher probability of holding an account where they are also saving money with interest. Older people tend to be more responsible and are thinking not only of their own financial future, but also the future of their family.

In comparing the different groups of people that have saved money in the previous 12 months, we see that there are two other significant variables that also influence the chances that they have put money away: income level and level of education.

When comparing those from the lower income brackets to the richest we find that the poorer are less likely to have saved. This may very well be due to the fact that they do not have disposable income over and above their regular household expenses. They often find themselves in the minus, which means it is hard for them to have put money aside.

Globally, 36% of adults report having saved or set aside money in the past 12 months [7]. In the V4 countries that average goes up to 39% where the largest group is in Slovakia (49,3%), then the Czech Republic (49%), Poland (30,8%) and finally Hungary (26,7%).

When comparing the situations in the different V4 countries to Slovakia, we find that only Hungary and Poland are statistically significant. Adults in Hungary and Poland are less likely than those in Slovakia to have saved money in the past 12 months. However, when comparing Slovakia to the other V4 countries, the results from this research on the country effect do not show the Czech Republic to be statistically significant.

Tab. 2: Logit model for dependent variable: Have saved money in the past 12 months

| Coefficients | Estimate | Std. Error | z value | p value | LCB | UCB | Odds ratio | LCB | UCB |
|--------------------------------|---------------|--------------|----------------|-----------------|---------------|---------------|--------------|--------------|--------------|
| account at FI | 0,759 | 0,111 | 6,812 | 0,000*** | 0,541 | 0,978 | 2,136 | 1,718 | 2,659 |
| debit card | 0,120 | 0,095 | 1,266 | 0,205 | -0,066 | 0,306 | 1,127 | 0,936 | 1,357 |
| credit card | 0,051 | 0,093 | 0,553 | 0,580 | -0,130 | 0,233 | 1,053 | 0,878 | 1,262 |
| borrowed FI | -0,718 | 0,129 | -5,565 | 0,000*** | -0,973 | -0,467 | 0,488 | 0,378 | 0,627 |
| borrowed store credit | -0,154 | 0,145 | -1,056 | 0,291 | -0,440 | 0,131 | 0,858 | 0,644 | 1,139 |
| borrowed family/friend | -0,767 | 0,111 | -6,899 | 0,000*** | -0,988 | -0,551 | 0,464 | 0,373 | 0,576 |
| borrowed employer | 0,831 | 0,383 | 2,168 | 0,030* | 0,093 | 1,608 | 2,296 | 1,097 | 4,991 |
| borrowed private l. | -1,074 | 0,530 | -2,025 | 0,043* | -2,227 | -0,111 | 0,342 | 0,108 | 0,895 |
| loan for home purchase | -0,095 | 0,135 | -0,704 | 0,481 | -0,359 | 0,169 | 0,910 | 0,698 | 1,184 |
| gender_female | -0,034 | 0,073 | -0,471 | 0,638 | -0,177 | 0,109 | 0,966 | 0,837 | 1,115 |
| income_bottom | -0,806 | 0,119 | -6,751 | 0,000*** | -1,041 | -0,573 | 0,447 | 0,353 | 0,564 |
| income_second | -0,567 | 0,117 | -4,841 | 0,000*** | -0,798 | -0,338 | 0,567 | 0,450 | 0,713 |
| income_third | -0,392 | 0,114 | -3,452 | 0,001*** | -0,616 | -0,170 | 0,675 | 0,540 | 0,844 |
| income_fourth | 0,013 | 0,113 | 0,119 | 0,905 | -0,208 | 0,235 | 1,014 | 0,812 | 1,264 |
| log (age) | 0,293 | 0,090 | 3,240 | 0,001** | 0,116 | 0,470 | 1,340 | 1,123 | 1,600 |
| completed prim./less e. | -0,886 | 0,142 | -6,219 | 0,000*** | -1,167 | -0,608 | 0,412 | 0,311 | 0,544 |
| secondary educ | -0,592 | 0,096 | -6,150 | 0,000*** | -0,781 | -0,404 | 0,553 | 0,458 | 0,668 |
| Czech | -0,011 | 0,097 | -0,110 | 0,912 | -0,201 | 0,180 | 0,989 | 0,818 | 1,197 |
| Hungary | -1,055 | 0,103 | -10,232 | 0,000*** | -1,258 | -0,854 | 0,348 | 0,284 | 0,426 |
| Poland | -0,888 | 0,105 | -8,481 | 0,000*** | -1,094 | -0,684 | 0,411 | 0,335 | 0,505 |

Source: [Author]

Signif. codes: '***' p < 0,001, '**' p < 0,01, '*' p < 0,05, '.' p < 0,1, ' ' p < 1

Binary dependent variable: adult has not saved or set aside any money in the past 12 months = 0, adult has saved or set aside money in the past 12 months = 1. LCB: lower confidence bounds, UCB: upper confidence bounds.

Pseudo R2: Mc Faden = 0,144, 237 observations deleted due to missingness

4 Discussion

Most people need to borrow money at some time. They may buy or renovate a house, invest in an education, or pay for a wedding. When they do not have enough money they then borrow from a bank, a cousin, or an informal lender. In some parts of the world, however, many people rely on credit cards to obtain short-term credit [7].

As a result of the extensive ownership of credit cards in high-income economies people have less need for short-term loans from financial institutions [6]. This may explain why the adults in these economies who report having received a loan in the past year from a financial institution (only 7% on average) is less than the V4 countries average of 9,7%.

Credit cards make a predetermined, limited line-of-credit available for a time without interest. However, if not paid in full within the grace period, i.e. 30 days, a minimum payment is due and the balance is then recalculated with interest for the following month [14]. Every credit card owner must then be financially literate to manage the borrowed funds, avoid the risk of going deep into debt, and guard financial well-being.

Saving behaviour is also considered an important component of financial literacy. It builds financial security while reducing reliance on credit. The amount a person can save and the length of time they can keep money aside varies. Financial literacy highlights whether or not respondents have saved money [1].

Atkinson et al. surveyed the financial knowledge, behaviour and attitudes in 14 different countries relating to their financial literacy: money management, short/long term financial plans, and financial product choice. Their findings, from an OECD International Network on Financial Education pilot study, included the V4 countries except Slovakia. Their research evidenced the following financial behaviours: thinking before making a purchase, paying bills on time, budgeting, and saving/borrowing to make ends meet. In each pilot country 1000 individuals were interviewed in 2010/2011. One question asked if a person had actively saved in the past year. Their results revealed that in Hungary just 27% and in Poland 51% had saved, whilst in the Czech Republic 72% had done so [1].

Interestingly, our study confirmed the same basic results, listing the V4 countries in the same order (without Slovakia, which they did not survey) when comparing the percentage of respondents that said they had saved money in the past year.

Tang et al. researched the financial behaviour and life satisfaction of college students. They used data from 976 completed surveys at a large southwestern state university in the U.S. Their study included three financial behaviour variables: expense management, balance control, and saving. They found that positive financial behaviour contributes to financial satisfaction which, in turn, contributes to life satisfaction. This positive financial behavior may refer to a wise individual that pays off their credit card balance monthly, saves money regularly or puts aside money for emergencies [15].

Xiao et al. also studied the effects of positive financial behaviour but on consumers of credit counseling services in the U.S. in 2003. They studied financially distressed consumers who telephoned for help with outstanding credit. Their 'Personal Finances Survey' indicated that consumers in credit counseling may follow a hierarchical pattern in their financial behaviour, first paying off debts and adjusting spending before considering saving. Consumers who are older, have a part-time job (vs. the unemployed), report a more secure retirement, a better family relationship, and a higher score on their self-evaluation of their financial behaviour are likely to report having more positive financial behaviour [17].

Conclusion

Financial literacy is related to financial behaviour and consequently to the saving, borrowing, spending and investing decisions made by individuals. This paper focuses specifically on the financial behaviour of individuals owning credit cards and savings, which is an important part of financial literacy.

Our aim was to evaluate the situation in the V4 nations with respect to the financial behaviour of adults who own credit cards and have savings. We compared the results from the different V4 countries. To accomplish this goal we used the Global Findex Database

of 2011 from the World Bank in combination with the binary response model Logit for a better evaluation of the financial behaviour of those in the V4 countries.

Based on the results of our models, definite differences are evident in the data from the different V4 nations. In Hungary people are less likely to own a credit card and are also less likely to have saved money in the past 12 months than are individuals in Slovakia. However, we see that in the Czech Republic it is the opposite, where they more likely to own a credit card. In comparison, those in Slovakia are more likely to have saved money in the previous 12 months than that those living in Poland.

Credit card ownership has a significant relationship to the demographic characteristics of age, gender, within-economy income quintile and education level. People who borrowed money in the past 12 months (from any number of various sources) are more likely to own a credit card. This highlights the need for increased financial literacy.

We can say then, that a person's financial behaviour regarding the borrowing of money, account ownership, as well as different demographic characteristics (other than gender) have a significant relationship to their ability to save. Owning a credit card as well as having saved money (for future expenses or emergencies) both impact a person's financial well-being. Those not aware of the need to save will therefore not save, and will have a higher probability of borrowing funds from various sources in the future. The level of an individual's financial literacy and their financial behaviour, with regards to owning a credit card and saving funds, have a definite impact on their financial well-being.

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References

- [1] ATKINSON, A., MESSY, F. Measuring Financial Literacy. *In OECD Working Papers on Finance, Insurance and Private Pensions*, OECD Publishing 2012, No. 15, 73 p. ISSN: 2079-7117.
- [2] Bežný účet - súčasť všedného dňa. [cit. 2013-12-21]. Available at WWW: <<http://openiazoch.zoznam.sk/bankove-ucty/vklady>>.
- [3] BROWN, R. B et. al. You owe it to yourself: The financially literate manager. *In Accounting Forum*, Elsevier 2006, Vol. 30, Iss. 2, pp. 179-191. ISSN: 0155-9982.
- [4] CACKLEY, A. P. *A Federal Certification Process for Providers Would Pose Challenges*. United States Government Accountability Office (GAO-11-614). 2011. 50 p. [cit. 2013-12-13]. Available at WWW: <<http://www.gao.gov/new.items/d11614.pdf>>.
- [5] DAVIDSON, R., MACKINNON, J.G. *Econometric Theory and Methods*. New York: Oxford University Press, 1999. 688 p. ISBN 0-19512-372-7.
- [6] DEMIRGÜÇ-KUNT, A., KLAPPER, L. Measuring Financial Inclusion: Explaining variation in use of financial services across and within countries. *In Brookings Papers on Economic Activity*, Spring 2013, pp. 279-321. ISSN: 0007-2303.
- [7] DEMIRGÜÇ-KUNT, A., KLAPPER, L. Measuring Financial Inclusion: The Global Findex. Policy Research Working Paper 6025, World Bank, Washington, D.C., 2012.

- [8] Global Financial Inclusion (Global Findex) Database. [cit. 2013-12-08]. Available at WWW: <<http://microdata.worldbank.org/index.php/catalog/global-findex/about>>.
- [9] GUJARATI, D.N. *Basic Econometrics*. 4th ed. McGraw-Hill Higher Education, 2004. 2002 p. ISBN 978-0070597938.
- [10] HIRA, T. K. Promoting sustainable financial behaviour: implications for education and research. In *International Journal of Consumer Studies*, 2012, Vol. 36, Iss. 5, pp. 502-507. ISSN: 1470-6423.
- [11] HUSTON, S. J. Measuring Financial Literacy. In *The Journal of Consumer Affairs*, 2010, Vol. 44, Iss. 2, pp. 296-316. ISSN: 0022-0078.
- [12] LUSARDI, A. et al. Financial literacy among the young. In *Journal of Consumer Affairs*, 2010, Vol. 44, Iss. 2, pp. 358–380. ISSN: 0022-0078.
- [13] OECD. *Improving Financial Literacy: Analysis of Issues and Policies*. OECD Publishing 2005. 177 p. ISBN 92-64-01256-7.
- [14] The ins and outs of your credit. [cit. 2013-12-20]. Available at WWW: <<https://www.bnz.co.nz/personal-banking/be-money-smart/managing-debt/getting-on-top-of-credit-card-debt/the-ins-and-outs-of-your-credit-card>>.
- [15] TANG, CH. et al. Acting for Happiness: Financial Behavior and Life Satisfaction of College Students. In *Social Indicators Research*, 2009, Vol. 92, Iss. 1, p. 53-68. ISSN: 0303-8300.
- [16] WEST, J. Financial literacy education and behaviour unhinged: combating bias and poor product design. In *International Journal of Consumer Studies*, 2012, Vol. 36, Iss. 5, pp. 523–530. ISSN: 1470-6423.
- [17] XIAO, J. et al. Financial behaviours of consumers in credit counselling. In *International Journal of Consumer Studies*, 2006, Vol. 30, Iss. 2, pp 108-121. ISSN 1470-6431.

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COMPARISON OF REGIONAL COMPETITIVENESS INDEX AFTER EU ENLARGEMENT IN 2013

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***Abstract:** The paper deals with the concept and evaluation of competitiveness in terms of the European Union (EU). The paper deals with an evaluation of EU competitiveness at regional level by multi-criteria approach called the EU Regional Competitiveness Index (RCI). The main purpose of this composite indicator is evaluation of EU NUTS 2 region competitiveness. The aim of this paper is to introduce the theoretical and methodological basis of the RCI and its usage on the example of evaluating the competitiveness of NUTS 2 regions in the group of Visegrad Group (V4) countries. The theoretical part of the paper defines concept of the RCI and methodological background of its creation. The empirical part of the paper deals with evaluation of the Visegrad group NUTS 2 region competitiveness before and after the EU 2013 enlargement, resp. comparison of RCI results in year 2010 and 2013 and evaluation of RCI changes in the case of V4 countries in reference years.*

***Keywords:** Competitiveness, NUTS 2 region, European Union, Evaluation, Regional Competitiveness Index, Visegrad Group.*

***JEL Classification:** R11, R58.*

Introduction

Nowadays, the concept of competitiveness is very popular expression of politicians, economists, media, academics and businesses. The concept of competitiveness originated in microeconomic aspects of national economy for several decades. However in the last few years, it is significantly coming to the fore at macroeconomic level. The European Union (EU) is currently in the biggest economic crisis since the World War II and it faces globalization pressures and increased economic, social and territorial disparities among all regions. Therefore, the need to increase competitiveness is mentioned in many speeches and strategies, such as e.g. the EU 2020 Strategy. The EU RCI was created to show economic, social and territorial gaps among the EU regions. For this reason, the classic competitiveness evaluation had to be modified and approximated to the regional level. The Regional Competitiveness Index (RCI) approach evaluates the regional performance and then compares the results of the EU regions. In the case of high efficiency usage of the regional potential, the regions are ranked on the highest levels of the regional competitiveness evaluation. The paper deals with an evaluation of the EU regional competitiveness by multi-criteria approach of the EU RCI. In 2013, the revision of the RCI was made in response to accession of Croatia to the EU which took place in mid-2013. Therefore, this paper compares RCI results of the NUTS 2 regions in 2010 and 2013 in the case of Visegrad Group (V4) group countries.

1 Definition and measurement of competitiveness

1.1 The Definition of Competitiveness

The definition of competitiveness is difficult because of the **lack of mainstream view** for understanding this term. Competitiveness remains a concept that is not well understood and that can be understood in different ways and levels despite widespread acceptance of its importance. The concept of competitiveness is distinguished at different levels - **microeconomic, macroeconomic and regional**. Anyway, there are some differences between these three approaches; see e.g. [5].

The widest explanation provides the World Economic Forum (WEF) when defines competitiveness as: the set of institutions, policies and factors that determine the level of productivity of the country [8]. It means that competitiveness of country is influenced by individual components of the economy. It is not just about economic performance, but also about living standards of inhabitants, social protection, state of environment, set of institutions and many others. Some organisations define competitiveness somewhat narrowly. The OECD describes it as: a measure of a country's advantage or disadvantage in selling its products in international markets [7]. Here, the definition is limited only to the economic aspect of country. The European Commission defined competitiveness in The Sixth Periodic Report on the Social and Economic Situation of Regions in the EU as: the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income or more generally, the ability of (regions) to generate, while being exposed to external competition, relatively high income and employment levels [4]. The EU has been observing disparities among regions in the economic and social level under the Cohesion Policy framework. The territorial level was added to ensure sustainable territorial development at the beginning of the new millennium. That was the reason, why the EU decided to monitor competitiveness of their regions in order to target better a structural assistance and concentrate its support to underdeveloped regions. **The Regional Competitiveness Index** focuses on measuring competitiveness of territorial units that are lower than national level. Therefore the citation of Meyer-Stammer that defines competitiveness of a territory as: the ability of a locality or region to generate high and rising incomes and improve livelihoods of the people living there is more appropriate [1]. There are thus many ways to understand competitiveness. Therefore for further interpretation of the RCI can be used following definition of competitiveness as: the ability of territory, consisting of policies and factors, to offer a proper living standard to people who are connected to it. Each territory consisting of its natural factors and institutional framework determines the characteristics of living in the area. The living standard of people who live in this area is then given by ability to use a combination of these factors.

1.2 Theoretical Background of the Regional Competitiveness Index

The evaluation of competitiveness has become a focus of economic research in last decades. The best-known institution conducting competitiveness research is WEF which publishes the Global Competitiveness Report. Next very famous institution is the Institute for Management Development publishing the World Competitiveness Yearbook. The European Commission issues the European Competitiveness Report.

Nowadays, the echoes resound from many ways that the EU is losing its competitiveness and therefore it creates strategies for reversing this natural trend. The EU is not determined to strengthen its competitiveness only through investment in infrastructure and institutional environment, but also through innovation, education, labour market efficiency, etc. By implementing these objectives, employment and competitiveness should increase in terms of cohesion among countries and regions. Therefore, the EU prepares long-term strategies that should determine goals that should be achieved and perspective where the EU would like to be in competitiveness, standard of living, structure of economy etc., in the future. The first strategy was the Lisbon Strategy started in 2000. But this strategy failed for many reasons. The EU learned from its mistakes and published new Europe 2020 Strategy in 2010. This strategy should lead Europe the way for smart, sustainable and inclusive growth.

The national competitiveness is determined by competitiveness of its regions that consists of. The regional competitiveness is evaluated by indicators of both strategies. Unfortunately, there can be expected problems with the availability of data at regional level. Not all indicators are monitored at regional level, have a sufficiently long period or same data are missing in period line. There were introduced three regional competitiveness indexes. It is the Regional Lisbon Index, the Synthetic Index and the Regional Competitiveness Index that will be further presented in the paper [6].

2 The EU RCI Approach for Measuring Regional Competitiveness

The EU consists of twenty eight member states and is constantly expanding to include new members. Large geographic, demographic and cultural diversity of the EU brings also differences in socio-economic position of the EU member states and their regions. Different results in economic performance and living standards of the population indicate the status of the competitiveness of every country or region. However, the competitiveness is always measured at the national level and thus did not distinguish individual differences among regions. The EU RCI is the first composite indicator that was created especially for monitoring the socio-economic performance development of the EU NUTS 2 level regions [2]. The purpose of the RCI is to create a benchmark of the regional competitiveness and identify the key factors that influence the socio-economic performance and get an overview about disparities among the EU NUTS 2 level regions. The EU RCI was composed by 69 indicators in 2010, but the RCI includes 73 indicators since revision in 2013.

The original RCI 2010 was upgraded to RCI 2013 for **several reasons** [3]:

1. The RCI 2010 was indeed the first attempt to identify regional competitiveness;
2. extending the number of indicators and new methodology;
3. modification of the NUTS classification;
4. Croatia's entering to the European Union in July 2013.

The second edition of the RCI brought undated index that includes more data and method refinements. That new release enriched the level of regional description from lessons learnt from the previous RCI 2010. There were selected 73 indicators out of 80 candidate indicators using multivariate analysis according to whether they are relevant to that dimension, which constitutes the final form of the RCI. The weighting system was also a little modified. The European Commission replaced the original three groups of the

regional development, as measured by GDP per capita, by five new upgraded groups. Also the weighting system was slightly modified in innovation group for the lowest developed regions.

The biggest changes were made in the distribution of NUTS 2 regions. As the Tab. 1 shows, some of the capitals were merged with their surrounding regions mainly because of the data correction caused by the commuting issue. The original NUTS 2 regions were created as administrative units without any functional economic links. This caused distortions in the form of exclusion of people's qualification or GDP per capita. The goal of this new approach is to achieve a similar size of some regions. Therefore, there were some capital region merged with one or more of their neighboring regions as Wien, Brussels, Prague, Berlin, Amsterdam and London. In addition to these merges were adjusted NUTS classification in other regions of Germany and Finland [3]. Last reason for new RCI 2013 was the Croatia's joining the EU. Therefore, regional competitiveness measure includes also two new NUTS 2 regions of Croatia: Jadranska Hrvatska and Kontinentalna Hrvatska. **A total number of regions included in RCI 2013 reached 262.**

Tab. 1: NUTS 2 classifications adopted for RCI 2013

| Merged regions due to commuting patterns | Official NUTS 2 regions | New merged regions |
|--|--|----------------------------------|
| Wien | AT12: Niederösterreich AT13: Wien | AT00 |
| Brussels | BE10: Rég. Bruxelles/ Brussels Gewest BE24: Prov. Vlaams-Brabant BE31: Prov. Brabant-Wallon | BE00 |
| Praha | CZ01: Praha CZ02: Střední Čechy | CZ00 |
| Berlin | DE30: Berlin DE40: Brandenburg (former DE41 + DE42) | DE00 |
| Amsterdam | NL23: Flevoland NL32: Noord-Holland | NL00 |
| London | UKI1: Inner London UKI2: Outer London UKH2: Bedfordshire and Hertfordshire UKH3: Essex | UK00 |
| Merged regions due to revised NUTS 2 classification | Old NUTS 2 classification | New NUTS 2 classification |
| | FI1A: Pohjois-Suomi FI13: Itä-Suomi | FI1D: Pohjois- ja Itä-Suomi |

Source: [3]; Own elaboration, 2013

The roots of the Regional Competitiveness Index lay in the most known competitiveness indicator: The Global Competitiveness Index (GCI) reported by the WEF. The RCI partially takes its methodology from the WEF and its pillars are focused into three major groups: Basic (I), Efficiency (II) and Innovation (III). A region must always meet the requirements

of the lower group to be included into the higher one. The basic group contains indicators concentrated into five pillars as Institutions, Macroeconomic Stability, Infrastructure, Health and Quality of Primary and Secondary Education. These pillars represent the basic assumptions that the economy must achieve in order to be competitive. If any region is supposed to reach higher level of competitiveness, it has to dispose of resources included in the Higher Education/Training and Lifelong Learning pillar, Labour Market Efficiency pillar and Market Size pillar which are part of the Efficiency group of indicators. The fulfilment of these pillars leads primarily through higher productivity and efficiency use of resources. The highest level of the state or regional competitiveness is symbolized by ability to provide new or unique products and services. This Innovation group contains the Technological Readiness, Business Sophistication and Innovation pillar. The country, that has passed two previous stages of development, is now mature enough to compete on the world market with the most sophisticated products and services. Further development of the innovation driven economics depends on its ability to innovate and create new products and services. But they also must take care of maintaining its position in other economic and non-economic aspects. It is important to recall that all these aspects are primarily determined by natural conditions of the country and its historical development [8].

The EU RCI was especially created for observation of the regional competitiveness of the EU NUTS 2 level regions. The RCI follows the WEF framework, but modify it to be convenient to the regional dimension of the EU. There are three **main differences between the EU RCI and the WEF GCI** [2]:

1. focus on the regional level instead of national level;
2. internal structure of the pillars;
3. concentration on quantitative data.

3 Methodology of the RCI

The Regional Competitiveness Index presents a metric composite indicator that quantifies comprehensive view of the regional competitiveness into a single number. This indicator is intrinsically multidimensional because it combines a large set of indicators. The design of such multidimensional indicator requires professional grief for his compilation using various statistical methods and procedures. The assembly consists of several steps: observing, statistical treating, weighing and aggregating.

3.1 Statistical Assessment

Statistical evaluation involves two phases. The first stage is to assess the quality indicators and missing data. For the purposes of the RCI is a limit rate of 10 – 15 % of missing data. This phase includes univariate analysis that is performed for each indicator. Missing data will be calculated from the NUTS 1 level values because there are usually available at this level. Next method is an imputation method. This method is used for calculating the missing data using statistical estimates and available data. The Box-Cox transformation is used for the treatment of outliers. It uses a logarithmic transformation which depends on a power parameter l that contract the high values for $l < 1$ or a stretches of high values for $l > 1$. The second step is to verify internal data consistency within each dimension (the dimension is meant here as one of major groups). In this case, there is uses Principal Component Analysis (PCA). It is a multivariate method which concentrates a large amount of data in a small number of transformed dimensions. The RCI consist of indicators grouping into eleven pillars. Because competitiveness is a very abstract

concept that has no precise definition, the RCI is equipped with a number of observable indicators. The PCA helps to clear framework for RCI and its pillars contain a clear and balanced set of indicators [1].

3.2 Aggregation and Weighing Scheme

The process of aggregation begins by counting simple arithmetic average of indicators. Further, it is computing the scores for three groups of indicators – Basic, Efficiency, and Innovation – as arithmetic average of the dimension scores. Each region i have its sub-score associated to the dimension groups, which are:

$$RCI_{basic}(i) = \frac{1}{5} \sum_{j=1}^5 score(i, j) \quad (1)$$

$$RCI_{efficiency}(i) = \frac{1}{3} \sum_{j=6}^8 score(i, j) \quad (2)$$

$$RCI_{innovation}(i) = \frac{1}{3} \sum_{j=9}^{11} score(i, j) \quad (3)$$

when score (i, j) is the score assigned to the region i for dimension $j, j= 1, \dots, 11$. The last step counts the weighted average of the three sub-scores:

$$RCI(i) = w_{basic}RCI_{basic}(i) + w_{efficiency}RCI_{efficiency}(i) + w_{innovation}RCI_{innovation}(i) \quad (4)$$

$$w_{basic} + w_{efficiency} + w_{innovation} = 1 \quad (5)$$

The set of weighs for RCI 2010 was chosen according to development stage of each region by GDP measured as PPP as percentage of the EU average per capita. For the RCI, there were chosen another development stages then the WEF GCI consists of. The RCI classifies EU regions in three categories – medium, intermediate and high as Tab. 2 shows.

Tab. 2: RCI 2010 weighting system

| Stage of development | GDP per capita (PPP) as % of EU | Basic | Efficiency | Innovation |
|----------------------|---------------------------------|-------|------------|------------|
| Medium | < 75 % | 40 % | 50 % | 10 % |
| Intermediate | ≥ 75 % and < 100 % | 30 % | 50 % | 20 % |
| High | ≥ 100 % | 20 % | 50 % | 30 % |

Source: [1]; Own elaboration, 2013

The lowest threshold (e.g., GDP below 75 % of the EU average) was chosen because this value identifies regions eligible for funding under the Convergence objective of the EU Cohesion policy 2007 – 2013. The medium stage of development is usually driven by factors of the basic group of indicators. It means good governance, quality of health, infrastructure, lower skilled labour force etc. Intermediate stage is associated with the factors of efficiency group of indicators. The high development stage works with factors that are important to innovation-driven regions as it is innovation, business sophistication and technological readiness. The set of weighs was created just by classification of the development stages of the regions. The weights are selected by their region ability to accept growing relevance of innovation dimensions. It means that the innovation pillar group has bigger weight in the high stage of development and vice versa, the factors of the basic pillar group in the medium development stage have the highest weight. Distribution of weights is shown in Tab. 2.

The regions classification into development stages and weighting system was modified in the RCI 2013 revision. The regions classification was enriched by 2 extra stages of development to attain smoother change of weighting values across development stages. This system provides a more accurate assessment of the regional competitiveness.

Creating of two transition stages reduces strong variability of regional development within country. Economic policy can then precisely target its development assistance. The weighting system was changed in favor of the lowest developed regions as a reward for progress in innovation policy so that more weight were given in the innovation group to these regions. Development of most European regions is currently based on increasing efficiency of the economy and therefore the greatest weights are assigned to groups of efficiency indicators. Less developed regions have more weight in the basic group of indicators. The higher level of regional development the lower weight of basic group of indicators and vice versa, the higher level of regional development the higher weight of indicators in the innovation group of indicators (see Tab. 3).

Tab. 3: RCI 2013 weighting system

| Stage of development | GDP per capita (PPP) as % of EU | Basic | Efficiency | Innovation |
|----------------------|---------------------------------|---------|------------|------------|
| Medium | < 50 % | 35,00 % | 50,00 % | 15,00 % |
| Transition 1 | [50 % - 75 %) | 31,25 % | 50,00 % | 18,75 % |
| Intermediate | [75 % - 90 %) | 27,50 % | 50,00 % | 22,50 % |
| Transition 2 | [90 % - 110 %) | 23,75 % | 50,00 % | 26,25 % |
| High | ≥ 110 % | 20,00 % | 50,00 % | 30,00 % |

Source: [3]; Own elaboration, 2013

The robustness analysis responds to question: how sensitive does a small input change affects the output? If the output variance is small, the design solution is robust and insensitive and conversely. For robustness assessment, there must be created an uncertainty analysis and evaluation of compensability. Uncertainty analysis expects to uniformly vary in the interval (e.g. 95, 105) reference value 100 as the second threshold for the definition of the development stage. There are two presumptions: insurance a wide enough rate of uncertainty but no interference with the rationale of the composite weighing scheme needed to account for the intrinsic differences among regions. Thus, set of uncertain interval was created.

4 Comparison of RCI results after EU 2013 Enlargement: case of Visegrad group

The European Commission, immediately after new adjustment of the RCI, used proposed new methodology for evaluating the competitiveness of EU regions. In the report EU Regional Competitiveness Index 2013 is compared to the results and improvement or descent of each region in terms of competitiveness or each dimension period of three years. This paper compares results of the old RCI 2010 and new RCI 2013 in the case of the Visegrad Group regions.

The Annex 1 shows values for RCI 2010 sub-indices and for new RCI 2013 sub-indices of the V4 NUTS 2 level regions. The regions with the capital of country reach the best sub-indices results. The Praha NUTS 2 region (CZ01) gained the highest values of RCI 2010. It is followed by Bratislavský kraj (SK01), Mazowieckie region (PL12) and as the last one was Közép-Magyarország (HU10). On the other hand, Moravskoslezsko (CZ08) a Severozápad region (CZ04), Észak-Magyarország (HU31) and Észak-Alföld region (HU32), Podlaskie (PL34) and Warmińsko-Mazurskie region (PL62) and Východné Slovensko region (S04K) reached the worst values of RCI 2010 sub-indexes. The best values of RCI 2013 sub-indices got regions with capital again. However, some changes were occurred in the case of worst results. The worst values of sub-indices reached the Severozápad (CZ04) and Střední Morava (CZ07), Észak-Alföld (HU32) and Dél-Alföld

(HU33), Warminsko-Mazurskie (PL62) and Podkarpadskie (PL32). The worst values of the RCI 2013 sub-indices in Slovakia reached the Východné Slovensko region (SK04).

Among the various regions is observed large variability of RCI sub-indices in both observed years not only within each country but also across the surveyed countries. The neighboring regions close to the capital, or other large economic centers, reach higher values in individual sub-indices, especially in efficiency and innovation sub-index. Peripheral regions reach much worse values. In the case of the Czech Republic took place the Praha (CZ01) and Střední Čechy (CZ02) NUTS 2 level region joining in 2013. This merger caused steep decline in all RCI 2013 sub-indices when the negative values of the RCI 2013 sub-indices of the Střední Čechy region turned down the positive values of the Praha region. In case of differences among the values of the RCI 2010 sub-indices and the new RCI 2013 sub-indices is not so clear that there would be a general improvement or deterioration. Each region developed specifically and therefore no general trend was observed.

The Annex 2 shows values of the RCI 2010 and new RCI 2013 as well as the rank of the Visegrad group regions. The regions that reached the best results of RCI 2010 were: Praha (1.-CZ01), Bratislavský kraj (2.-SK01), Közép-Magyarország (3.-HU10) and Mazowieckie (4.-PL12). The best values of RCI 2013 reached the same regions. Only the Bratislavský kraj region (SK01) skipped the Praha region (CZ01). However, this change was due to decrease of the index value of the Praha region because of its association with the Střední Čechy region as it was already said. The last position of each country came in Severozápad (CZ04), Észak-Alföld (HU32) and Dél-Alföld (HU33), Warminsko-Mazurskie (PL62) and Východní Slovensko (SK04) regions. However, there is considerable variance among the worst regions of the Visegrad group countries. While the worst region of the Czech Republic is ranked between the 12th and 13th position on average in both reporting years, the worst regions in other countries amounted to 33rd, 32nd and 31st place. Both ranks show that the regions of the Czech Republic ranked immediately after the capitals. However, most regions of Hungary and Slovakia occupied last places.

The best move forward was made by Hungarian region Nyugat-Dunántúl (HU22) which occupied 13th place in the RCI 2013 instead of 23rd place in 2010. Other regions, such as Moravskoslezsko (CZ08), Podlaskie (PL34) and Lubuskie (PL43) made also big steps forward in the RCI 2013 rank. At the same positions in both periods remained regions Közép-Magyarország (HU31), Mazowieckie (PL12), Zachodniopomorskie (PL42) and Swietokrzyskie (PL33). The largest drop in the RCI ranking between the two reference years experienced Polish regions Wielkopolskie (PL41) (from 17th to 23rd place), Podkarpatskie (PL32) (from 21st to 26th place), Łódzkie (PL11) (from 15th to 19th place) and Západné Slovensko region (SK02) (from 11th to 15th place) in Slovakia. However, due to the RCI 2010 and the new RCI 2013 results comparison can be concluded that **most regions of the Czech Republic, Slovakia and Poland deteriorated their RCI values. Only most of Hungarian regions improved their RCI values.** But it should be noted that the Hungarian regions still continue to reach worst places.

Conclusion

The Regional Competitiveness Index provides a new innovation method of the overall performance level of each EU region. The advantage of this approach lies in the capture of many economic, social and territorial characteristics of each region in a single number. This approach will help to take the appropriate action of national and regional stakeholders to

improve the situation in problematic issues and thus help to increase the standard of living in each region. The RCI represents approach for the comprehensive evaluation of the competitiveness of the EU regions. With respect to other indices of regional competitiveness (mentioned in chapter 1.2), the main advantage of RCI approach lies in its focus on the regional level instead of national level; also in internal structure of the pillars and last but not least in its concentration on quantitative data. Through RCI eleven pillars and more than 70 aggregated indicators into one number, it gives information about strengths and weaknesses of each region. The RCI takes wider approach in looking at the performance of the region, because it does not include only economic aspects, but also social and territorial characteristics of the region. Using different weights depending on the degree of development of the region creates a fair basis for regional competitiveness evaluation. In 2013, the revision of the RCI was made as a reaction to EU enlargement and to improve its methodology to increase the information value of this index. The RCI should help to European policy makers to target better the measures to solve different needs of each region. A new approach based on an evaluation by RCI may provide the potential for its further use in economic research. Its theoretical framework may be used through specific methods of multi-criteria decision making such as factor and cluster analysis, Data Envelopment Analysis or the construction of an econometric model of panel data. Based on application of the RCI on NUTS 2 regions level in the Visegrad Group, there has been found a huge gap among the best and the worst regions.

Acknowledgement

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References

- [1] EUROPEAN COMMISSION. *A New Regional Competitiveness Index: Theory, Methods and Findings*. 2011. [cit. 2013-12-12]. Available from WWW: <http://ec.europa.eu/regional_policy/sources/docgener/work/2011_02_competitiveness.pdf>.
- [2] EUROPEAN COMMISSION. *EU Regional Competitiveness Index 2010*. 2010. [cit. 2013-12-16]. Available from WWW: <<http://bookshop.europa.eu/en/eu-regional-competitiveness-Index-2010-pbLBNA24346/>>.
- [3] EUROPEAN COMMISSION. *EU Regional Competitiveness Index 2013*. 2013. [cit. 2013-12-16]. Available from WWW: <http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf>.
- [4] EUROPEAN COMMISSION. *Sixth Periodic Report on the Social and Economic Situation of Regions in the EU*. 1999. [2013-12-12]. Available from WWW: <http://ec.europa.eu/regional_policy/sources/docgener/informat/irmo_en.pdf>.
- [5] KRUGMAN, P. Competitiveness: A Dangerous Obsession, *Foreign Affairs*, vol. 73, no.2, 1994, pp. 28-44.
- [6] MELECKÝ, L., M. STANIČKOVÁ a E. POLEDNÍKOVÁ. Data Base Analysis for Exploration of EU Cohesion and Competitiveness. In: *IMEA 2011*. Sborník

příspěvků z XI. Mezinárodní konference. [CD-ROM]. Liberec: Technická univerzita v Liberci, 2011, s. 279-288. ISBN 978-80-7372-720-8.

- [7] ORGANIZATION FOR ECONOMIC CO-OPERATION DEVELOPMENT. Competitiveness. 2013. [2013-12-15]. Available from WWW: <<http://stats.oecd.org/glossary/detail.asp?ID=399>>.
- [8] VAHALÍK, B., M. STANIČKOVÁ. The EU Regional Competitiveness Index. In: *IMEA 2013. Conference Proceedings*. [CD-ROM]. Pardubice: University of Pardubice, 2013, s. 337-345. ISBN 978-80-7395-696-7.
- [9] WORLD ECONOMIC FORUM. *The Global Competitiveness Report 2012 – 2013*. 2012. [cit. 2013-12-10]. Available from WWW: <http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf>.

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Annex 1: The EU RCI evaluation of the V4 NUTS 2 regions

| Code | NUTS 2 level region | 2010 | | | 2013 | | |
|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | sub-index 1 | sub-index 2 | sub-index 3 | sub-index 1 | sub-index 2 | sub-index 3 |
| CZ01 | Praha | 0,118 | 0,767 | 0,533 | -0,132 | 0,282 | 0,328 |
| CZ02 | Střední Čechy | -0,096 | -0,160 | -0,648 | | | |
| CZ03 | Jihozápad | -0,098 | -0,210 | -0,677 | -0,227 | -0,275 | -0,638 |
| CZ04 | Severozápad | -0,192 | -0,640 | -0,940 | -0,341 | -0,404 | -0,728 |
| CZ05 | Severovýchod | -0,144 | -0,270 | -0,687 | -0,193 | -0,246 | -0,602 |
| CZ06 | Jihovýchod | -0,092 | -0,260 | -0,542 | -0,164 | -0,420 | -0,408 |
| CZ07 | Střední Morava | -0,288 | -0,410 | -0,857 | -0,302 | -0,421 | -0,742 |
| CZ08 | Moravskoslezsko | -0,830 | -0,523 | -0,890 | -0,294 | -0,345 | -0,797 |
| HU10 | Közép-Magyarország | -0,748 | -0,177 | 0,015 | -0,487 | -0,229 | 0,312 |
| HU21 | Közép-Donántúl | -0,814 | -0,440 | -0,825 | -0,568 | -0,501 | -0,754 |
| HU22 | Nyugat-Dunántúl | -0,790 | -0,503 | -0,902 | -0,496 | -0,446 | -0,852 |
| HU23 | Dél-Dunántúl | -0,988 | -0,870 | -0,932 | -0,730 | -0,859 | -0,668 |
| HU31 | Észak-Magyarország | -0,942 | -0,830 | -1,130 | -0,691 | -0,822 | -0,846 |
| HU32 | Észak-Alföld | -0,990 | -0,867 | -1,073 | -0,806 | -0,904 | -0,950 |
| HU33 | Dél-Alföld | -0,944 | -0,783 | -1,048 | -0,707 | -0,821 | -0,862 |
| PL11 | Lódskie | -0,488 | -0,453 | -0,730 | -0,434 | -0,558 | -0,904 |
| PL12 | Mazowieckie | -0,532 | 0,207 | -0,070 | -0,348 | -0,089 | -0,201 |
| PL21 | Malopolskie | -0,356 | -0,240 | -0,627 | -0,300 | -0,507 | -0,750 |
| PL22 | Slaskie | -0,346 | -0,047 | -0,683 | -0,341 | -0,278 | -0,853 |
| PL31 | Lubelskie | -0,698 | -0,603 | -0,982 | -0,451 | -0,685 | -1,103 |
| PL32 | Podkarpackie | -0,598 | -0,637 | -0,942 | -0,378 | -0,872 | -1,166 |
| PL33 | Swietokrzyskie | -0,608 | -0,643 | -1,188 | -0,461 | -0,748 | -1,319 |
| PL34 | Podlaskie | -0,816 | -0,787 | -1,035 | -0,455 | -0,784 | -1,185 |
| PL41 | Wielkopolskie | -0,492 | -0,487 | -0,712 | -0,422 | -0,801 | -1,042 |
| PL42 | Zachodniopomorskie | -0,472 | -0,790 | -0,702 | -0,434 | -0,821 | -0,885 |
| PL43 | Lubuskie | -0,542 | -0,843 | -0,798 | -0,449 | -0,788 | -1,021 |
| PL51 | Dolnoslaskie | -0,438 | -0,427 | -0,595 | -0,452 | -0,503 | -0,806 |
| PL52 | Opolskie | -0,376 | -0,663 | -0,858 | -0,325 | -0,634 | -1,020 |
| PL61 | Kujawsko-Pomorskie | -0,612 | -0,780 | -0,912 | -0,472 | -0,847 | -1,037 |
| PL62 | Warminsko-Mazurskie | -0,648 | -1,027 | -0,938 | -0,473 | -1,081 | -1,098 |
| PL63 | Pomorskie | -0,538 | -0,527 | -0,645 | -0,388 | -0,627 | -0,783 |
| SK01 | Bratislavský kraj | -0,186 | 0,560 | 0,420 | -0,215 | 0,432 | 0,685 |
| SK02 | Západné Slovensko | -0,354 | -0,330 | -0,545 | -0,445 | -0,556 | -0,774 |
| SK03 | Stredné Slovensko | -0,540 | -0,810 | -0,792 | -0,564 | -0,833 | -0,831 |
| SK04 | Východné Slovensko | -0,580 | -1,047 | -0,735 | -0,617 | -1,052 | -0,859 |

Source: [3]; Own elaboration, 2013

Annex 2: The EU RCI evaluation of the V4 NUTS 2 regions

| Code | NUTS 2 level region | RCI score 2010 | RCI score 2013 | RCI rank 2010 | RCI rank 2013 | Character of RCI level change |
|------|---------------------|----------------|----------------|---------------|---------------|-------------------------------|
| CZ01 | Praha | 0,561 | 0,213 | 1 | 2 | ↘ -1 |
| CZ02 | Střední Čechy | -0,238 | | 8 | | ↗ 6 |
| CZ03 | Jihozápad | -0,212 | -0,328 | 5 | 6 | ↘ -1 |
| CZ04 | Severozápad | -0,491 | -0,445 | 14 | 11 | ↗ 3 |
| CZ05 | Severovýchod | -0,261 | -0,296 | 9 | 5 | ↗ 4 |
| CZ06 | Jihovýchod | -0,221 | -0,338 | 6 | 7 | ↘ -1 |
| CZ07 | Střední Morava | -0,406 | -0,444 | 12 | 10 | ↗ 2 |
| CZ08 | Moravskoslezsko | -0,503 | -0,414 | 16 | 9 | ↗ 7 |
| HU10 | Közép-Magyarország | -0,057 | -0,148 | 3 | 3 | → 0 |
| HU21 | Közép-Donántúl | -0,628 | -0,569 | 20 | 16 | ↗ 4 |
| HU22 | Nyugat-Dunántúl | -0,658 | -0,538 | 23 | 13 | ↗ 10 |
| HU23 | Dél-Dunántúl | -0,923 | -0,785 | 34 | 30 | ↗ 4 |
| HU31 | Eszak-Magyarország | -0,905 | -0,780 | 33 | 29 | ↗ 4 |
| HU32 | Észak-Alföld | -0,937 | -0,877 | 35 | 31 | ↗ 4 |
| HU33 | Dél-Alföld | -0,874 | -0,787 | 32 | 34 | ↘ -2 |
| PL11 | Lódskie | -0,495 | -0,584 | 15 | 19 | ↘ -4 |
| PL12 | Mazowieckie | -0,070 | -0,180 | 4 | 4 | → 0 |
| PL21 | Malopolskie | -0,325 | -0,471 | 10 | 12 | ↘ -2 |
| PL22 | Slaskie | -0,230 | -0,406 | 7 | 8 | ↘ -1 |
| PL31 | Lubelskie | -0,679 | -0,666 | 24 | 20 | ↗ 4 |
| PL32 | Podkarpatskie | -0,652 | -0,743 | 21 | 26 | ↘ -5 |
| PL33 | Swietokrzyskie | -0,684 | -0,733 | 25 | 25 | → 0 |
| PL34 | Podlaskie | -0,823 | -0,729 | 29 | 24 | ↗ 5 |
| PL41 | Wielkopolskie | -0,511 | -0,728 | 17 | 23 | ↘ -6 |
| PL42 | Zachodniopomorskie | -0,654 | -0,712 | 22 | 22 | → 0 |
| PL43 | Lubuskie | -0,718 | -0,704 | 27 | 21 | ↗ 6 |
| PL51 | Dolnoslaskie | -0,448 | -0,544 | 13 | 14 | ↘ -1 |
| PL52 | Opolskie | -0,568 | -0,584 | 19 | 18 | ↗ 1 |
| PL61 | Kujawsko-Pomorskie | -0,726 | -0,744 | 28 | 27 | ↗ 1 |
| PL62 | Warmińsko-Mazurskie | -0,866 | -0,781 | 31 | 33 | ↘ -2 |
| PL63 | Pomorskie | -0,543 | -0,582 | 18 | 17 | ↗ 1 |
| SK01 | Bratislavský kraj | 0,366 | 0,378 | 2 | 1 | ↗ 1 |
| SK02 | Západné Slovensko | -0,361 | -0,562 | 11 | 15 | ↘ -4 |
| SK03 | Stredné Slovensko | -0,700 | -0,749 | 26 | 28 | ↘ -2 |
| SK04 | Východné Slovensko | -0,829 | -0,871 | 30 | 32 | ↘ -2 |

Source: [3]; Own elaboration, 2013

GUIDELINES FOR PAPER WRITING

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Tables and pictures are placed directly in the text. Figure is any graphical object other than table. Figures – we recommend choosing two-dimensional graphs, only in cases of inevitable spatial graphs. Lines, axes and a description of the image are written in font size 9. We recommend not using the raster grid and outer surround. Journal is printed in black and white. The source is placed right below the figure or table, Times New Roman, italics, 11.

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| Number | Year 2001 | Year 2002 | Year 2003 |
|--------|-----------|-----------|-----------|
| 1 | 23 | 25 | 23 |
| 2 | 24 | 25 | 24 |

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- [1] BELODEAU, B., RIGBY, D. *Management Tools and Trends 2009*. Bain&Company. [cit. 2010-02-25]. Available at WWW: Available from WWW: <http://www.bain.com/bainweb/PDFs/cms/Public/Management_Tools_2009.pdf>.
- [2] BERGEVOET, R. H. M., ONDERSTEIJN, C. J. M., SAATKAMP, H. W., VAN WOERKUM, C. M. J., HUIRNE, R. B. M. Entrepreneurial behavior of Dutch dairy farmers under a milk quota system: goals, objectives and attitudes. *In Agricultural Systems*, 2004, Vol. 80, Iss. 1, pp. 1-21. ISSN: 0308-521X.
- [3] GREENACRE, M. *Correspondence Analysis in Practice*. Boca Raton: Chapman & Hall/CRC, 2007. 280 p. ISBN 978-1-58488-616-7.

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