2/2010
Volume 4

ACTA VŠFS

Economic Studies and Analyses
Ekonomické studie a analýzy

ARTICLES
STATĚ

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EDITORIAL

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ACTA VŠFS Increases its Periodicity
ACTA VŠFS zvyšují periodicitu

BOHUSLAVA ŠENKÝŘOVÁ

Dear Readers,

The previous issue of ACTA of the University of Finance and Administration (VŠFS) was completely concerned with international scientific conference "Social Europe – Problems and Perspectives". The issue 2/2010 returns to the usual content of this scientific magazine. It contains papers on current problems of the Czech economy in the business sector and taxes. Theoretical economy is also included, presenting a paper on morality in redistribution systems. Experiences from foreign economic developments are described in a paper on the impacts of adopting the euro in Slovakia.

The mission of scientific magazine ACTA VŠFS is to make available the results of the research conducted at the University of Finance and Administration and also to publish other high-quality papers offered by the expert community in the Czech Republic as well as abroad. Owing to the ever expanding range of authors, this year has been the first time that we will prepare the 3rd issue while maintaining our careful selection process to pick quality papers, guaranteed by proficient reviewers, in close cooperation with the Editorial Board and the entire implementation team.

I believe that this issue will also present enlightening thoughts, which will attract your attention, and I look forward to the new ideas and suggestions that will add more inspiration to our magazine on its way to a recognised scholarly periodical.

Dr. Bohuslava Šenkýřová
Editor in Chief
Rector, University of Finance and Administration

Vážení čtenáři,

předchozí číslo ACTA VŠFS bylo plně věnováno mezinárodní vědecké konferenci „Sociální Evropa – problémy a perspektivy". Číslo 2/2010 se vrací k tradičnímu pojetí tohoto vědeckého časopisu. Obsahuje stati o aktuálních problémech české ekonomiky z podnikové sféry a z daňové problematiky. Zastoupena je zde i teoretická ekonomie statí o moralitě v redistribučních systémech. Zkušenosti z ekonomického vývoje v zahraničí popisuje stať o dopadech zavedení eura na Slovensku.

Posláním vědeckého časopisu ACTA VŠFS je zpřístupnit výsledky výzkumu prováděného na Vysoké škole finanční a správní a publikovat i další kvalitní stati nabídnuté odbornou veřejností u nás i v zahraničí. Díky stále se rozšiřujícímu okruhu autorů jsme se letos poprvé rozhodli připravit 3. vydání při zachování pečlivého výběru kvalitních statí, který je garantován erudovanými recenzenty v úzké spolupráci s redakční radou a celým realizačním týmem.

Věřím, že i v tomto čísle naleznete podnětné myšlenky, které vás zaujmou, a těším se na nové nápady a náměty, které pro náš časopis budou další inspirací na cestě k uznávanému odbornému periodiku.

Dr. Bohuslava Šenkýřová
šéfredaktorka
rektorka Vysoké školy finanční a správní, o. p. s.

Analysis of Differences in Reporting According to IFRS in SMEs in the Czech Republic and its Influence on Performance Measurement

Analýza rozdílností při vykazováni dle IFRS v MSP v České republice a jejich vlivu na měření výkonnosti

LIBUŠE MÜLLEROVÁ, MARIE PASEKOVÁ, DANA KUBÍČKOVÁ

Abstract

New information technologies, development of international economic cooperation and market interconnection call for the need of multinational, globally applicable and acknowledged accounting standards which will enable to describe the processes taking place on the companies´ level, within the extent of the contemporary knowledge, but especially in a comparable form.

These requirements are met e.g. by International Financial Reporting Standards (IFRS) used mainly in Europe. Their fundamental aim is to develop unified, high-quality and understandable global accounting standards. The financial statements prepared according to these standards provide high-quality, transparent and comparable information, which can help the users to make economic decisions.

The information disclosed according to full IFRS standards is sometimes too superfluous for users of financial statements of small and medium–sized enterprises (SMEs) and very often the cost of its full consistence exceeds its contributions. Another problem, which is specific for the Czech Republic is that the national legislation does not allow it to specify the income tax base from the statements prepared according to IFRS standards and thus the companies have to prepare the statements according to Czech legislation in parallel, which represents a tremendous administrative burden.

The aim of the article is to analyse problem areas in reporting according to IFRS at SMEs in the Czech Republic and to compare their results with the accounting practice in companies which report according to IFRS.

Keywords

IFRS, SMEs, Czech accounting standards (CAS), financial statements, performance measurement

Abstrakt

Nové informační technologie, rozvoj mezinárodní ekonomické spolupráce a propojenost trhu vyvolávají potřebu nadnárodních, celosvětově platných a uznávaných účetních

norem, které umožní věrně a v rozsahu odpovídajícím soudobému poznání, ale především ve srovnatelné podobě, vypovídat o procesech probíhajících na úrovni podniku.

Těmto požadavkům odpovídají např. Mezinárodní standardy účetního výkaznictví (IFRS), využívané především v Evropě.

Jejich základním cílem je rozvoj jednotného celku vysoce kvalitních a srozumitelných globálních účetních standardů. Z účetních závěrek sestavených dle těchto standardů budou vyplývat vysoce kvalitní, transparentní a srovnatelné informace, které napomohou uživatelům těchto informací provést ekonomická rozhodnutí.

Zveřejňované informace podle plných IFRS jsou pro malé a střední podniky (MSP) zbytečné a mnohdy náklady na plnou konzistenci přesahují jejich přínosy. Dalším problémem specifickým pro Českou republiku je, že národní legislativa neumožňuje z výkazů sestavených podle IFRS stanovit zaklad daně z příjmů, a tak podniky musí sestavovat výkazy paralelně podle dvou různých standardů, což představuje velkou administrativní zátěž.

Cílem článku je analýza problémových okruhů při vykazováni dle IFRS u MSP v České republice a porovnání jejich výsledků s účetní praxí v podnicích, které už podle IFRS vykazují.

Klíčová slova

IFRS, MSP, české účetní standardy (ČÚS), účetní závěrka, měření výkonnosti

Introduction

Small and medium-sized enterprises (SMEs) play an important part in EU economy. However, their mutual activities are limited by various difficulties. One of the biggest problems is the fact that each of the 27 countries has a different accounting system. From this point of view it is useful to harmonize the systems. The best tool for this harmonization is IFRS for SMEs as a set of rules which can be used for making financial reports of the company. The advantage of such standards should be building them on IFRS principles however they will not be as complicated as full IFRS financial statements. That is very important for SMEs as they do not have large capital so they need to use all financial, informational and personal sources effectively.

So far SMEs in the Czech Republic do not use full IFRS standards very much. Except the above mentioned demandingness, IFRS differ considerably from the Czech national accounting system. Moreover, the Czech tax legislation does not accept business results calculated according to IFRS as a basis for income tax calculation and thus reporting according to IFRS is something extra to Czech financial statements.

On the other hand, more and more SMEs are starting to report according to IFRS because they are more and more linked to the surrounding world due to capital connections, customer/supplier relations or external financing by banks. Issuing IFRS for SMEs would simplify reporting of these enterprises, using a common standard.

This article deals with main problems the Czech SMEs have when reporting according to full IFRS standards. Theoretically set topics are compared with the results of our hitherto research in chosen enterprises.

1 Definition of small and medium-sized enterprises

Small and medium-sized enterprises are regarded as the moving economic power not only in the Czech Republic but in the whole EU.

To support and develop these businesses of these enterprises, EU has introduced a new definition of small and medium-sized enterprises valid from 1. January 2005. SMEs are defined by three main criteria: the number of employees, the annual turnover in millions of euros and the value of assets in millions of euros (Table 1).

Table 1: EU Definition of SMEs

Size	Number of Employees	Turnover in EUR	Balance Sum EUR
Medium enterprise	50 – 249	Max 50 mil	Max 43 mil
Small enterprise	10 – 49	2 mil – 10 mil	2 mil – 10 mil
Micro-enterprise (small entrepreneur)	Below 10	Up to 2 mil	Up to 2 mil

Source: http://www.czechinvest.org/definice-msp

2 Reasons for harmonization of accounting

Informative ability of financial statements is a fundamental condition for communication among accounting information users. Accounting is a subject of continuous development both on European and worldwide scale, it has to react to the development of national as well as multinational economic environment and it has to react to stimuli based especially on new world tendencies in theoretical knowledge and practical experience from realization of different opinions.

The growth of multinational corporations, new information technologies and development of the international capital market call for the need of multinational, worldwide valid and respected accounting standards which will enable truly and within the range of current subject field, but mostly comparably inform about enterprise processes. International Financial Reporting Standards (IFRS)[1] correspond to these requirements. The International Financial Reporting Standards are a summary of the best accounting procedures and experience of the accounting profession and of users´ requirements upon the range of publicly notified information. Their purpose is to increase comparability of reporting on financial

1 *The original name was IAS (International Accounting Standards). To stress the fact that the case is standardization of financial reporting and not standardization of accounting, the name of the whole IAS set was changed into IFRS. Individual standards (IAS 1 through IAS 41) remain in force but new and updated standards are published under IFRS name.*

effectiveness and financial position of different companies, operating under different national conditions. Comparability of data included in reports e.g. balance sheet (statement of financial position), income statement (statement of comprehensive income), statement of changes in equity and statement of cash flow are of high importance for investors, but also for managers and financial management of companies. Financial reporting provides input information for a financial analysis. For a financial management of key importance is to guarantee comparability of data included in financial statements.

However, reaching full comparability is often very difficult. Comparability could be judged in the scope of indices time line within consecutive accounting periods in one company, where generally accepted consistence principle is followed. Comparing final statements among various companies in one country is only possible when centrally regulated, however it does not work on the international scale.

3 IFRS for small and medium-sized enterprises

As full IFRS were designed to meet the needs of investors in companies operating on public capital markets, they include a range of suggestions and solutions suitable for public businesses. Non-publicly Accountable Entities, especially SMEs do not need identical information or they lack financial sources to adapt to the requirement upon a big volume of reported data. Many of these businesses claim that the use of full IFRS is too demanding.

The aim of IASB board when formulating IFRS for Non-publicly Accountable Entities was to satisfy users' needs in terms of balance between the expenses and benefits. The main aims of these standards for SMEs are:

- to define a unified set of high-quality, understandable and enforceable accounting standards,
- to drop financial burden,
- to allow easy transfer to full IRSF for those SMEs which will decide to move to them or those which will acquire a duty to make accounting information public,
- to concentrate on satisfying the needs of users of financial statements of small and medium sized enterprises.

ISAB board changed the name of the standards to IFRS for Private Entities in May 2008. In January 2009 the name was changed again to IFRS for Non-publicly Accountable Entities. The Czech Republic has adopted the classification of private enterprises elaborated and recommended by the European Commission, but at the moment only for the purposes of supporting small enterprises. The definition of private enterprises (PE) has not been included in national accounting legislation yet.

On 9 July 2009, the IASB issued Final IFRS for SMEs, effective immediately. This is the first set of international accounting requirements developed specifically for small and medium-sized entities (SMEs). It has been prepared on IFRS foundations but is a stand-alone product that is separate from the full set of International Financial Reporting Standards (IFRSs). The IFRS for SMEs has simplifications that reflect the needs of users of SMEs' fi-

nancial statements and cost-benefit considerations. Compared with full IFRSs, it is less complex in a number of ways:

- Topics not relevant to SMEs are omitted.
- Where full IFRSs allow accounting policy choices, the IFRS for SMEs allows only the easier option.
- Many of the principles for recognising and measuring assets, liabilities, income and expenses in full IFRSs are simplified.
- Significantly fewer disclosures are required.
- And the standard has been written in clear, easily translatable language.

To further reduce the reporting burden for SMEs, revisions to the IFRS will be limited to once every three years. It is suitable for all entities except those whose securities are publicly traded and financial institutions such as banks and insurance companies. The 230-page standard is a result of a five-year development process with extensive consultation of SMEs worldwide. Accompanying the standard is implementation guidance consisting of illustrative financial statements and a presentation and disclosure checklist. It is necessary to decrease the cost and administration during the process of IFRS implementation and to provide for enough implementation booklets.

The standard has 230 pages (it is ten times less than full IFRS) and it is adapted for the needs and abilities of smaller enterprises. Parts of the standard are the explanatory report and implementation manual which includes an example of financial reports of SMEs, presentations of financial statements and a list of requirements for disclosing. Many principles from full IFRS concerning recognition and appreciation of assets, liabilities, revenues and expenses were simplified, some items which did not relate to SMEs were left out and the number of requirements for disclosing was considerably simplified. This standard will further be simplified and will be revised every three years. The standard is based on individual spheres which are further divided into sections.

The International Financial Reporting Standards for SMEs response to strong international requirements of both developed and emerging economies to introduce accounting standards for small and medium-sized enterprises which would be much simpler than full IFRS. IASB supposes that the standard will:

- provide improved comparability for users of financial statements,
- enhance the overall confidence in financial statements of SMEs,
- reduce significant expenses connected with maintaining standards on a national basis,
- enable easy transition to full IFRS at growing businesses that are preparing to enter public capital markets.

The standard contains five types of simplifications of full IFRS:

- some topics in IFRSs are omitted because they are not relevant for SMEs,
- simplification of some accounting policy options used in full IFRS, which are unnecessarily complicated for SMEs; there is no choice in cases where IFRS enable it,

- simplification of measurement and reporting requirements,
- simplification of requirements upon accounting information disclosure,
- simplification of the process of displaying future changes.

Compared to full IFRS, the standard does not address the following areas because they are not relevant for SMEs:

- earnings per share,
- interim financial reporting,
- segment reporting,
- insurance (subjects issuing contracts of insurance will not be allowed to use this standard),
- accounting of assets held for sale.

If SMEs want to report these spheres, they can create their own methodology and disclosure it.

As it was already mentioned above, the SMEs standard does not provide any options in areas where full IFRS enable them. They are:

- financial instruments options, including available-for-sale, held–to maturity and fair value options,
- revaluation model for property, plant and equipment, and for intangible assets,
- proportionate consolidation for investments in joint-ventures,
- property investment valuation using historical costs not accounting policy based on cost revaluation models and fair value models,
- various options for government grants.

4 Harmonization in the Czech Republic

The biggest obstacle in comparability of financial statements among individual European Union countries is the fact that the directives do not have a character of an international law. They are realized through the mediation of the corresponding national legal regulations of a member country. Thus specifics of individual member countries reflect in financial accounting, following from their different economic as well legal environments and historical tradition. Enterprises from national economics enter international environment, however they are not yet completely ready for the aligning processes. This is especially the case of SMEs reporting.

Comparing accounting procedures and reporting of some items according to the Czech Accounting Standards and according to IFRS results in differences in the accounting data reporting. According to one reporting frame a company can reach a profit, while according to another it can show a loss. Of big difference can also be total balance sums, asset value, and value of other items of property or liabilities. Financial analyses indices and comprehensive conclusions about performance could differ considerably.

The efforts of the CR crowned by the Czech Republic joining the EU define clearly the choice of the form of international harmonization of accounting, including tax harmoniza-

tion and coordination. In the past the application of IAS/IFRS was optional more or less, possibly evoked by respecting requirements of foreign companies to include accounting information in consolidated financial statements. Since 2005 the IFRS application has been compulsory for companies operating on EU regulated markets. According to the Regulation No. 1606/2002 of the European Parliament and the Council of 19 July 2002 on the Application of International Accounting Standards, the accounting entities that are trading companies and that are issuers of securities registered at a regulated securities market in the European Union member countries, have to apply the International Accounting Standards, adapted by the European Union law, for accounting and drawing a financial statement.

The financial statement according to IFRS differs from the Czech financial statement first of all in its purpose. Its key aim is to provide information for economic decision making of shareholders and investors. The statements also differ in requirements upon selection and range of information disclosed. The statements preparation in compliance with IAS/IFRS cannot do without professional estimates and references, respecting fundamental accounting principles. It requires consistent recording of transactions according to their economic nature and not in compliance with the rule of law, if different.

Introduction of IFRS is a turning point in financial reporting. It calls for collection and classification of financial data in several dimensions, e.g. not only according to companies´ individual products and services but also in geographical classification, often from inhomogeneous and incomparable data. Information systems and accounting policies have to be adapted not only for big corporations but also for SMEs.

The impact of international accounting upon Czech companies will be stronger and stronger and timely solution of the problems will offer a certain competitive advantage to the companies in future. Companies that will not be able to provide correct and comparable financial information on IFRS basis will be losing the trust of capital and financial markets but also of business partners. On the contrary, high quality financial reporting makes approach to sources of finance easier in both forms of financing at the capital markets and from loans which has a majority in SMEs.

5 Difficulties of SMEs in the Czech Republic during the transition process to IFRS

A key problem of accounting based on IFRS is the tax basis which is obtained from the accounting profit in the Czech Republic. For this reason, the accounting entities which account and report according to IFRS by law have, for the purposes of calculation of the profit tax payable, to transform the business result to such a result which they would have if they accounted and reported according to the Czech regulations.

If SMEs were forced to account and report according to IFRS, even if simplified, this would mean adopting new accounting legislation. Then the enterprises would have to train their accountants and prepare them for a new approach to accounting, or teach them new approaches to accounting thinking. All this would mean – at least in the beginning – a huge administrative as well as financial burden for these enterprises.

Next to this, the majority of SMEs are interested very little in "a trustable and truthful view" provided by accounting. The enterprises want the financial accounting to provide them mainly with data necessary for specifying the profit tax basis, they use accounting information for the purpose of management very rarely. This fact is also documented by the following research.[2]

6 Scope and aims of the research done at Tomas Bata University in Zlin, Faculty of Management and Economics

At Tomas Bata University in Zlin, Faculty of Management and Economics research is done as a part of a project financed by the Czech Science Foundation, a research grant ' IAS/IFRS Usage in Small and Medium Enterprises and its Influence on Performance Measurement'. Registration number: GACR 402/09/0225.

The outlet of the grant should be theoretical knowledge of possibilities and problems of IAS/IFRS implementation in small and medium enterprises as a basis for creation of accounting standards and other linking regulations and creation of methodological recommendations of how to keep accounts and how to make accounting statements according to IAS/IFRS.

Now we identify of problem fields of using IFRS in SMEs. The identification is based on theoretical judging of differences, possibly discrepancies between the accounting procedures used so far and recommendations in IFRS and on results of questionnaire research applied within chosen SMEs. The aim is to obtain information about possible usage of IFRS from entrepreneur sphere and about difficulties connected with this.

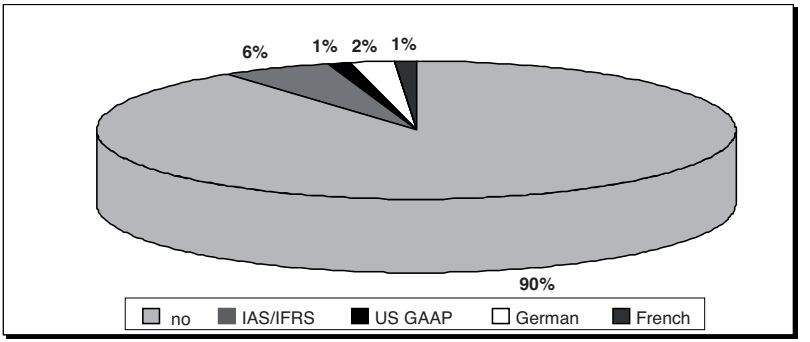
Results

Eightg-nine businesses took part in our research, out of which 83 were from the Czech Republic. We involved businesses with less than 250 employees in the SMEs category. Production companies represented 37%, trade businesses 28% service-providing companies 35%.

The basic question of the questionnaire aimed at the problems of reporting, i.e. if the company reports also according to any other system than Czech. Only 10% of the companies asked (9 companies) answered positively. Out of this 5 companies report according to IAS/IFRS, 2 companies according to the German system, 1 company according to US GAAP and 1 company according to the French system (Figure 1):

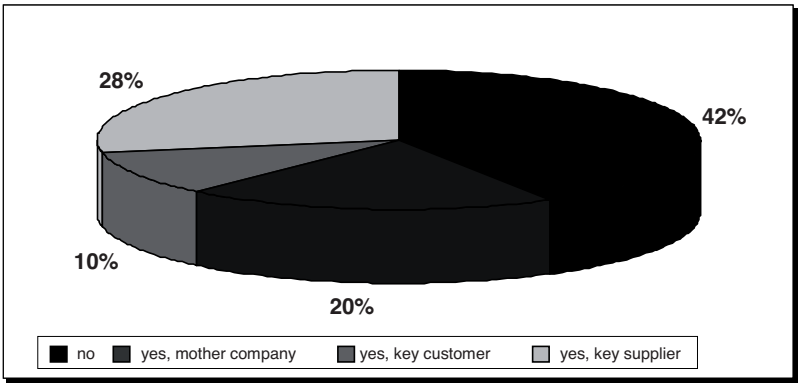
2 *MÜLLEROVÁ; PASEKOVÁ; HÝBLOVÁ (2010)*

Figure 1: In which other reporting system does your Company report?



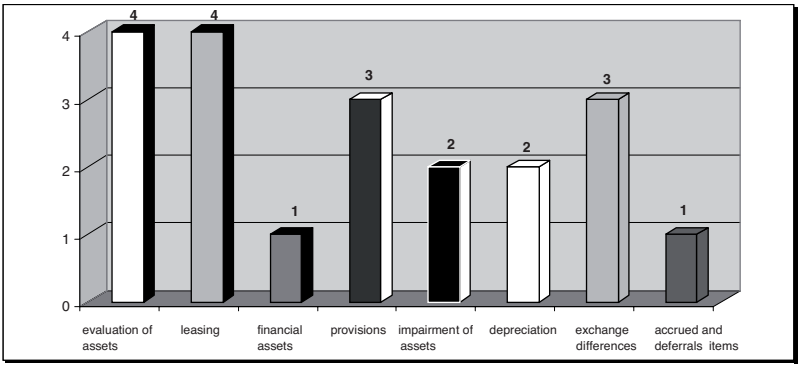
In connection with this we wanted to know if the company is somehow connected to a foreign subject. Fig. 2 shows that nearly 60% of companies have this type of connection. 28% of companies have an important foreign supplier, 20% of companies are linked to foreign mother company and 10% of companies have an important foreign customer (Figure 2):

Figure 2: Connection of companies with foreign subjects



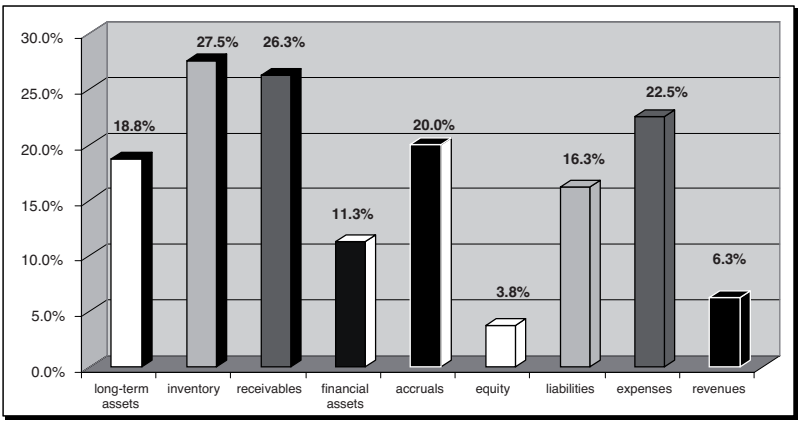
The following question concentrated on specific areas of reporting where the company makes alterations during transition from the national accounting system to another accounting system. Out of nine companies which reported also according to another system than Czech, four companies alter assessment of assets and leasing, three companies alter provisions and exchange rates and two companies alter corrections and depreciation. Alterations of financial assets and time differentiation were mentioned only once each of them (Figure 3):

Figure 3: What adjustments are needed to change your local statutory accounts to other reporting system you are using?



To find out if companies are interested to use IAS/IFRS in the future there was a question about an interest of the responsible employees to undergo trainings or courses on IAS/IFRS. More than 76% of companies without IAS/IFRS experience said they were not interested in such trainings. These companies were then asked to name problematic accounting areas. 28% responses mentioned inventories as problematic areas, 26% receivables, 23% costs; accruals were mentioned in 20% of responses. The least complicated parts were equity and revenues (Figure 4):

Figure 4: Which are the problematic accounting areas in your company, in your opinion?



Discussion

According to our research we can state that SMEs are not interested in international accounting standards. It is probably due to disadvantageous proportion between the cost invested and the revenues obtained.

Companies which report according to IAS/IFRS standards find the biggest problems while reporting long-term assets, leasing, provisions and exchange rate differences.

7 Reporting according to IFRS and its influence on the assessment of the financial performance of the SMEs

Reporting of assets and liabilities according to IFRS in compare to the Czech accounting standard brings substantial changes in the classification, content and valuation that affect almost the all items of the financial statements in varying degrees and in different direction. As the experiences of the companies which report according to IFRS show, provide these Financial Statements a different set of data and totally different picture of financial position and performance of the company. It affects the other areas of use of these data, including assessing of the financial situation and the financial performance based on the indicators of the financial analysis.

Assessment of the financial situation and performance based on data of the financial statement are used not only by the companies themselves for financial planning and decision, but also by the financial institutions in the process of lending companies, by business partners who assess perspectives and risks of collaboration, by investors who assess performance and risks of their investments. On the data of the financial statement is based also the bankruptcy and other models, that are used by the financial institution for risk assessment of clients and consequently for managing the capital relevancy. The results of financial analysis are also used by the regional authorities and authorities of the EU for valuation of credibility of applicants for EU funds, evaluation of projects for support from EU funds etc.

Financial analysis provides the data for assessment of the main aspects of the financial stability: i.e. profitability, liquidity, financial independence (debt), to asses and predict the development of the financial situation. It allows to express these aspects by the quantitative data, to compare them with the recommended values, to monitor interaction between them, to compare them with the same in the other firms, and identify problem areas and to set targets and measures in order to improve the situation.

Financial analysis and financial indicators are based on the data of financial statements. If the financial statements according to IFRS provide a different set of data and totally different picture of financial situation, it can be regarded that the totally assessment of the financial performance will change. That may lead to the other assessment and the other decisions. At what degree and what direction will the IFRS change this assessment, it is the question, that must be considered in connection with the process of implementation of IFRS in the range of the SMEs.

On these problems concentrates the second part of the research supported by the GACR, which is realised by the cooperating institution, Department of management and business economics, University of Finance and Administration, Prague.

Research methods

In this part of the project was made an empirical research aimed to find out if the reporting according IFRS in the terms of concrete companies lead to the different assessment of the

financial situation and performance. The research was based on the supposition that IAS/IFRS will cause the change in the assessment of the firms and its financial situation and performance. At the second level we supposed, that the results of the assesment will be worse.

To achieve the goals we used the method comparison of the two set of the financial indicators, which one of them was based on the data of the financial statement prepared according to IFRS, the other one of them was based on the data of the financial statement according to Czech Accounting Standards. The two sets of the financial statements are compilated in one and the same company. Since 2005 the IFRS application has been compulsory for companies operating on EU regulated markets. Besides it they must the same financial statements compile according to the Czech Accounting standard for the tax purposes. It creates a unique situation for the research. We also obtained the financial statement of the other companies, that are not operating on the regulated capital markets, but must compile two sets of financial statements – one according to IFRS for mother company abroad and one for the tax purposes according to Czech Accounting Standards. At the first stage we had six sets of statements, at the end we have at our disposal nine sets of financial statement.

For the assessment of the financial situation have been selected only some of the indicators of financial analysis. The selection was based on the frequency of use in normally undertaken analysis including the basic method of its detection[3] they are listed below:

1) Profitability ratios[4]:

a) rentability of equity (ROE)	= EAT / Equity
b) rentability of assets (ROA)	= EBIT / Assets
c) rentability of sales (ROS)	= EBIT / Sales
d) rentability of capital employment (ROCE)	= EBIT / Long-term capital

2) Liquidity ratios:

a) current ratio	= current assets / short-term liabilities
b) quick ratio	= current assets – inventories / short-term liabilities
c) cash ratio	= current assets – inventories – short-term receivables / short-term liabilities

3) Debt ratios:

debt ratio	= Liabilities / Assets
equity ratio	= Equity / Assets
financial laverage	= Assets / Equity
debt-equity ratio	= Liabilities / Equity
earnings effect of financial leverage	= EBT / EBIT x Assets / Equity
Interests coverage	= EBDIT / Interests
1/interests coverage	= Interests / EBDIT

3 *MRKVIČKA; KOLÁŘ (2006).*

4 *EAT = earning after taxes, EBT = earning before taxes, EBIT = earning before interests and taxes, EBITD = earning before interests, depreciations and taxes.*

4) Activity indicators:

a) turnover rate: turnover rate of assets = Sales / Assets
turnover rate of inventories = Sales / Inventories
turnover rate of receivables = Sales / Receivables
turnover rate of short-term liabilities = Sales / Short-term liabilities

b) turnover time: 360 / turnover rate (assets, inventories, receivables, short-term liabilities)

The two sets of the data were also used for calculation of the Altman model value Z-score. For this purpose we could not use the variant of the model created for the Czech condition, because we could not determine the indicator of the overdue liabilities. So we use the formula for the calculation of the model, in this form:

$$\mathbf{Zo= 0{,}717*x_1 + 0{,}847* x_2 + 3{,}107*x_3 + 0{,}420*x_4 + 0{,}998*x_5}$$

where x_1 = net working capital / Assets
x_2 = retained earnings / Assets
x_3 = EBIT / Assets
x_4 = Equity / Liabilities
x_5 = Sales / Assets

Interpretation:

- value Z-score values higher than 2,7 – the firm is in good condition, there is not a threat of the bankruptcy in the two further years
- values in the interval 2,7 – 1,2 – further development can not be specified more precisely („grey zone")
- values lower than 1,2 – the firm is threatened by the serious financial problems in the next two-three years

Achievements of the research

The comparison of the two sets of the financial indicators according the two sets of financial statements, one of them according to Czech Accounting Standards and one according to the International Financial Reporting Standards, obtained from the six companies, is presented in the table No 2. There is calculated the difference between those on CAS and IFRS in the absolute value and while in percentage terms (the base is the value according CAS statements). Plus or minus expresses the direction of change in comparison with the CAS level.

In the table No 3 there is a presentation of the indicators values in all the companies in absolute and percentage terms, that allows the simple assessment the degree and the direction of the change.

In the table No 4 there are comparison of the Z-score values in the companies – the differences are listed in absolute and percentage terms.

Table 2: Comparison of selected indicators of financial analyses based on CAS and on IAS/IFRS (part 1)

	Řízení letového provozu, s.p.				Spolana, a.s.				Škoda Auto, a.s.			
Indicator	**CAS**	**IFRS**	**Diff. (absol.)**	**Diff. (%CAS)**	**CAS**	**IFRS**	**Diff. (absol.)**	**Diff. (%CAS)**	**CAS**	**IFRS**	**Diff. (absol.)**	**Diff. (%CAS)**
ROE	10.64%	10.74%	-0.10	**-0.96**	8.855%	8.357%	-0.498	**-5.62**	10.64%	7.10%	- 3.54	**- 33.00**
ROA	12.00%	12.00%	0.00	**0.00**	8.268%	7.837%	-0.431	**-5.21**	8.06%	6.24%	- 1.82	**- 22.00**
ROS	20.71%	20.71%	0.00	**0.00**	94.649%	95.521%	0.872	**0.92**	3.77%	3.54%	- 0.23	**- 6.00**
ROCE	12.98%	13.10%	-0.12	**-0.92**	8.765%	8.277%	-0.488	**-5.57**	13.05%	9.93%	- 3.12	**- 24.00**
current ratio	2.519	2.268	-0.251	**-9.96**	5.300	5.327	0.026	**0.49**	1.117	0.991	- 0.126	**- 11.30**
quick ratio	2.471	2.225	-0.246	**-9.96**	5.300	5.327	0.026	**0.49**	0.812	0.708	- 0.104	**- 12.80**
cash ratio	0.987	0.889	-0.098	**-9.96**	4.354	4.419	0.065	**1.49**	0.200	0.139	- 0.061	**- 30.50**
debt ratio	0.117	0.126	0.008	**7.16**	0.058	0.070	0.012	**21.06**	0.5428	0.4996	- 0.0432	**- 7.96**
equity ratio	0.883	0.874	-0.008	**-0.95**	0.942	0.930	-0.012	**-1.29**	0.4572	0.5004	+ 0.0432	**+ 9.45**
financial leverage	1.133	1.144	0.011	**0.96**	1.061	1.075	0.014	**1.30**	2.1870	1.9970	- 0.19	**- 8.69**
debt-equity ratio	7.535	6.964	-0.571	**-7.57**	16.377	13.354	-3.023	**-18.46**	0.8420	1.0020	+ 0.16	**+19.00**
earnings effect of financial leverage	1.133	1.144	0.011	**0.96**	1.061	1.074	0.013	**1.18**	1.8150	1.604	- 0.211	**- 11.60**
interest coverage	x	x	x	**x**	0.000	991.652	991.652	**0.00**	24.260	17.070	- 7.190	**- 29.60**
1 / interest coverage	0.000	0.000	0.000	**0.00**	0.000	0.001	0.119	**0.00**	11.67%	19.67%	- 8.000	**- 68.50**
Turnover of assets	0.579	0.579	0.000	**0.00**	0.087	0.082	-0.005	**-6.07**	2.137	1.739	- 0.398	**- 18.60**
Time of turnover (days)	621.430	621.43	0.000	**0.00**	31.000	30.000	-1.910	**-6.07**	168.000	207.000	+39.000	**+ 23.20**
Turnover of inventories	158.900	158.90	0.000	**0.00**	0.000	0.000	0.000	**0.00**	18.304	16.832	- 1.472	**- 8.00**
Time of turnover (days)	2.270	2.27	0.000	**0.00**	0.000	0.000	0.000	**0.00**	19.600	21.400	+1.800	**+ 9.20**
Turnover of receivable	5.148	5.148	0.000	**0.00**	1.627	1.702	0.076	**4.66**	11.398	7.333	- 4.065	**- 35.60**
Time of turnover (days)	69.932	69.932	0.000	**0.00**	221.000	211.000	-9.857	**-4.45**	31.600	49.100	+17.500	**+ 55.40**
T.of short-term liabilities	7.640	6.880	-0.760	**-9.96**	1.539	1.545	0.006	**0.39**	5.589	4.749	- 0.840	**- 15.00**
Time of turnover (days)	47.130	52.340	5.210	**11.06**	234.000	233.000	-0.100	**-0.39**	64.400	75.800	+11.400	**+ 17.70**

Table 2: Comparison of selected indicators of financial analyses based on CAS and on IAS/IFRS (part 2)

	Česká námořní plavba, a.s.				Léčebné lázně Jáchymov, a.s.				České vinařské závody, a.s.			
Indicator	**CAS**	**IFRS**	**Diff. (absol.)**	**Diff. (%CAS)**	**CAS**	**IFRS**	**Diff. (absol.)**	**Diff. (%CAS)**	**CAS**	**IFRS**	**Diff. (absol.)**	**Diff. (%CAS)**
ROE	8.513%	9.272%	0.759	**8.920**	5.04%	5.02%	-0.020	**-0.01**	17.57%	21.70%	4.130	**4.13**
ROA	4.834%	4.774%	-0.060	**-1.250**	5.73%	6.20%	0.470	**0.47**	17.18%	22.78%	5.600	**5.60**
ROS	3.617%	3.562%	-0.055	**-1.530**	10.52%	12.50%	1.980	**1.99**	28.14%	41.65%	13.510	**13.51**
ROCE	16.777%	16.685%	-0.092	**-0.550**	6.31%	6.32%	0.010	**0.01**	20.10%	26.76%	6.660	**6.66**
current ratio	0.422	0.392	-0.030	**-7.100**	0.840	0.796	-0.040	**-5.26**	5.243	5.230	-0.013	**-0.24**
quick ratio	0.256	0.241	-0.014	**-5.590**	0.731	0.690	-0.040	**-5.62**	4.213	4.205	-0.007	**-0.17**
cash ratio	0.029	0.016	-0.013	**-46.050**	0.206	0.168	-0.040	**-18.21**	1.913	0.791	-1.122	**-58.64**
debt ratio	0.745	0.766	0.022	**2.900**	0.214	0.207	-0.010	**-3.41**	0.212	0.172	-0.040	**-18.68**
equity ratio	0.255	0.234	-0.022	**-8.460**	0.789	0.864	0.070	**9.47**	0.788	0.827	0.038	**4.87**
financial leverage	3.915	4.277	0.362	**9.240**	1.267	1.158	-0.110	**-8.65**	1.268	1.209	-0.059	**-4.64**
debt-equity ratio	0.343	0.305	-0.038	**-11.040**	3.690	4.183	0.490	**13.34**	3.727	4.807	1.079	**28.96**
earnings effect of financial leverage	1.761	1.942	0.181	**10.290**	1.179	1.090	-0.090	**-7.57**	1.268	1.209	-0.059	**-4.68**
interest coverage	18.972	19.449	0.477	**2.520**	26.545	34.319	7.77	**29.29**	0.000	2937.740	2937.740	**x**
1 / interest coverage	55.020%	54.580%	-0.440	**-0.790**	6.920%	5.820%	-1.100	**-1.100**	0.000%	0.040%	0.040	**0.04**
Turnover of assets	1.337	1.340	0.003	**0.280**	0.545	0.496	-0.049	**-9.02**	0.61	0.55	-0.06	**-10.41**
Time of turnover (days)	269.760	269.000	-0.76	**-0.280**	660.282	725.771	65.488	**9.92**	589.75	658.29	68.55	**11.62**
Turnover of inventories	11.295	12.470	1.175	**10.400**	53.139	53.139	0.000	**0.00**	4.08	3.61	-0.47	**-11.43**
Time of turnover (days)	32.000	29.000	-3.003	**-9.420**	6.775	6.775	0.000	**0.00**	88.28	99.68	11.40	**12.91**
Turnover of receivable	8.279	8.316	0.037	**0.450**	10.975	10.734	-0.242	**-2.20**	1.83	1.08	-0.74	**-40.67**
Time of turnover (days)	43.000	43.000	-0.196	**-0.450**	32.801	33.540	0.739	**2.25**	197.07	332.16	135.09	**68.55**
T.of short-term liabilities	1.878	1.878	0.000	**-0.001**	5.770	5.604	-0.166	**-2.88**	4.20	3.70	-0.50	**-11.91**
Time of turnover (days)	192.000	192.000	0.002	**0.001**	62.397	64.245	1.848	**2.96**	85.71	97.29	11.58	**13.52**

Origin: financial statements and own calculations.

Table 3: Comparison of the value of selected indicators in the six companies

	ŘLP, s.p.	Spolana, a.s.	Škoda Auto, a.s.	ČNP, a.s.	Léč. Lázně Jáchymov	ČVZ, a.s.	Stroje, s.r.o.	ČSA, a.s.
Indicator	**Diff. (%CAS)**	**Diff. (%CAS)**	**Diff. (%CAS)**	**Diff. (%CAS)**	**Diff. (%CAS)**	**Diff. (%CAS)**	**Diff. (%CAS)**	**Diff. (%CAS)**
ROE	-0.96	-5.62	- 33.27	+8.92	-0.01	+4.13	0.00	5.95
ROA	0.00	-5.21	- 22.58	-1.25	+0.47	+5.60	0.00	0.73
ROS	0.00	+0.92	- 6.10	-1.53	+1.99	+13.51	4.70	-0.18
ROCE	-0.92	-5.57	- 23.90	-0.55	+0.01	+6.66	0.00	3.47
current ratio	-9.96	+0.49	- 11.28	-7.10	-5.26	-0.24	-24.69	+1.85
quick ratio	-9.96	+0.49	- 12.80	-5.59	-5.62	-0.17	-24.67	0.00
cash ratio	-9.96	+1.49	- 30.50	-46.05	-18.21	-58.64	-24.87	-9.33
debt ratio	+7.16	+21.06	- 7.96	+2.90	-3.41	-18.68	0.00	-21.59
equity ratio	-0.95	-1.29	+ 9.45	-8.46	+9.47	+4.87	0.00	+158.08
financial leverage	0.96	+1.30	- 8.69	+9.24	-8.65	-4.64	0.00	-60.49
debt-equity ratio	-7.57	-18.46	+19.00	-11.04	+13.34	+28.96	0.00	-40.96
earnings effect of financial leverage	0.96	+1.18	- 11.62	+10.29	-7.57	-4.68	--	-151.54
interest coverage	x	0.00	- 29.63	+2.52	+29.29	x	--	-78.21
1 / interest coverage	0.00	0.00	- 68.55	-0.79	-1.10	+0.04	--	+371.00
Turnover of assets	0.00	-6.07	- 18.62	+0.28	-9.02	-10.41	0.00	-51.69
Time of turnover (days)	0.00	-6.07	+23.21	-0.28	+9.92	+11.62	+0.34	+157.00
Turnover of inventories	0.00	0.00	- 8.04	+10.40	0.00	-11.43	+0.64	+0.40
Time of turnover (days)	0.00	0.00	+ 9.18	-9.42	0.00	+12.91	+7.70	-0.37
Turnover of receivable	0.00	+4.66	- 35.66	+0.45	-2.20	-40.67	--	+0.20
Time of turnover (days)	0.00	-4.45	+55.38	-0.45	+2.25	+68.55	+1.80	-1.90
T.of short-term liabilities	-9.96	+0.39	- 15.03	-0.001	-2.88	-11.91	+12.59	+9.34
Time of turnover (days)	+11.06	-0.39	+17.70%	+0.001	+2.96	+13.52	--	-10.50

Origin: financial statements and own calculations.

Table 4: Comparison of the values Z-score of the companies

Company	Value Z-score				Interpretation		
	CAS	IFRS	Diff. absol.	Diff. (% CAS)	CAS	IFRS	change +/-
Řízení letového provozu, s.p.	4.710	4.464	- 0.256	**-5.43**	no threat of the bank-ruptcy	no threat of the bank-ruptcy	–
Spolana, a.s.	1.185	1.117	- 0.068	**-5.74**	Grey zone	Grey zone	–
Škoda Auto, a.s.	2.949	2.600	- 0.349	**-11.83**	no threat of the bank-ruptcy	Grey zone	–
Česká námořní plavba, a.s.	-0.955	-0.804	+ 0.151	**+15.81**	Bankruptcy is possible	Bankruptcy is possible	+
Léčebné Lázně Jáchymov, a.s.	2.503	2.775	+0.272	**+10.87**	Grey zone	no threat of the bank-ruptcy	+
České vinařské závody, a.s.	2.221	2.450	+0.229	**+10.31**	Grey zone	Grey zone	+
Stroje, s.r.o	16.510	16.230	- 0.280	**- 1.69**	no threat of the bank-ruptcy	no threat of the bank-ruptcy	-
ČSA, a.s.	2.140	1.360	-0.780	**-0.36**	Grey zone	Bankruptcy is possible	-

Origin: financial statements and own calculations.

The comparison of the indicators can be summarized by a few conclusions:

1. The values of the indicators were affected by the Financial Statement prepared according to at all companies.

2. The sort of change (positive, negative) was different in individual indicators and individual companies, and the same situation was in the Altman's model value. The results does not allowed to conclude that the IFRS lead to both to worse assessment of the financial situation of the companies and to better ones. The values of the indicators based on IFRS changed both above and below the ones based on the CAS.

3. The greatest changes both positive and negative can be seen in the indicator Debt ratio and Equity ratio, the biggest shift was in the indicator Interests coverage and Turnover of Receivables. Both the biggest changes were in the same company.

4. The indicators which have the greatest importance, i.e. profitability of equity, profitability of assets, were affected by the IFRS too, also in positive and in negative direction, but to a lesser extent (the greater difference was negative, less 33%, the smallest one 0%).

5. The great change can be seen in the indicators of cash liquidity, turnover of short-terms liabilities, interests coverage.

It can be concluded that the comparison of two sets of selected indicators of financial analysis based on the Financial Statements compiled according the two systems of Accounting Standards confirmed the assumption that IFRS change the assessment of the financial situation of companies. A partial supposition that IFRS change the assessment in negative direction was not confirmed.

Further knowledge gained at this stage of research, which cannot be generalize in the wider scope due to the small sample of companies surveyed, is:

a) the changes are not significant in the total assessment of the financial situation,
b) the changes are both in positive and in negative direction,
c) the most extreme changes were noticed in the indicators based on the data of assets, capital structure, sales, i.e. on these items, in which the approach to the reporting the item is significant different from the Czech accounting standards.

Conclusions

Special standards would require small and medium-sized enterprises to change their opinion on high-quality accounting in general, where instead of stressing correct accounting procedures and methods the emphasis is placed on final statements. They would have to duly compile cash flow statements, get used to somewhat various kinds of evaluation bases and broader range of supplementary and explanatory information in the appendix. A stress upon the final product of accounting, statements, requires understanding the consequences and relationships among transactions and their reflection in accounting because no set rules will be available any more.[5]

The reason for making a financial statement according to one of the forms of accounting harmonization is above all cooperation with foreign partners and investors and also exclusively for their comparison with foreign competition.

Compilation of the financial statements according to IFRS will change the assessment of financial stability and financial performance, both in positive and in negative direction.

Objective of this research phase was to obtain information regarding to the experiences, approaches of the small and medium-sized enterprises to the process of harmonization of accounting and the first view on its possible influence on the assessment of financial situation and performance of these subjects. And these objectives were achieved.

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5 *MÜLLEROVÁ; PASEKOVÁ; HÝBLOVÁ (2010)*

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The Causes of Changes in the Rates of Value Added Tax in the Czech Republic and their Possible Impacts[1]

Příčiny změn v sazbách daně z přidané hodnoty v České republice a jejich možné reflexe

JAN ŠIROKÝ, ANNA KOVÁŘOVÁ

Abstract

Value added tax is the most harmonized tax within the single internal market of the European Communities. Although Community law defines the basic constraints of the VAT legislative form in the Member States, Directive No. 2006/112/EC on the common system of value added tax, as amended, leaves a certain freedom for the Member States. One of the most visible characteristics of VAT is its rates, which are – while maintaining the established minimum limits – fully within the responsibility of Member States.

This paper outlines - on the example of the Czech Republic and the VAT changes effective as at 1/1/2010 – the possibility of following the internal fiscal interests of the Czech Republic in the context of the economic crisis and the obligation to implement the directives of the Council.

The aim of this text is to indicate, along with the increase of the public budget revenues, the further effects of changes in VAT rates on the consumer basket (and thus the price level) and the structure of household expenditures.

Keywords

value added tax (VAT), VAT rates, European Union, Community law, national interests, consumer basket, price level

JEL Classification

H20, D12

Abstrakt

Daň z přidané hodnoty je pro fungování jednotného vnitřního trhu Evropských společenství nejvíce harmonizovanou daní. I když komunitární právo vymezuje základní mantinely zákonné úpravy DPH v jednotlivých členských zemích, nechává směrnice Rady 2006/112/EC o společném systému daně z přidané hodnoty, ve znění pozdějších předpisů, oblasti volné působnosti členských států. Jednou z nejviditelnějších charakteristik DPH jsou její sazby, které jsou – při zachování stanovených minimálních hranic – v kompetenci členských států.

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Stať se na příkladu České republiky a úprav DPH v této zemi účinných od 1. 1. 2010 snaží ukázat na sledování vlastních fiskálních zájmů České republiky v kontextu ekonomické krize a při povinnosti implementace směrnic Rady.

Cílem textu je i naznačit další vlivy změn sazeb DPH – mimo zvýšení příjmů veřejných rozpočtů – na spotřební koš (a tím na cenovou hladinu) a strukturu výdajů domácností.

Klíčová slova

daň z přidané hodnoty (DPH), sazby DPH, Evropská unie, komunitární právo, národní zájmy, spotřební koš, cenová hladina

Introduction and objective of the paper

Value added tax (VAT) is often characterized as a general, indirect, turnover, non-cascading tax levied on the end consumption of goods and services. Its development is highly specific and hardly comparable to other taxes. VAT is considered to be a modern, simple tax in its original theory with a great potential for tax yield. Simultaneously, VAT eliminates the tax burden imposed on the taxpayers[2].

There is one sphere of VAT which has not been clearly solved either in theory or in application – the existence of different VAT rates, or more precisely, the existence of a different number of VAT rates. The common, or rather, supposed practice of the only non-zero VAT rate[3] is accompanied with other lowered rates in many states.

In addition, the EU supports the application of several VAT rates; VAT itself remains the only officially permitted general consumption tax. The sole VAT rate is used in the long term only in Denmark (see Table 1).

The objective of this paper is to illustrate the supra-national (EU) process of the unification of VAT rates using the example of the Czech Republic and to point out the fact that EU Member States have some freedom in determining VAT rates despite the requirement of harmonization. The change of VAT rates has a substantial and relevant influence on the revenues of the public budget and can also be reflected in the change of the price level. The next part of the text is formed by possible methods of the practical investigation of that relation. Together with analyses of national and community law and their comparison, the methods of analogy and deduction were used in this paper.

The structure of the chapters follows the determined objective of this text. The first chapter contains the definition of VAT and its application in EU Member States; the second chapter covers the relative freedom of the EU Member States in determining VAT rates, illustrated by the example of the Czech Republic. In the third chapter, certain associations of VAT with the price level are outlined. The discussion and conclusion summarize the results achieved and show the possible future trends of this issue.

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2 *See TAIT (1988).*

3 *According to SCHENK, OLDMAN (2007), on 1/1/2007 a single VAT rate was applied in 51% of the countries; two rates were used in 13% of the countries, 5% of the countries applied four rates and 1% of the countries used five rates.*

1 Value added tax in the European Union

The decision whether to use a single type of indirect tax in the Member States and which indirect taxation system should be used, was clear. The conclusions of a special working group established by the European Commission in 1960 (The EEC Reports on Tax Harmonization) as well as the Fiscal and Financial Committee appointed by the Commission, confirmed[4] that the Member States had to abolish the cumulative tax system of indirect taxation and introduce value added tax. If more forms of indirect tax, including sales tax, were to be maintained, the Member State would have to apply a complicated European system of reciprocal reimbursements in common business. Control of their successful performance would be very difficult, if not impossible, and would be based mainly on mutual trust among the States[5].

Implementation of the agreement on the uniform application of value added tax was not easy. It took 10 years after the Rome agreements until the First Directive on Value Added Tax No. 67/227/EEC[6] and it took another ten years until the ground-breaking regulation (the Sixth Directive – Directive No. 77/388/EEC).

Despite the significant unification of the tax, some of the ideas and rules that would further facilitate trade among Member States have failed to be fulfilled in practice. These include mainly the adoption of the general principle on the country of origin (which is applied in the modified form only to tourism, with the exception of new means of transport) instead of the predominant principle of the country of consumption. Adoption of the country of origin would also mean uniform VAT rates in all EU Member States.

Table 1: VAT rates in the European Union as at 1/7/2009 (part 1)

Member States	National VAT title	Tax rates			
		Number of rates	Super reduced (in %)	Reduced (in %)	Standard (in %)
Austria	Umsatzsteuer	2	-	10	20
Belgium	Belasting over de Toegevoegde; Taxe sur la valeur ajoutée	3	-	6.12	21
Bulgaria	Dank vrchu dabavenata stojnost	2		7	20
Cyprus	Foros Prostithemenis Aksias	3	-	5.8	15
Czech Rep.	Daň z přidané hodnoty	2	-	9	19
Denmark	Merværdiafgiftsloven (Momsloven)	1	-	-	25
Estonia	Käibemaksuseadus	2	-	9	20
Finland	Arvonlisävero	3	-	8.17	22

4 *Resource: Taxation and Customs Union [online].*

5 *See ŠKAMPA (2005), p. 12.*

6 *Resource of all the Directives: EUR – LEX*

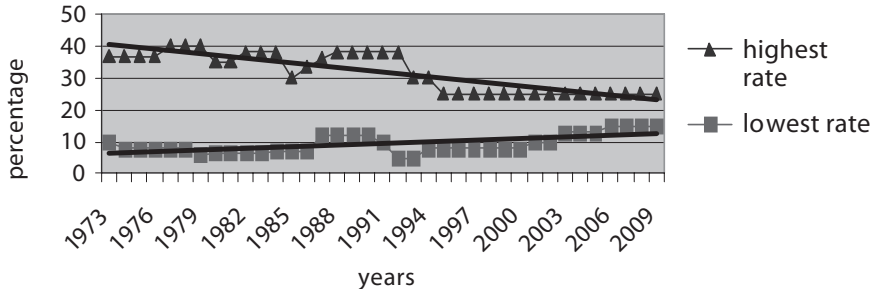
Table 1: VAT rates in the European Union as at 1/7/2009 (part 2)

Member States	National VAT title	Tax rates			
		Number of rates	Super reduced (in %)	Reduced (in %)	Standard (in %)
France	Taxe sur la valeur ajoutée	3	2.1	5.5	19.6
Germany	Umsatzsteuer	2	-	7	19
Greek	Foros Prostithemenis Aksias	3	4.5	9	19
Hungary	Általános forgalmi adó	3	-	5.18	25
Ireland	Value Added Tax	3	4.8	13.5	21.5
Italy	Impolsa sul Valore Aggiunto	3	4	10	20
Latvia	Pievienotās vērtības nodoklis	2	-	10	21
Lithuania	Pridetines Verte Mokestis	3	-	5.9	21
Luxembourg	Taxe sur la valeur ajoutée	4	3	6.12	15
Malta	Taxxa Fuq il-Valur Mizjud; Value Added Tax	2	-	5	18
Netherlands	Belasting over de Toegevoegde	2	-	6	19
Poland	Podatek od towarow i úsluh	3	3	7	22
Portugal	Imposto Sobre o Valor Acrescentado	3	-	5.12	20
Romania	Taxa pe valoarea adaugata	2		9	19
Slovakia	Daň z pridanej hodnoty	2	-	10	19
Slovenia	Davka za dodano všednost	2	-	8.5	20
Spain	Impuesto sobre el Valor Añadido	3	4	7	16
Sweden	Mervärdesskatt (Moms)	3	-	6.12	25
UK	Value Added Tax	2	-	5	15

Source: National titles - Worldwide VAT and GST Guide; tax rates: European Commission.

In the process of the further harmonization of value added tax, the European Commission faced the problem of unifying the number of tax rates and the tax rate itself (or at least the tax brackets into which the tax rates should move). After difficult discussions, the basic model is considered a model with two types of tax rates: A basic rate and a reduced rate. A Member States that has applied the higher rates should refrain from this practice. Graph 1 shows the development of the variance of the tax rates in the European Union:

Graph 1: Genesis of the variance of standard and increased VAT rates in the European Union from 1973–2009



Source: Authors' calculation.

The conclusions of the European Commission accent the need for reconciliation of the Member States' approaches to VAT rates and the tax base, as relations among the countries could be regarded as transparent and flexible. The current VAT rates are considered to be highly divergent and, relatively, very complicated[7]. However, the basic principles remain simple: Goods and services that are subject to VAT are taxed at least 15%. Particular Member States may apply a reduced VAT rate on goods and services listed in a special list; the rate is no less than 5%.

These simple principles are complicated by a larger number of derogations that have been given to certain Member States during the negotiations preceding Directive No. 92/77/EEC, or the so-called Act of Accession[8]. The European Commission wants to contribute to simplification of the European tax legislation by setting a unified VAT rate for each Member State and by the removal of reduced rates. Reduced VAT rates are considered as minor and their overall benefits according to various studies do not meet the cost of their application in practice[9].

The econometric model created in the above-mentioned study[10] also shows that the uniform rate will lead to a slight increase of consumer welfare in comparison with this current position; distortions in the functioning of the EU's internal market will be reduced and the simplification of the rules will lead to an overall reduction of the costs expended on harmonization of the trade.

The study does not assume complete deliverance from reduced rates in all market segments. It has been proved that in very specific cases, such as distinctive locally offered services, reduced VAT rates can stimulate economic growth by inducing a consumer demand for these locally offered services. Reduced VAT rates are also recommended for economic

7 *For details, see Structures of the Taxation Systems in the European Union (2005).*

8 *These exceptions, which are contained in Chapter 5 (Articles Nos. 123 to 130) of Council Directive No. 2006/1112/EC, have been extended by Council Directive No. 2007/75/EC of 31/12/2010.*

9 *For details, see the Study on Reduced VAT Applied to Goods and Services in the Member States of the European Union (2007).*

10 *Ditto.*

segments with an overwhelming dominance of a less skilled workforce[11], where new jobs are being created continuously. At the same time, it is emphasized that other economic instruments (e.g. subsidies) can contribute to the achievement of environmental, social, cultural and economic objectives more efficiently than reduced VAT rates. The same conclusion is contained in the subsequent studies, which emphasize the need to take into account the local specifics and existence of appropriate economic instruments that are better focused on target groups when deciding on the existence of a single or multiple VAT rate[12].

2 Value added tax in the Czech Republic

Value added tax was introduced in the Czech Republic on 1/1/1993 with rates of 5% and 23%. Development of the rates was not precipitant, as illustrated in Table 2:

Table 2: Genesis of VAT rates in the Czech Republic from 1993–2009

Date of implementation	Reduced rate	Standard rate
1/1/1993	5	23
1/1/1995	5	22
1/5/2004	5	19
1/1/2008	9	19

Source: Act on VAT.

While the VAT rates in the Czech Republic changed infrequently, the text of the Act on Value Added Tax was amended several times, in particular with the entry of the Czech Republic into the European Union[13]. In the field of VAT rates, however, the Czech Republic has never had a problem with the fulfilment of the basic ES rules on tax rates, i.e. one standard rate at a minimum value of 15% and one or two reduced rates at a minimum value of 5%).

As resulting from the relevant provisions of community law, the EU limits Member States only in the number of rates and their minimum limits, which gives the Member States considerable discretion in determining the upper values of the VAT rates. This means that the Member States can follow their fiscal interests when they do not use the practice of minimum VAT rates. The freedom given in this field also affects the resulting tax quota of the country.

The discussed changes also illustrate these facts at the end of 2009 in the Czech Republic. Substantial changes to value added tax have been approved in the Czech Republic, beginning from 1/1/2010. They represent the outcomes of the autumn session of the Chamber

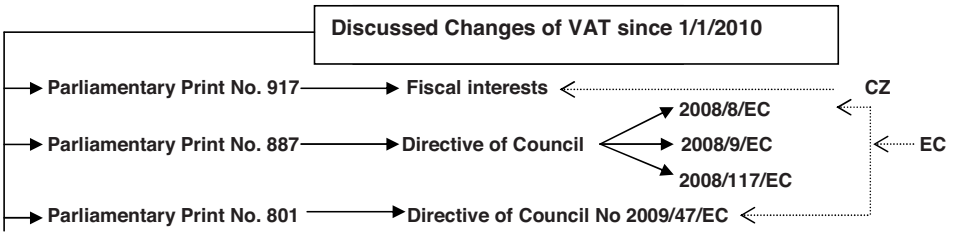
11 These facts are also one of the reasons for the existence of Article 106 of Council Directive No. 2006/112/EC, which allows Member States to apply reduced rates to service-intensive work.

12 See BOGETIĆ, HASSAN (1993) or KEEN, LOCKWOOD (2007).

13 As at the date of the entry of the Czech Republic into the European Union, the new Act No. 235/2004 Coll., on Value Added Tax, came into effect. This law replaced Act No. 588/1992 Coll., on Value Added Tax, as amended by later regulations.

of Deputies where three draft acts (parliamentary prints) were discussed, which were designed to change Act No. 235/2004 Coll., on value added tax as amended by later regulations (hereinafter, the Act on VAT), in a significant way. This is illustrated in Scheme 1:

Scheme 1: Discussed parliamentary prints related to the Act on VAT



Source: Authors' calculation.

The scheme shows the differences between the draft acts. In Parliamentary Print No. 917, the Government reacts to the economic crisis. The next two draft acts are based on the obligation of implementation of EC legislature into Czech legislature. It was also the economic situation that led to the failure to adopt the third draft act.

The most visible change that was made was increasing the VAT rates. This process followed the admission of Act No. 362/2009 Coll.[14] (Parliamentary Print No. 917[15]). The act that was negotiated together with the act on the state budget of the Czech Republic for 2010[16] has changed 15 laws in total. The aim is to reduce the enormous decrease of the state budget revenues as the deficit of the budget in 2010 is thought to be CZK 160 billion (approximately EUR 6.15 billion). Increasing the standard VAT rate from 19% to 20% and the reduced rate from 9% to 10% should push up public budget revenues[17] by CZK 17.8 billion (approximately EUR 0.68 billion) and reduce the negative impacts of the economic crisis. Increasing VAT rates is explicitly within the competency of the Czech Republic and corresponds with its fiscal interests. It does not result from any rule of Community law[18].

Contrary to Act No. 362/2009 Coll., other proposals for changes to the Act on VAT resulted from the amendment to Directive No. 2006/112/EC on the common system of value added tax.

Three Council directives have been included in Parliamentary Print 887, which was passed: Council Directive 2008/8/EC (change of the basic rule for determining the location of sup-

14 *Act No. 362/2009 Coll., on Amendment to Certain other Acts, in connection with the draft Act on state budget of the Czech Republic for 2010, Title No. Five: The change of the Act on Value Added Tax.*

15 *Parliamentary prints can be found on www.psp.cz*

16 *Parliamentary Print No. 913.*

17 *VAT yields, according to Act No. 243/2000 Coll., on the budgetary allocation of taxes, subsequently amended, form the revenues of the state budget as well as municipal and regional budgets.*

18 *Due to Directive No. 2006/112/EC, the standard rate may not be less than 15% (Article 98) and the reduced rate may not be less than 5% (Article 99).*

ply of services), Council Directive 2008/9/EC (laying down detailed rules for the refund of value added tax) and Council Directive 2008/117/EC (monthly submission of a recapitulative statement for the supply of services, possibility of submission by electronic file transfer). For the purposes of this paper dealing with the changes in VAT rates, this proposal is irrelevant; however, it shows the need to respond to the adoption of EC Directives. In the event it is rejected, the Czech Republic would be endangered by the direct effect of unimplemented directives that would be reflected in the number of lost legal processes (especially against the involved subjects in connection with the change in location for the supply of services).

This doctrine of direct effect will not occur, as Parliamentary Print 801 was rejected. Parliamentary Print 801 reacted to Council Directive 2009/47/EC (signed during the Czech chairmanship by Miroslav Kalousek, the former Czech Minister of Finance) that consisted in extension of the number of goods and services, which may underlie the reduced VAT rate. The text of the directive does not levy any new obligation on Member States; it merely enables us now to include the supply of books on all physical means of support, and restaurant and catering services under the reduced VAT rate. Directive 2009/47/EC also enables the use of permanently (from 1/1/2011) reduced rates for labour-intensive services in all five categories listed in Annex IV[19] to Directive 2006/112/EC.

However, the Czech Republic did not take advantage of these options due to the fear of revenue reduction in public budgets. Parliamentary Print 801 was rejected. The main reason for this is the estimated loss of CZK[20] 4.5 billion (approximately EUR 0.17 billion) in the event of a reduced rate levied on restaurant services. In the Czech Republic, VAT on restaurant services will paradoxically rise from 19% to 20%.

From 1/1/2010, the Czech Republic will levy the reduced rates only on window cleaning, housecleaning, domestic care services and the renovation and repair of private dwellings. The Czech Republic received permission to apply a reduced rate on the third service named by Council Decision 2006/774/EC.

3 Influence of VAT rates on price levels

In the previous text, the expected impact of VAT changes on public budgets is also quantified. There is another interesting circumstance of VAT changes – their effects on the price level. Price level is examined at the household level by the changes in the prices of final products (i.e. including VAT) contained in the consumer basket[21]. Although the change in inflation is the result of many different factors (some of them act in a contradictory way), it is clear that the increase of VAT rates may – ceteris paribus – lead to an increase of the price level.

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19 This annex has been repealed; the services listed have been shifted to Annex III. Therefore, the limitation of the possibility to levy the reduced VAT rate only until 31/12/2010 has been cancelled.

20 Source: Explanatory report on the draft act, see www.psp.cz

21 According to the international classification of COICOP, the consumer basket in the Czech Republic is sorted into 14 divisions, 58 groups and 157 classes. On the whole, it contains about 730 items.

3.1 Definition of the consumer basket in the Czech Republic

A consumer basket is a representative group of goods by which the price or inflation is measured at the macroeconomic level. According to the Czech Statistical Office, the statistical measurement of inflation is based on measuring the net price changes via consumer price indices. Price indices compare the price level of a selected basket of representative goods and services in the two time periods under comparison. The weight (or importance) attributed to the particular price representatives in the consumer basket, corresponds to the proportion of the certain type of consumption which is represented by the particular price representatives on the total household consumption[22].

The consumer basket contains food goods (food, beverages and tobacco), non-food goods (clothing, furniture, household goods, drugstore and small miscellaneous goods, goods for transportation and leisure time, personal care goods etc.) and services (repair, housing, household operations, health, social care, transport, leisure time, education, catering and accommodation, personal care, and finance).

A consumer basket is compiled on the basis of the statistical surveys, which play an important role in social statistics. These surveys place high demands on the respondents and on professional, financial and human resources. In the Czech Republic, they are also a part of the Household Budget Survey and are carried out continuously[23].

Revisions of the consumer basket in the Czech Republic proceed approximately every five years; the last revision was in the year 2005. During these revisions, the weights of particular items are reviewed; this means their share in total household consumption. The current structure of the consumer basket in the Czech Republic (on 1/1/2010) has approximately 730 items[24].

3.2 The role of VAT in the consumer basket

The procedure of examining the above-mentioned relationship involves a comprehensive analysis of all items included in the consumer basket and their subsequent classification into groups according to particular tax rates, i.e. either into the group of goods and services, which is liable to a standard rate of 19% (on 31/12/2009), or into the group of goods and services, which is liable to a reduced rate of 9% (also on 31/12/2009). The third group of examined items of the consumer basket consists in goods and services that are exempted from value added tax (so-called exempt supplies).

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22 Resource: Czech Statistical Office [online].

23 In most EU Member States, such investigations are carried out periodically, mostly after 4-5 years, and they have considerable scope.

24 Goods (goods and services) that are monitored in the Household Budget Survey are classified according to the international classification of COICOP (Classification of Individual Consumption by Purpose). This classification is one of the four classifications (also with COPNI, COPPA, COFOG) which were approved by the UN Statistical Commission in 1999 and intended for use in the system of national accounts.

First, it is necessary to proceed to the analysis of the items included in the consumer basket that was valid on 1/1/2009, according to the basic classification of the sections. Each item is compared to the latest wording of the Act on VAT and on the basis of this comparison the classification of items by VAT rates is performed. This assignment represents the result of the authors' own analysis. For better clarity, the data are grouped into sections and the exceptions deviating from the prevailing rates are emphasized.

01. Food and soft drinks

In this section, all items are subject to the reduced VAT rate of 9%. The weight of the section is 162.634716.

02. Alcoholic beverages, tobacco

All items in this section are subject to the 19% standard VAT rate. The weight of the section in the consumer basket is 81.720181.

03. Clothing and footwear

In this section, almost[25] all of the items are subject to the 19% VAT rate. The weight of the section in the consumer basket is 52.427432.

04. Housing, water, electricity, fuel

Less than half of the items in this section are subject to the 19% VAT rate. The exception in the rent which is exempted from the tax (weight proportion is 133.244889). Water supply, sewerage, and repair of dwellings which are subject to the reduced VAT rate (weight percentage is 12.116571). The weight of the entire section is 248.291765.

05. Furnishings, household equipment, repairs

In this section, most items falls under the standard 19% VAT rate. Some exceptions are the services of household help and childcare, which are subject to reduced VAT rate (the weight proportion is 0.65752). The weight of the entire section is 58.055496.

06. Health

Medicines and medical supplies are subject to a 9% VAT rate (the weight percentage is 12.902297). Health care is exempt from VAT (the weight proportion is 4.18047). The weight of the entire section is 17.86422.

07. Transportation

Rent and highway signs are exempt from VAT[26] (the weight proportion is 1.887012). Air transport and domestic transportation, including luggage is taxed at the reduced VAT rate (the weight proportion is 2.310935). Other items are subject to the standard VAT rate. The weight of the entire section is 114.095481.

08. Post and telecommunications

Postage and postal services are exempt from VAT (the weight proportion is 0.745052). Other items are subject to the standard VAT rate. The weight of the entire section is 38.732462.

09. Recreation and culture

A reduced VAT rate is applied to flowers, pets, tickets to sport events, admission to the theatre, print media and books. Recreation was also included due to the prevalence of accommodation services, which are subject to a reduced VAT rate (the weight percentage is 58.567503). The weight of the entire section is 98.657185.

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25 The exception is baby nappies, taxed at a reduced VAT rate.

26 Intra-community transportation is also exempt.

10. Education
Almost all of the items are exempt from VAT. The total weight of the section is 6.178061.
11. Catering and accommodation
Accommodation is subject to a reduced VAT rate (the weight proportion is 6.617551). Other items, in the absolute majority of cases, fall under the standard VAT rate. The weight of the entire section is 58.385787.
12. Other goods and services
Insurance, financial services and other services defined in this section fall under the exempt supplies (the weight percentage is 14.351269). Other items are subject to the standard VAT rate. The weight of the entire section is 62.957214.

Table 3 gives the VAT rates and associated values of the particular weight proportions of the items included in the consumer basket. The sum of the appropriate items proved that the largest share of the consumer basket consists in items burdened with the standard VAT rate; this share is 57.98%. The reduced VAT rate is represented in the consumer basket by 25.96%. Exempt supplies make up approximately 16% of the total weight of the consumer basket. These supplies, however, do not play any role in changes of VAT rates because their "tax rate" is zero. Consequently, the hypothetical "average" household consumes commodities burdened with different VAT rates and commodities exempt from VAT in this observed proportion.

Table 3: Weight proportions of VAT rates of the items included in the consumer basket

Rates	Weight proportion	Weight proportion in %
Exempt supplies	160,586753	16.06
9%	259,611014	25.96
19%	579,802233	57.98
Total	1000,000000	100.00

Source: Author's calculation.

4 Discussion: Impacts of changes in VAT rates on households

For correct interpretation of the impacts of value added tax it is essential to perform an initial analysis of the impact of income on the demanded quantity of goods and then to analyse the influence of the price on the demanded quantity of goods.

The first analysis is based on the change in income of the taxpayer (his/her budget restrictions). According to this analysis and assuming constant prices, goods can be divided into normal and inferior. A relation valid for normal goods is that the quantity of purchased goods increases when the income grows. For inferior goods, there is an inverse relationship. In the graphic analysis, a balance can be seen in only two markets when using the income expansion path (IEP). Three situations may arise – both goods are normal; both goods are inferior; one item is normal and the other is inferior. Movement along the IEP curve is caused by the income effect, i.e. also by the income effect of taxation[27].

27 *For details, see SOUKUPOVÁ et. al. (2002) and STIGLITZ (1997).*

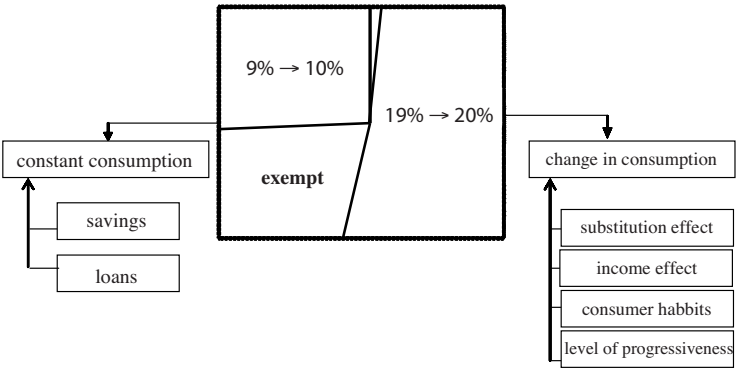
The second analysis – analysis of the price impact on the demanded quantity of goods – is based on changes in prices of the goods. These changes also turn the marginal rate of substitution in exchange. The marginal rate of substitution in exchange expresses how many units of item X the taxpayer may receive when he/she abandons the consumption of one unit of item Y. Changes in prices represent the main factor that affects the individual demand. This situation can be illustrated by a price consumer curve. Its form reflects the effect that may occur – the income effect or the substitution effect. While the substitution effect is always negative, the income effect varies for different types of goods – normal or inferior.

Regarding the prevalence of items that are subject to the standard VAT rate, it can be stated that the change of the standard rate (increase or decrease) will bring a major change of the taxpayer's behaviour. A reduced VAT rate is applied to goods and services that are supported by the state due to their social impacts. These goods and services represent necessary goods whose consumption may hardly be given up by the taxpayer. That is also why the change of the reduced VAT rate will not bring about a fundamental change in taxpayer's behaviour. On the contrary, it can be said that in the case of goods and services that are subject to the standard VAT rate, the taxpayer can easily give up their consumption.[28]

It can also be assumed that if the taxpayer's (or household's) income increases, the amount of purchased goods and services burdened with a 19% VAT rate will also grow and the tax burden of the taxpayer will increase. In this case, VAT revenues will also grow, but at a lower rate than the increase of income.

As already mentioned, this paper arises from the original authors' analysis, which classifies the consumption of a hypothetical household. It is possible that in real economics, there is no real household that corresponds with this hypothesis. The issue is outlined primarily in theory and its practical verification deserves follow-up studies. The effects of VAT changes on the consumer basket of a hypothetical household are shown in Scheme 2:

Scheme 2: Effects of VAT rate changes on a hypothetical household in the Czech Republic



Source: Authors' calculation.

28 *It is necessary to mention the regressive character of VAT contained in certain commodities, see e.g. SVÁTKOVÁ (2007).*

Conclusion

Value added tax is the only general consumption tax permitted in EU Member States. Although it is the most harmonized tax due to ensuring the free movement of goods and services, it leaves the Member States with flexibility in certain areas of national VAT structure. In the field of VAT rates, the Member States have to apply a standard rate of at least 15% and they can apply one or two reduced rates of at least 5%. The upper limit of both types of rates is unlimited. This gives a certain space to the Member States to follow their own fiscal interests.

The legislative form of VAT in particular Member States can be considered as a conglomerate of national and community requirements. The example of the Czech Republic, which has increased the reduced and standard VAT rate since 1/1/2010 can illustrate the different reasons and causes of the legislative changes in this tax, which is the most important tax in the EU. These reasons may both derive from national interests, both from the obligation to respect Community law. However, these interests may not always be consistent.

Changes in VAT rates will be reflected in changes of public budget revenues as well as having a relevant impact on the price level, which is determined in accordance with the consumer basket of the households. In the Czech Republic, about 730 goods and services are monitored, while 57.98% is subject to the standard VAT rate, 25.96% is burdened with the reduced VAT rate and 16.06% is exempt from VAT. A change of consumer expenditures and, due to this, the change of the VAT portion in household expenditures, will depend (except for the change of the VAT rate itself) on consumer habits, the degree of VAT progression in particular types of households and on other factors.

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What are the Causes of Disturbances of Morality in Redistribution Systems

Jaké příčiny má narušení morality v redistribučních systémech

RADIM VALENČÍK, PETR BUDINSKÝ

Abstract

A redistribution system has two main attributes: 1. The greater the deviation of the payout of players from their performance, the greater the decline in the performance of the system. 2. The cause of this deviation is the formation of coalitions that treat their members preferentially and discriminate other players. If the players in these systems focus on the formation of discriminating coalitions, the system converges towards oscillating between discriminatory balances. But there is a strategy that leads to the attainment of a mutually acceptable balance, in which each of the players improves his / her position in comparison to the average payout that he/she would get when using a strategy based on the formation of discriminating coalitions. In systems of the given type this can be considered as the objective foundation of rationally justified morality. The stated finding is important and opens the way to revealing what in reality most prevents the attainment of a balance that is acceptable for everyone. It turns out that this factor is parallel redistribution games. The revelation of their role as well as their classification and description of some of them is of significant importance to managerial practice.

Keywords

game theory, redistribution systems, negotiations, coalitions, discriminatory balance, mutually acceptable balance, parallel redistribution system, rationality and morality

Abstrakt

Redistribuční systém má dva hlavní atributy: 1. Čím větší je odchylka výplat hráčů od jejich výkonnosti, tím více poklesne výkon systému. 2. Příčinou této odchylky je vznik koalic, které zvýhodňují své členy a diskriminují ostatní hráče. Pokud se hráči v těchto systémech orientují na vytváření diskriminujících koalic, systém konverguje k oscilaci mezi diskriminačními rovnováhami. Existuje však strategie, která vede k dosažení společně přijatelné rovnováhy, ve které si každý z hráčů polepší oproti průměrné výplatě, kterou získá při uplatnění strategie založené na vytváření diskriminujících koalic. To lze v systémech daného typu považovat za objektivní základ racionálně zdůvodněné morality. Uvedený poznatek je významný a otevírá cestu k odhalení toho, co v realitě nejvíce brání dosažení společně přijatelné rovnováhy. Ukazuje se, že jsou to paralelní redistribuční hry. Odhalení jejich role i utřídění a popis některých z nich má značný význam v manažerské praxi.

Klíčová slova
teorie her, redistribuční systémy, vyjednávání, koalice, diskriminační rovnováha, společně přijatelná rovnováha, paralelní redistribuční systém, racionalita a moralita

Introduction

The article Redistribution Systems, Cross-Coalitions among them and Complexes of Memes Securing their Robustness (Budinský-Valenčík 2009a) published in the ACTA VŠFS 1/2009 journal presented the first version of the description of the negotiations process in redistribution systems[1]. This description was subsequently presented much more precisely (Budinský-Valenčík 2009b). The mathematical description of the negotiations process made it possible to build a computer model, which became a very effective tool for analyzing redistribution systems.[2] This opened the way to formulating one of the most interesting and most important problems the theory of redistribution systems has encountered so far.

In the first approximation the problem can be presented as follows: Do an objective foundation of moral behavior based on a rational approach and a negotiations strategy, corresponding to this exist in redistribution systems? The question can also be reformulated in a different way, and that is whether it is possible to find and define such a negotiations strategy that would be "stronger" (in the sense that it would make it possible for each of the players to attain a more favorable outcome) than a strategy based on negotiating discriminatory balances.

If such a negotiations strategy could be found, it would have considerable significance for the understanding of the motives of human actions. And not only by proving that moral actions in systems that can be classified as redistribution systems have a backing in rational choice and rationally substantiated actions. At the same time it would also open the way to revealing what disturbs the mutual harmony of rationality and morality, i.e., what the cause of both irrationality as well as immoral behavior is.[3] In the paper it is shown and proven that a rational foundation of morality exists in redistribution systems. Some of the most significant causes of the disturbing of morality in these systems are

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1 *A redistribution system has two main attributes: 1. The greater the deviation of the payout of players from their performance, the greater the performance decrease of the system. 2. The cause of this deviation is the formation of coalitions that give preferential treatment to their members and discriminate against other players. Since 2009 this issue is being dealt with by a team working within the scope of the GACR Theory of Redistribution Systems Project (maintained under number 402/09/0086), of the Specific Research at Universities supported by Ministry of Education of the same name, which also includes students (specifically I. Stáňa and O. Zhylinkov), and the project of IGA - University of Finance and Administration.*

2 *The computer model of an elementary redistribution system was created by a member of the team handling the GACR Theory of Redistribution Systems Project, P. Vávra. He first published it in a complete form within the scope of his diploma thesis at the University of Finance and Administration in 2009 called "Software for the modeling of redistribution systems".*

3 *The outcome is also expected to contribute to a deeper analysis of conditions for the replication of blocking memeplexes, see (Budinský-Valenčík 2009b, pp. 42-45).*

then identified. Reaching these goals was made possible by – and at the same time also required – proceeding in two directions:

- Putting the basics of the theory of redistribution systems (a fuller reflection of what makes this type of N-coalition games specific) into more precise terms.
- Obtaining additional valuable findings related to what role is played by an abstract (mathematically defined and executed on a computer) model in deciphering human behavior.

There are certain doubts in professional sphere about the possibility of using the mathematical model for expressing of "irrational" human behaviour. Therefore we are firstly bringing out a particular example from the field of game theory with two players, i.e. from the different field than our mentioned problem of redistribution systems is. We are doing that because the particular example is authentic and it clearly illustrates how to subsequently express what seems to be "specifically human", "humanly irrational" etc. We will apply the approach based on a continuous completion of the basic model for finding an answer for a question if there exists the possibility of reciprocally acceptable agreement in systems with more players, how they can reach the agreement and under what assumptions. We will show based on the evaluation of obtained outcomes that the possibility of achieving jointly acceptable agreement (and with it related equilibrium) is the mostly disturbed by the existence of parallel redistribution games. Wide range of practical conclusions appears from the identification of the existence of parallel redistribution games. We present some of them in the end of the article.

1 How to express "irrational" human behavior precisely

Before we begin "deciphering" how humans behave in a certain redistribution system, we will show (in the form of an example illustrating the most important aspects) a similar problem in a different area. A "Generally Popular Error" (in the meaning used by the writer Ludvík Souček) is that humans behave not only irrationally but also based on their human weaknesses, which no theory is able to describe suitably. For example, the pioneer in research in the area of game theory in the Czech Republic, M. Maňas, in connection with the solution of one of the typical problems of game theory (collusive oligopoly consisting of five players) after he presents all equilibrium situations notes: *"Contract negotiations are usually lengthy and if a contract is signed after general fatigue from the negotiations, it is most likely under the influence of personal sympathies rather than logical considerations (underlined by P. B. – R. V.)"* (Maňas, 2002, p. 61) Similarly in a text by A. Michl "How to distribute intergalactically blocked 100 CZK?" published on May 22, 2009 in a blog on Aktuálně.cz[4] the following is stated:

"Task: Divide 100 CZK that you have found with an unknown person. You propose the ratio of your shares. You have one chance to make an offer. If the other party refuses, nobody gets anything. If the other party agrees, it will be as you said. What do you do? I say that I take

4 *The text can be found at the following address blog.aktualne.centrum.cz/blogy/ales-michl.php?itemid=6643 For interest's sake - since the text was published it was read 1,739 times, which is a very high number of visits.*

80 crowns and give you twenty crowns to go buy a small beer. Do you take it? According to theory you should maximize utility. So the twenty is great, no? But let's be frank, would you really accept the offer? When I did this experiment at the best student pub in London, "The Quad", during my studies, 90 percent of the people rejected the 80:20 offer. Economic theory is destroyed by natural human characteristics such as own interest, pride, humiliation, revenge (underlined by P. B. – R. V.). According to the experiments you have to come up with a 65:35 at least ratio in order to have a relatively good probability of success."

From the perspective of what we are dealing with (deciphering the nature of human behavior via game theory in a specific modification of the theory of redistribution systems), it would be rather difficult to find a more suitable example that opens the way for the following:

- Disproves the above mentioned "generally popular error" that (stated, for example, in the words of the text's author) *"economic theory is destroyed by natural human characteristics such as own interest, pride, humiliation, revenge"*, respectively shows that good economic theory is able to decipher the sources of this type of psychological phenomena.
- Illustrates that behind every discovered layer of reality is another and more interesting layer.

Before we show what is happening in the given case, let's take a look at the reactions of readers at the same web address (we selected those that deal with the matter the most). We label the readers with the letters A, B, C, etc.:

A: *"Good exercise. I also wouldn't take the twenty: If you're a penny pincher, then you'll lose out as well. But the truth is that if I were on the other side of the experiment, not even for a second would I consider making an offer other than fifty-fifty. Does something arise from this? Probably yes. I am probably at the edge of the Gauss curve. Where is its middle? Around that thirty five?"*
B: *"I'd take the twenty, but I immediately thought of the same thing as Jedla: If I were on the other side, I'd share the found money 50:50. That's human. Maybe that's why I don't have anything to this day..."*
C: *"Well Mr. Michl, you're quite rough. If it is set up in the way that if the other person refuses then nobody gets anything, then I wouldn't risk so much."*
D: *"The second person got an opportunity from the first person, he'd have absolutely nothing without the first person, so from my perspective 50:50 isn't the only fair offer."*
E: *"Mr. Michl, you forgot about ideas such as fairness and fair play – I understand you, fair play is not an economic category."*
F: *"You really don't know that in a normal "men's society" (in the army, among scouts, in a group of construction workers) 50:50 sharing is the absolute standard and any other ratio qualifies as being a rat and a scoundrel? It is this fact that appears to be unknown to our "elites" that believe that they can steal at will, even in cases where 'they can be seen'. I read somewhere that ethical conduct is basically a reflex – those that steal publicly are acting against this reflex and will be, sooner or later (most frequently in a time of some crisis – lo and behold!) punished. "*

G: *"I had one more idea – what impact does the amount of the money have. It is quite simple to reject a small beer from the point of view of 'fairness'. But how would a person behave when dividing 1 million (20:80)? "*
H: *"If I understand the conditions well and if they are also one hundred percent clear to the experiment participants (i.e., they are not under some pressure), then I think, Mr. Michl, that you are approaching the matter too scientifically. We simple people honor half and half or go to…, either accepts or rejects."*
I: *"What fifty-fifty? This is no sharing with a friend. It doesn't matter who played the more important role. It is a model situation and the only thing that is important is maximizing profit based on what I can do. I can make one offer. General statistics, Mr. Michl, are useless. What is decisive is what the amount of the second person's share means for him/her. If it represents his/her yearly income, then he/she will take it without regard for whether he/she is angry with you. If it will be twenty crowns (in the same ratio) he/she will send you to hell. So it is not possible to establish a general ratio. If this really concerned a hundred crowns, it's a waste of time trying to solve it."*
J: *"Nice psychological game: what amount will be enticing enough for your opponent so that he/she gives up the pleasure from the thought that you get nothing? It's possible that maliciousness can also play a role when considering sharing in the liquidation of a problem. Suicidal!"*

Note that practically all reactions refer to various psychological phenomena with which the readers attempt to justify their position regarding the given problem.

The example of the division of the 100 CZK is an example of what we call "positive investing". Let's imagine that the first game (of the division of the 100 CZK) is followed by another, i.e., game of the above described. Specific example – after the participants of the previous game divide the 100 crowns, they will compete for a girl. Each of them knows the following: The girl will choose the guy that will buy her the nicer (and in our case thus the more expensive) flower. Then exactly according to economic theory (of course under precisely defined conditions) the only acceptable division for each of the players is 50:50. Otherwise the person that gets the least in the first game will absolutely certainly lose in the second game.

One can object that our example is based on artificial assumptions (the girl chooses only based on who brings her the more expensive flower). But even the initial example was based on the creation of conditions that are not entirely natural. If this did not concern experimenting, then a magician would have to enter the game.

In reality a number of various games are played in parallel and these games mix in with one another in various ways. Nobody knows their parameters absolutely exactly and each player only guesses them. We meet with positional games, which we discussed, almost everywhere (how one dresses, which car does one drive to the government office, which lawyer does one hire, which restaurant does one visit, what kind of party one can afford to finance…). One performs the evaluation of the various games – how they mix with one another, how to play them and how to hold up in them – not only via rational calculations but also via his/her emotions. A person rates (but only very approximately and with a number of failures) real situations with his/her psyche (feeling). This also manifests itself by the fact that in a person's psyche we also meet with such phenomena as envy,

resentfulness, etc. But this does not mean that in the area of the "deciphering" of reality we cannot use a suitable economic model based on the assumption of the rational foundation of human behavior.

Inter alia – in order to decode (decipher) a specific simple case, we usually need to reveal about 4-5 layers. Sometimes we already have a "reading device" (model that is gradually being deciphered) available, and sometimes we do not. It is relatively exciting to decipher social reality including human weaknesses (if these really are weaknesses) in this way.

For illustration purposes let's introduce a third layer that would follow the two that we described above (games assuming a magician offering under certain conditions one hundred crowns and positional investing into a flower via which it is possible to win the desired girl). As we have already demonstrated, for a rationally thinking player there is only one reasonable solution (if the player is informed about the follow-up game that leads to winning the girl) and that is to offer a 50:50 division. If the player offered a share that would be more advantageous for him, the second player would have to reject this share with regard for the existence of the follow-up game. But this is not the end of the game. Both players have 50 CZK, which they can spend on a flower in order to try to win the girl. But they can also do something else. One who has learned to see real situations via game theory will immediately think of what they can do and what other game they will start by doing so.[5] The players can conclude an agreement that they will not use the money to buy a flower and that they will use it in a different way. Because if both purchase a flower, neither player gains anything. Each of them can either comply with the agreement or breach it. This will get them into the situation that is described by one of the most famous game situations -- the so called Prisoner's dilemma.

Analysis of redistribution systems shows that what could appear as external influences in them (e.g., personal sympathy or antipathy, envy or hate, etc.) is frequently given by the system parameters themselves.

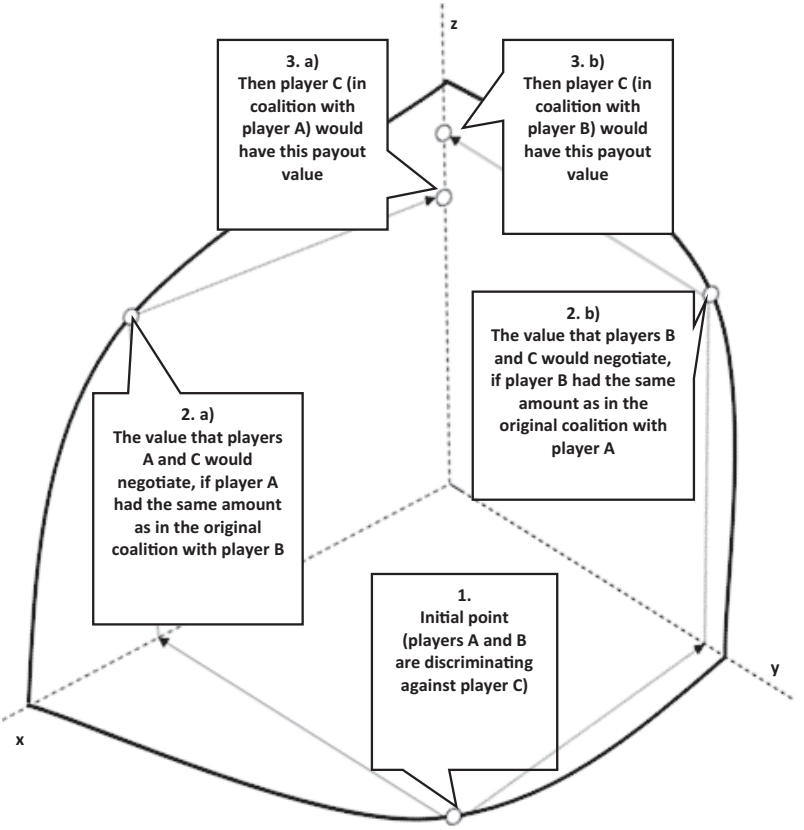
2 Graphical depiction of strategies leading to discriminatory balances

As an elementary (and as truly the simplest in the given case) strategy that is characterized by full symmetry from the perspective of the position of all entities can be considered the strategy in which the players focus on creating discriminating coalitions. In previous papers published in the ACTA VŠFS[6] journal we demonstrated how any redistribution situation (any division of payouts in accordance with the redistribution equation) can change into a situation in which one of the players is fully discriminated against (i.e., has the lowest possible payout). As a follow up to this we will now demonstrate how negotiations take place inside coalitions if a transformation of one discriminating coalition into another is occurring:

5 *BENESCH (2008) in the motto to his diploma thesis quotes the following statement by D. McAdams from the Massachusetts Institute of Technology in connection with this: "Game theory is a structure of thinking and as soon as you become aware of it once you see it everywhere."*

6 *BUDINSKÝ-VALENČÍK (2008a), BUDINSKÝ-VALENČÍK (2008b), BUDINSKÝ-VALENČÍK (2009a).*

Illustration 1: One step of negotiations based on the creation of fully discriminating coalitions (initial situation – discriminated against is player C with payout z)



Source: VÁVRA (2009).

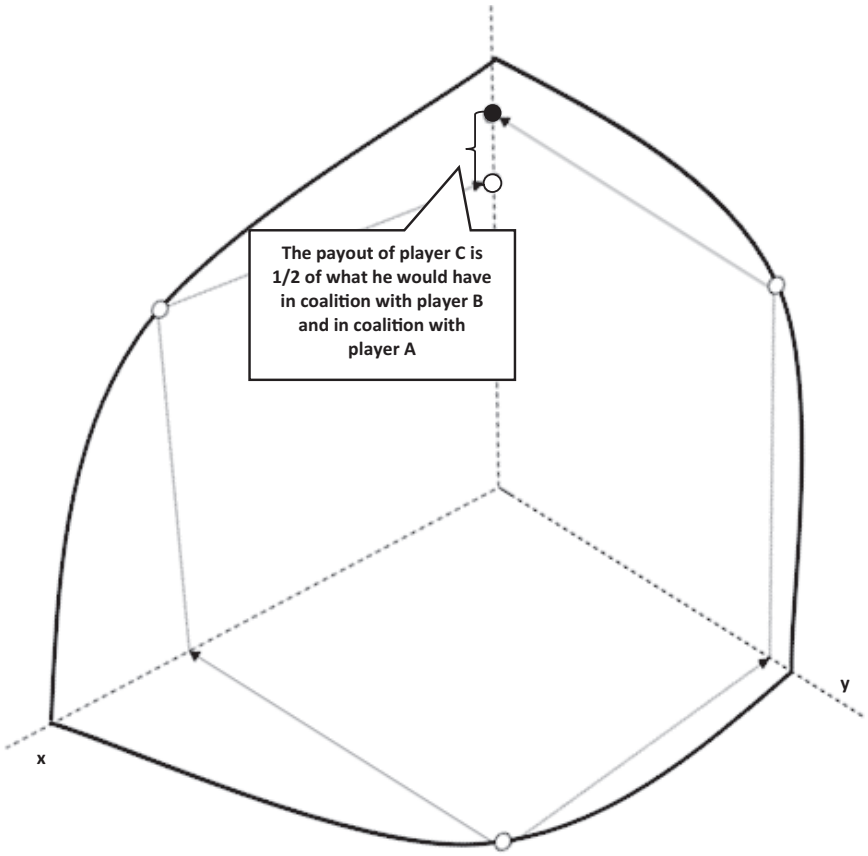
Commentary to the illustration:

- Player C is discriminated against (minimum on the z axis), meaning that players A and B concluded a coalition.
- Player C knows what his maximum payout would be if he concluded a coalition with player B or A (this coalition is determined by the fact that he would have to offer the relevant player at least as much as this player had in the original coalition).
- Player C immediately knows that in the given case it is worthwhile for him to conclude a coalition with player B because it is in coalition with him that he receives the maximum payout.

Let's assume that each of the players that conclude a new coalition wishes to improve his situation. So player C must offer more to player B. He thus decreases his maximum payout by some amount so that he can offer a part of it to player B. Be he cannot decrease it too

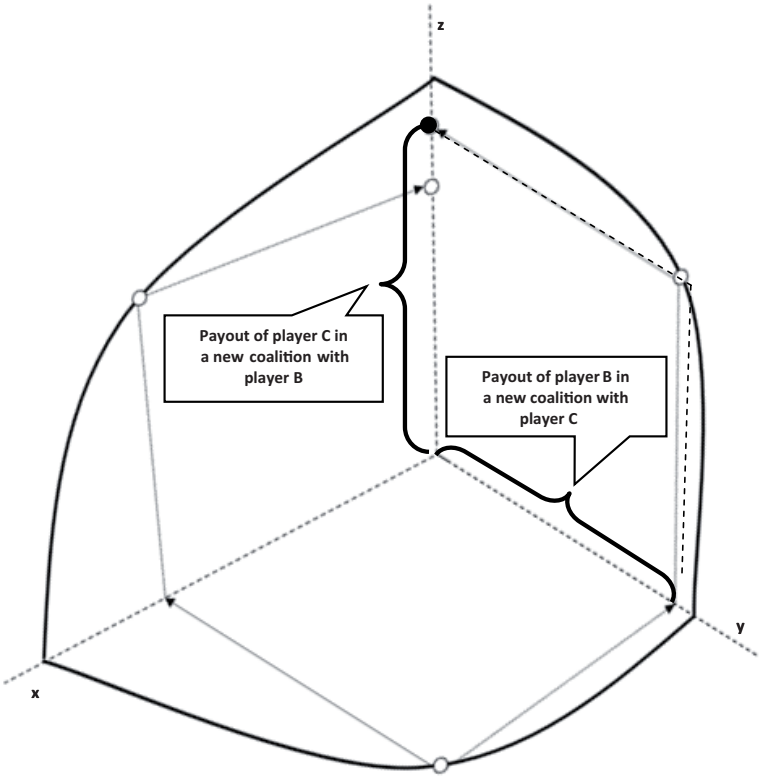
much; for player C the coalition with player B must remain more advantageous than a coalition with A. Let's say that he decreases his profit, for example, by one half of the difference that he would gain. Instead of one half of the difference, any other percentage division of the difference between the two maximum payouts of the two players could be applied.

Illustration 2: Graphical depiction of one step of negotiations from the perspective of what determines the size of the payouts of player C



Source: VÁVRA (2009).

Illustration 3: Graphical depiction of a step of negotiations from the perspective of the size of payouts – result after one round of negotiations



Source: VÁVRA (2009).

The model of elementary negotiations in a redistribution system shows the following:

1. Cases where each player is in a winning coalition and outside of it, and is thus being discriminated against, alternate.
2. Situations where each player has a little more and a little less (this is relatively significant and we will demonstrate what role this plays) in a winning coalition alternate.
3. The system converges to oscillation among three unstable discriminatory balances.

As we have already shown[7], these discriminatory balances (in the case of the performance of players divided, for example, in a ratio of 6:4:2) can also be attained by solving the following system of equations:

$$1 + y + z = 12 - \eta.R(5; y - 4; z - 2)$$
$$x + 1 + z = 12 - \eta.R(x - 6; 3; z - 2)$$
$$x + y + 1 = 12 - \eta.R(x - 6; y - 4; 1)$$

7 *BUDINSKÝ-VALENČÍK (2008).*

These are three independent equations with three variables, the solutions of which are the values of discriminating balances that we are looking for. The discovery of the elementary strategy of negotiations shows and proves that even without solving a relatively complicated system of equations, but merely on the basis of negotiations – the logic of which is not too far removed from human behavior – the negotiated coalitions approach what we have named discriminatory balances.

3 Strategy making it possible to attain a balance acceptable for everyone

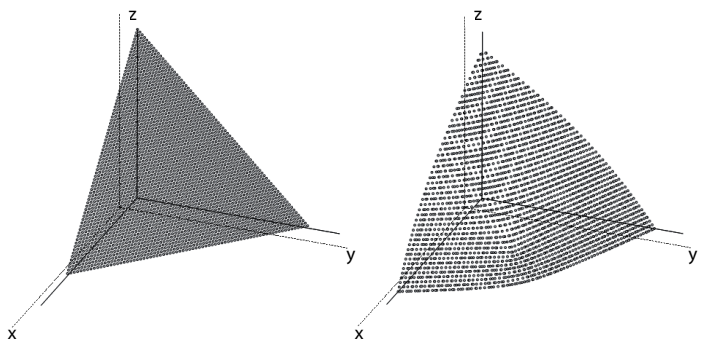
As we have already stated in the introduction, redistribution systems are a special case of N-coalition games. They differ from generally considered N-coalition games by the term η.R(x - a; y - b; z - c), where:

- Function R is the method for expressing the distance of payouts from the performance of players on the decline of the performance of the entire system.
- Coefficient η represents the degree of the influence of this distance on the decline in performance.
- Parameters a, b, c characterize the performance of the players.
- Variables x, y, z are the payouts of players.

Whereas in the generally considered N-coalition games all maximum reachable payouts of players are in the sub-space with N-1 dimensions, which is not curved (the division of the payouts does not have an impact on the performance of the system as a whole), in our case this sub-space is curved. Let's demonstrate what this difference means in the case of three players, i.e., in a case that can be displayed via projection in a two-dimensional space and that can be imagined relatively easily:

Illustration 4: Graphical depiction of the difference between generally considered coalition games with three players and redistribution systems where the division of payouts has an impact on the performance of the entire system

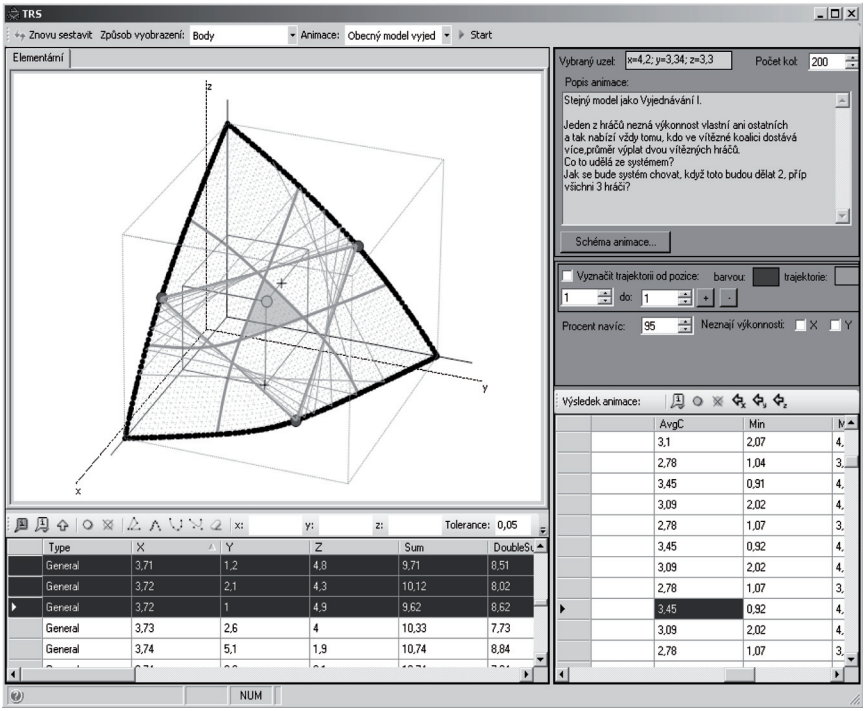
Regular coalition game with three players *Redistribution game with three players*



Source: VÁVRA (2009).

At first glance, the difference between generally considered N-coalition games and redistribution games is not significant. Until we ask the question: What payout can each player expect? If no external conditions affect the system, then each of the discriminatory balances has the same probability of occurring, i.e., probability of 1/3. If the system arrived all the way at the three stated discriminatory balances, then the average payout of each player would equal 1/3 of the sum of his two payouts in a discriminating coalition and the one smallest payout when out of the discriminating coalition. The set of points in which each of the players has this average payout has the form of a line on the redistribution space. Let's call these two lines the lines of average payouts in discriminatory balances. Using a computer model we will demonstrate what these lines look like.[8] The following illustration is an authentic depiction of how the user sees this model.

Illustration 5: Redistribution space with the designation of the line of average payouts and the space of Pareto improvements in comparison to average payouts



The thin lines show how the system converges towards oscillation between three unstable discriminatory balances. The thick lines are the lines of average payouts. The space inside the figure delimited by the lines of average payouts in discriminatory balances ("canopy" on the redistribution space) represents the Pareto improvements in comparison to the case of negotiations leading to the formation of discriminating coalitions. The fact that these are Pareto improvements is the result of a greater deviation from the division of payouts based on performance in the discriminatory balances than inside the space delimited

8 *Taken from VÁVRA (2009).*

by the lines of average payouts in discriminatory balances. These Pareto improvements in comparison to the average payout of each of the players are possible due to the curvature of the redistribution space. I.e., they are possible only in a redistribution game and they are not possible in a regular N-coalition game.

Subsequently the following questions can be asked:

- Is there some precisely defined strategy of negotiations that when it is applied the game is "raised" from the creation of fully discriminating coalitions (in which one player always has the lowest possible payout) to the creation of coalitions where even the discriminated player receives a higher payout (and one that keeps growing in the process of negotiating), respectively when he stops being discriminated and the formation of a mutually acceptable balance occurs?
- When and how in this case does the negotiations process converge towards the mutually acceptable balance?
- Which player becomes aware of this possibility and when (will one of the players be first or will they all discover it at the same time)?
- What is the simplest strategy of negotiations that would make it possible to attain the Pareto improvements in comparison to the discriminatory balances, and how should it be defined?
- What are the assumptions of the process of convergence towards a mutually acceptable balance, i.e., the point given by the conduct of players based on rationally substantiated morality?
- Which of these assumptions is the most "sensitive" to external conditions, i.e., in reality what blocks or reverses the process of convergence towards a mutually acceptable balance the most or most frequently?

There is much more hidden behind these questions than would appear at first glance – this is because the matter concerns the transition from confrontation to cooperation of the participating players; there is a certain hope that the identification and description of the relevant strategy will reveal what is present in every transition from confrontation to the more reasonable resolution of problems, i.e., something like the foundation of rationally substantiated morality.

The questions asked above can be answered by answers, the correctness of which can be tested with mathematical means. Mathematics plays a dual role here. First, math makes it possible to create a computer model that clearly shows what is taking place with various initial parameters in the redistributions system. And it also makes it possible to test (via mathematical proof) whether the discovered strategy leads to the attainment of mutually acceptable balance. The discovery of a relevant strategy leading to the attainment of mutually acceptable balance thus becomes a matter of intuition.

Each player, from a certain step in the process of negotiations in a winning coalition, always has a better position one time and a worse position another time. This is apparent from the computer depiction and it can also be inferred logically. A better position (his payout is greater than in the second case and is greater than in the case of the attainment of discriminatory balance), when he enters the coalition from an already winning coalition, and worse when he enters the winning coalition from a discriminating position. In

addition to this we see that during the negotiations the payouts of all players ("from the bottom" as well as "from the top", i.e., their better as well as their worse payouts) gradually approach the discriminatory balance.

Let's now take a look at the given situation through the eyes of one of the players (e.g., player C). After each negotiation step this player C:

- Calculates the better average of player A (that is 2x his better payout in the winning coalition + 1, all of this divided by three).
- Calculates the better average of player B (that is 2x his better payout in the winning coalition + 1, all of this divided by three).
- He inputs these better averages values into the redistribution equation and determines how much he would get if players A and B receive a payout in the size of the given (i.e., attained after the given step) better average.
- He compares the result with his own better average.

What does he determine? If at the beginning the payouts will be farther away from the discriminatory balance, then the better average of his payouts will be greater than the outcome of the solution of the redistribution equation after the inputting of the better averages of players A and B. Gradually, with each round of negotiations, as the values of the better payouts of all players will approach the value of the discriminatory balances, thus decreasing the average better averages, the values of the better average of player C and of the result of the solution of the redistribution equation after the inputting of the better averages of players A and B will get closer and closer. We can take any small number and the values will be lower than this number.

We can interpret this small number as the player's sensitivity. If the deviation of his payout following from what he will receive based on the redistribution equation, from what he gets as the average of two of his better payouts and one smaller (i.e., equal to 1) is smaller than this number, he will satisfied and will not initiate further negotiations. (The deviation will be "below his discriminating level".)

Player C can then offer these better averages as the payout and both players, just like him, will (Pareto) improve their position in comparison to their own average payouts calculated on the basis of discriminatory balances. If the sensitivity of all players is equal, all three players will see this situation at the same time from their point of view. If the sensitivity of the players is different, the negotiations will only end when the most sensitive player is satisfied.

If the sensitivity of the players approaches zero, the negotiations in the system based on the above mentioned rules will converge towards a certain point. Let's call this point the mutually acceptable balance. We see that the mutually acceptable balance is clearly determined. From a mathematical perspective, the point of mutually acceptable balance has several very interesting characteristics, which are currently being investigated.

If we become aware of the sense of the strategy leading towards a mutually acceptable balance, we discover that it is also natural and performable via an estimate (i.e., the players can be guided by estimates; they do not have to perform complicated calculations).

4 Interpretation of the mutually acceptable balance

The result that we have attained is quite significant. It is said that under relatively general conditions, there is a natural – acceptable to natural understanding – strategy, which makes it possible for players in redistribution type systems to not try to negotiate discriminatory balances but to give priority to a mutually acceptable balance. This has been clearly determined and shows a number of interesting characteristics. To put it in other words - not only is it worthwhile for players to proceed in agreement, but there is also a clear path for attaining this agreement as well as a clear outcome of this agreement. The result can also be interpreted (as we have already mentioned) in the way that there is a rational foundation of moral conduct in these systems.

Those who are skeptical against the possibility of expressing important moments of real human behavior via mathematical models based on the assumption of human rationality will object: What is this result good for if in reality a real person will succumb to the temptation to discriminate against another, act irrationally, let his/her bad characteristics show? What is an abstract model good for if reality is different?

Here it is worthwhile to remind of the example that we discussed right in the first chapter and that was related to seemingly "irrational" elements in the conduct of people in experiments with the division of a certain amount of money. Finding what can be called the objective foundation of rationally substantiated morality in redistribution systems can become the key to revealing what is preventing the attainment of a mutually acceptable balance, i.e., the key to revealing (said with a bit of simplifying and exaggeration) what the source of human badness is.

We know that the attainment of a mutually acceptable balance is possible only under certain conditions. Most of the time they are related to the "cleanliness of the model" (no external influences, redistribution has clear rules, negotiations have no transaction costs, everyone is perfectly informed about everything, etc.). In other words - any disturbance of the assumptions (any "contamination") can make it impossible for a system to converge towards a mutually acceptable balance. Which of these disturbances are most significant? (By asking this question we attempt to reveal the next "layer" of reality via the model.)

We first think[9] that it is a natural human characteristic to evaluate ourselves differently than others. We have the tendency to over-value our own abilities (performance) and under-value the abilities (performance) of others.[10] But a detailed analysis of this case

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9 This was also the case at the Economy of productive consumption and social investing theoretical seminar, which is organized regularly every week at VŠFS during teaching months since October 2003, see http://www.vsfs.cz/?id=1046. At this website it is possible to follow the work of the team dealing with the theory of redistribution systems and the latest results.

10 At the above mentioned theoretical seminar was also discussed the possibility that the above stated is connected with the leadership syndrome. See the seminar on the topic: New ideas in the theory of redistribution systems III (Can the "leadership" syndrome be calculated?), which took place on June 10, 2009. Documents related to the seminar are available at http://www.vsfs.cz/?id=1046.

shows that the limited ability of individual players to assess their own performance and the performance of the other players is not the factor that plays such a significant role. This is because the following holds true:

- Each player is able to adjust his evaluations based on what proposals are being given during the negotiations process by the other player.
- The player who would not perform such adjustments (was insensitive to what is being stated in the proposals for the division of payouts) would find himself "out of the game" (the coalition would be formed by the players that are able to mutually adjust their evaluations).
- Therefore the strategies of the mutual adjusting of the assessment of performance win and these strategies also converge towards the mutually acceptable balance.

(Of course also here it holds that the assumptions of the mutual adjusting of the assessment of performance can be disrupted in various ways based on proposals that are submitted during the negotiations, but this would be subject to another, "finer", analysis.)

Therefore what remains is the question what from the perspective of the disturbing of the process of negotiating a mutually acceptable balance is the main, most important and thus also the key factor. Key in the sense of revealing what in reality restricts the use of rationality regarding the selection of moral conduct in the given area (for the relevant type of redistribution games). We will focus on this in the next part.

5 Parallel redistribution games

What plays the decisive role in the thwarting or blocking of the process of the negotiating of a mutually acceptable balance can be revealed via the following consideration (we state its most important points):

- Among other things, a condition of the convergence of negotiating towards a mutually acceptable balance is knowledge of one's own performance, performance of the other players and impact of the deviation of the payout of individual players from their performance on the performance of the entire system. (These are relatively strong conditions, which tend to not be met in reality.)
- The players estimate their own performance, the performance of other players as well as of the impact of the deviation of the payout of other players from their performance on the decline of the performance of the entire system with a greater or lesser degree of inaccuracy, but they can react to what valuations they give and adjust their assessments according to that.
- A player who would not react to the difference of his own assessments and the differences of other players would lose his negotiations position, i.e., each player must react in a certain way to the fact that his evaluation differs from the evaluation by other players.[11]

11 One of the important results of the theory is that if he isn't doing it, it's not "for no reason", but we must search for the causes elsewhere. Where? That follows from the following text.

- It is suitable to view the performance of players as a multifaceted phenomenon, where the players complement one another in some parameters of performance (resp. competences).
- The different scenarios can occur in the systems. Either the players value and appreciate the "difference" of other players, i.e., that another player can do something that the original player cannot do himself. In this case it appears (which at this moment we are expressing only as a hypothesis) that the adjustments of mutual assessments converge towards the mutually acceptable balance. In reality this case will manifest itself as the effective functioning of the team. Or the evaluation of players, where some performance parameters are over-valued and some are under-valued, will win. The winning coalition will be formed by the players that prioritize the assessment of those parameters of performance, respectively of those competences, in which they have the advantage and that discriminate against the other players. From the original prioritizing of own competencies ahead of the complementary ones, the players very quickly transition to the state where the leadership parameter and the ability to subordinate to the leader against all other competencies, is valued. The performance of the system goes down very quickly.
- The next phase of the development of the system in this direction is the formation of parallel redistribution other than the one that is connected with the original source of income that the players are dividing among themselves. (Mostly this concerns phenomena that are evaluated negatively – taking bribes, work in favor of the other party, application of a double standard policy towards the external environment, etc.)

We see that there is relatively a lot of what must be taken into consideration, if we are to say what influences the behavior of players in some specific redistribution system (from the perspective of the attainment of a mutually acceptable balance). If we want to reveal the general laws of behavior, we must find what the main cause preventing the attainment of a mutually acceptable balance is. In the given case we must search for what in reality will win as the dominant influence that overrides all others. The solution is thus based on the comparison of various specific influences and their evaluation from the perspective of which one predominates. From this perspective we can say the following:

- What influences the deviation in the evaluation of own and others' abilities as a condition for the assessment of performance is outweighed by what abilities (competencies) are accepted as beneficial for the overall performance of the redistribution system. I.e., what is decisive is not how good someone is, but what someone is good in. Discrimination is then based on the fact that the significance of some abilities, respectively competencies, is not appreciated, not considered as beneficial from the perspective of the performance of the entire system.
- Which abilities, respectively competencies, are appreciated in the system is outweighed in the case of parallel redistribution games by the fact that a certain such game is being played. Which coalitions will be formed in a given system and how payouts will be divided, as far as the original redistribution game is concerned, is then decided by which parallel game is being played (or which parallel games are being played).

- If multiple parallel games are being played in a certain system, the role of those that in a certain way interconnect the given system with other systems will predominate.[12]

6 Some practical aspects of the identification of parallel redistributiongames

From the perspective of managerial practice, a number of recommendations follow from the above stated (i.e., the general statements made above can be translated into the language of practice):

- For the stability and performance of a system, it is exceptionally important to support complementarity in mutual assessments (including informal) of player performance. I.e., a good manager will always emphasize and value the specific contribution of each subordinate; by doing so the manager will also contribute to the awareness that it is important to see who is beneficial how for a given system (worksite or company).
- Further to the above stated it is important to identify the entire spectrum of abilities, respectively competencies, via which the players can contribute to the improvement of the entire system's performance. I.e., a good manager is able to recognize everything that is beneficial for the performance of the entire system (company or worksite) in the form of specific abilities of specific people.
- Based on that the performance of the system is increased on the one hand, and on the other hand conditions are created that make it possible to recognize the seeds of parallel redistribution games early. I.e., a good manager must be aware of the risk of parallel redistribution games, able to identify their potential sources or current manifestations and subsequently then prevent them from establishing in the given system (in the company or at the worksite) as that, which determines the formation of coalitions and divisions of various types of gains.
- In order to be able to do this, it is necessary to evaluate the environment in which the given system is found and from which the penetration of various influences can be expected. I.e., a good manager must be aware that the given system (company or worksite) is not isolated from its environment, of what types of redistribution games have been established or can become established in various redistribution systems (institutions, organizations, companies, etc.) in the manager's surroundings and through which paths their influence can penetrate, and then face these influences based on these facts.

We are currently mapping the mentioned area from the perspective of differentiating basic types of various parallel games according to the following, among other things:

- Whether they expect or do not expect the interconnection of the given redistribution system with other systems.
- Whether the payouts to some players are greater than in the basic redistribution game or not.

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12 Here the theoretical connection with the role of social networks established from cross-coalitions (i.e., coalitions among redistribution systems) and subsequently also with the role of replicators in the process of communications (so called memes and memeplexes) can appear. See Budinský-Valenčík (2009 b).

- Whether they have a direct impact on the original redistribution game, i.e., lead to a different division of payouts inside the original redistribution game or change also the parameters of the redistribution equation of the original redistribution game.
- Whether they expect or do not expect various levels of player informedness.
- Whether players are paid from the means of the original redistribution game, from the means of the parallel game, or in a combined way (and which players these are).
- Whether they are or are not games within the hierarchic structure of redistribution systems.
- Whether they have or do not have an impact on the decline of performance in the hierarchic system.

In these parallel games we can then watch the following parameters:

- Payout size of the players of the parallel game.
- Impact of the parallel game on the performance decline of the original game.
- Role of players that are or are not informed about the existence of the parallel game and its parameters.
- How players are paid within the original redistribution game or from the means of the parallel redistribution game.
- How the impact power of players changes based on whether and to what extent they are informed about the parallel games.

The lists above are not complete. Each suggestion for adding to the list is welcomed. It is apparent that each step in the mapping of parallel games is beneficial in the putting together of the mathematical, respectively computer model, and also has immediate significance for the better understanding of what takes place in practice, makes it possible to define and name various standard situations that we can come across. It is also worth mentioning, respectively alerting, that the significance of parallel games is considerable and probably also growing, yet we usually do not come across analyses of this problem in the theoretical literature. This can probably be explained by the fact that in order for us to become aware of (reveal, appreciate, or even directly see) the significance of the corresponding phenomena, it is necessary to use a theoretical model.

If we reach the conclusion that what decides the formation of coalitions and division of payouts in redistribution systems has the form of parallel redistribution games, then this is logically followed by the question of which of the parallel games are the most important, respectively most determining, from this perspective. The simplest answer to this question is the statement that it is those parallel games that win as the determining ones that are the determining ones.

By making such a statement we only establish several types of tasks, including especially the following:

- Naming, describing and classifying parallel redistribution games, respectively putting together a well structured full list.
- Capturing of how individual parallel redistribution game types are connected with each other.

- Identifying the manifestations of parallel redistribution games in various redistribution systems.
- Revealing of the dynamics and developmental tendencies of redistribution systems from the perspective of the role of parallel redistribution games in them.
- Searching for the answer to the question of what to do, i.e., inferring practical conclusions.

The following parallel redistribution games can be played in redistribution systems:

1. Games based on the use, respectively abuse, of one's position in a relevant redistribution system. This means transacting with something that is administratively restricted, i.e., so called 'capturing income'. This can have the form of:

- Corruption or the taking of bribes.
- Abuse of authority.
- Use of double standards in the levying of sanctions or provision of advantages, etc.

2. Games based on the pushing through of a certain lobby into the leadership position in the system. This can have the form of:

- Efforts to push oneself through into the leadership or advantaged position.
- Pushing into a leadership or advantaged position someone from whom one expects the provision of certain advantages.
- Acting as an intermediary ("reconciliator" or "buffer") between enemy sides with the goal of pushing through one's own acceptable solution and the advantages that follow from it.
- Role of a hidden player acting in favor of the second party (externally the player acts as the one who supports a certain lobby, but in reality he is interested in pushing through a different lobby – one that is competitive or unfriendly towards the original lobby – and attaining the advantages based on this).

3. Games in favor of a lobby that is outside of a given redistribution system, which can:

- Be hierarchically superior to the given redistribution system.
- Be hierarchically subordinated to the given redistribution system.
- Function in parallel with the given redistribution system.
- Have the form of a cross-coalition between redistribution networks, or of a network between redistribution systems formed out of the corresponding cross-coalition.

Parallel redistribution games can differ by the following parameters:

1. Number of players, where:

- The game is being played in the given redistribution system by one player without a partner; the second player is the system itself in which the player is playing the game.

- The game is being played in the given redistribution system by two players who can maintain a partnership between them or breach it based on the payouts given by the parameters of the environment.
- The game is being played in the given redistribution system by three or more players, out of which each of them can maintain partnership between him and the players of a given parallel redistribution game or breach it based on the payouts given by the parameters of the environment; at the same time, however, the formation of coalitions is taking place inside the given parallel redistribution system.

2. Informedness of players, where:

- All players can be fully informed about all games, including parallel games.
- Some players are fully informed and some are not fully informed (only know the parameters of the original redistribution game).
- There are fully informed, not fully informed and fully uninformed players in the system.
- None of the players are fully informed about all of the parallel games that are being played in the system.

3. Nature of the environment in which they operate:

- The environment can be competitive, where a given redistribution system must attain or maintain a certain performance level in order to hold up in the given environment.
- The environment can have the form of the inclusion of a given redistribution system into a hierarchic system.
- The environment can have the form of a predominating influence of cross-coalitions and the social networks that become established out of them.

It is necessary to differentiate the following in every redistribution system in which parallel redistribution games are being played:

- Payouts of players in the original redistribution game.
- Payouts of players in other parallel games that they are playing.

The corresponding payouts can have a monetary or non-monetary form (e.g., positional, information, benefits, attainment of trust, etc.); mechanisms for the transfer of monetary payouts into non-monetary payouts and vice versa also exist.

Relations between parallel redistribution games are as follows:

1. Competitive, respectively mutually competing and mutually crowding out parallel redistribution games (mainly for who will dominate the original redistribution system) – A typical example of such a parallel game is the pushing through of mutually competing groups inside a certain redistribution system.
2. Inserted parallel redistribution games – Another game is inserted into a certain redistribution game.

3. Subordinate parallel redistribution games – For example, the tolerating of small parallel redistribution games in return for support by those playing them, in larger and more hidden parallel redistribution games (e.g., when subordinating a given redistribution system to external influences).
4. Complementary parallel games – Games where one type of parallel game necessarily assumes the existence of another parallel redistribution game.

There are certain general tendencies of the direction of the development of redistribution systems with parallel redistribution games:

1. The subordination of games based on the abuse of position to games based on the pushing through of a lobby, subsequently then the subordination of games based on the pushing through of a lobby to games connected with the formation of cross-coalitions among various redistribution systems and related social networks.
2. The crowding-out of the competitive nature of the environment in which the redistribution systems operate with the growth of the role of cross-coalitions between redistribution systems and the social networks that form out of them.
3. The penetration of determining parallel redistribution games in a given redistribution system by inserted parallel games and the formation of cross-coalitions among various redistribution systems by players that are informed about these inserted parallel games.

Every player in every parallel game has the possibility of either playing this game or exiting it, respectively exiting the given parallel game. The player can exit in two ways:

1. Either by playing only the original redistribution game in the given redistribution system.
2. Or switch to a competing (unfriendly) parallel redistribution game.

Both types of exit mean a loss for the player as well as for those players that know the parallel game that the player exited. The player's willingness to exit is given by the size of the payout that he receives in the parallel redistribution game and by the size of the payout that he can get by exiting the parallel game. Therefore:

- Payouts in parallel redistribution games are usually very high for the participating as well as informed players.
- Any exits of players from parallel games are accompanied by negative payouts, i.e., sanctions.

At any rate it holds that payouts of informed players playing determining parallel games are closer to the mutually acceptable balance than the payouts of players in the original redistribution game. The main sense of discrimination against some players in the original parallel game and the preferential treatment of other player serves mainly for making uninformed players enter the parallel game. These are players whose vote or influence in the resolution of questions inside the original game is significant, who have some advantage from the provision of the vote or influence, but who are usually not informed about what

parallel games are being played. That is why their reward can only come from the original redistribution game.

What conclusions can be expected from research conducted in this direction? From the perspective of practical research, this concerns, among other things, the answer to the following questions:

- What basic types of parallel redistribution games can be played and what are their characteristics that make it possible to recognize them in the given system.
- How to take advantage of the revealing of those parallel redistribution games that are being played in the system for the elimination of their influence (for example, what role in this is being played by the increasing of the informedness of those players that are not informed about the games; what type of coalitions can eliminate parallel redistribution games that decrease the performance of the system, etc.).
- Etc. (In a more practical position one can then expect the identification of characteristics of what makes it possible to relatively accurately differentiate, for example, truthful statements from badmouthing, etc.)

Instead of a conclusion

We consider the creation of a mathematical model of parallel redistribution games as the primary and, from a practical perspective, a very beneficial task of further research. This model will probably be the expansion of the elementary redistribution system model. As is being suggested also by the experience up until now from the development of the redistribution systems theory, it should be a model that is elegant and that would make it possible to look at the results that have been attained up until now from a certain detached point of view. The patient identifying, mapping and classifying of parallel games can contribute to the creation of this model. The practical sense is also apparent – the better the overview of the various types of parallel redistribution games that we will have, the greater is our chance to not allow their impact on the decreasing of the effectiveness of these organizations, institutions, companies, etc., in which we work or for the operations of which we are responsible. And that's what it's all about.

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The Prediction of the Impacts of the Euro Implementation on the Labour Price in the Slovak Republic – The View of Enterpreneurial Entities

Predikcia dopadov zavedenia eura v Slovenskej republike na cenu práce z pohľadu podnikateľských subjektov

MIROSLAV ŠPÁNIK

Abstract

The evaluation of the overall impact of the euro implementation on the national economy in the Slovak Republic is one year after its implementation as an official currency unreal[1]. This process will even be more complicated due to the fact that the change of national currency occurred in the period of the global economic crisis. The reduction in the use of existing production capacities, protectionism, rising unemployment[2] and so called backward migration actively influence the labour market and hence the labour price. This article is devoted to analyzing the shift of views of selected experts from the corporate sector on the impact of the euro implementation and the resulting changes to the assessment of work and the determination of wages in the Slovak companies and in the overall economy of the country after the adoption of the single European currency in 2009. A long term research was executed in three phases: before and after fixing the conversion rate and nine month after the implementation of the euro in the Slovak Republic. The research reflected opinions before first real impacts of the global economic crisis as well as impacts before and after the implementation of a new currency. In the survey of subjective expert opinions, the author used the Delphi method and/or directed interview.

Keywords

entrepreneurial entities, implementation of the euro, euro zone, evaluation of work, Delphi method, global economic crisis.

Abstrakt

Vyhodnotenie celkových dopadov prijatia eura v SR na národné hospodárstvo je rok po jeho zavedení ako oficiálnej meny ešte nereálne. Tento proces bude o to zložitejší, že k zmene národnej meny v SR došlo v období svetovej ekonomickej krízy. Zníženie

1 *Benefits or more precisely negatives of change of national currency would not be possible to evaluate not even in the case of less open economy, the implementation would not be possible in the times of world economic crisis etc.*

2 *In 2009 in Slovakia, the unemployment rate increased by 3.7%, which meant growth of number of unemployed people by more than 110 thousand. With the exception of 0.2% August decrease, in all other months the registered unemployment rate increased (Statistical board SR, 2010a).*

využívania existujúcich výrobných kapacít, protekcionizmus, zvýšenie nezamestnanosti a tzv. spätná migrácia aktívne vplývajú na trh práce, teda aj na cenu práce. Príspevok je venovaný analýze posunu názorov vybraných odborníkov z podnikovej sféry na vplyv zavedenia eura a z nich vyplývajúcich zmien na hodnotenie práce a určovanie výšky miezd v slovenských podnikoch a v hospodárstve krajiny ako celku po prijatí spoločnej európskej meny v roku 2009. Dlhodobý prieskum bol realizovaný v troch etapách: pred a po stanovení konverzného kurzu a deväť mesiacov po zavedení eura v SR. Prieskum teda reflektoval názory pred prvými reálnymi dopadmi globálnej hospodárskej krízy, ako aj dopady pred a po zavedení novej meny. Autor použil pri prieskume subjektívnych vyjadrení expertov, resp. priblížení názorového spektra na danú problematiku – delfskú metódu, resp. riadený rozhovor.

Kľúčové slová
podnikateľské subjekty, zavedenie eura, eurozóna, hodnotenie práce, delfská metóda, globálna hospodárska kríza

Introduction

After nearly two decades of continuous changes in the transition from a centrally planned economy to a market economy, the Slovak Republic, due to meeting the Maastricht criteria, became the first of the V4 countries which by adopting the euro as an official currency entered the final stage of the Economic and Monetary Union, the so-called euro zone. This time period seems at the first glance to be long enough for national economy to transform into conditions of effective operation in conditions of growing globalization. This assumption is, however, not confirmed by Poland and Hungary, which presently do not meet all Maastricht criteria. In case of the Czech Republic, the postponing of euro acceptance into the second decade of 21st century is a political and not an economical issue (Helísek, 2009, p. 26).

Despite the distortions resulting from the impact of the crisis and the fundamental differences in the composition of the national economy in each of the above mentioned countries, Slovakia may be a guide for them how to proceed with the introduction of the euro as their national currencies. Regarding the impact of the euro on the labour price, we can already now speak about the possibility of direct comparison.

The decisive factor influencing the success or the failure of companies is the quality of human factor operation. This is obvious in a challenging competitive environment and in the time of world economic globalization. The quality of human factor operation became even more important after Slovakia's accession to the European Union. One of the conditions for reaching this level of development[3] in Slovak organizations is sufficiently flexible organization staff and an organization, which perceives the employee not only as a "cost item", but also as an asset and the owner of the capital. Its quality is, however, directly proportional to the value of work.

3 *Achievement of natural ability to gain, deposit and transform the knowledge on organization level (use them).*

Next factor, which will have an impact on the gradual change in the way the organization views the employee, and in the way of evaluating his work, is a bigger demonstrativeness of Slovak economy after the entry of Slovakia into the euro zone, which means also a further growth of competition. Most companies underestimate this factor and are not aware of the consequences until after the outbreak of the crisis. This is also evident from the survey mentioned in the paper.

1 The prerequisites for the change of the approach to labour costs

In the period from January 2006 until September 2008 the development of basic macroeconomic indicators of the Slovak Republic was on a very good level, which was also indicated by appreciation of Slovak currency. Low wages of employees in the Slovak Republic, converted into euro, constituted for foreign investors a possibility of using cheap labour force and low production costs (Janičková, 2009, p. 334). Also this fact conditioned, or let us says actively influenced and created good conditions for the expansion of the whole national economy. It could mean also a good strategic position for the future development of wages after the implementation of the euro in Slovakia, since January 1, 2009.

A part of the execution of the international research project[4], which is focused on the research of the long term impact of the common currency implementation for states of the euro zone[5], is the survey of the expert opinions, if the assumed positive wage development will continue even after the euro implementation, or more precisely what kind of influence this change will have on a real wage development. We assumed that the pressure on the wage increase will be after the implementing of the euro more distinct, the imbalance in the remuneration of employees in the same working positions of the old and new EU member states will continue for 10 - 15 years and the wage increase will be appreciable especially in larger companies.

Problems associated with the changes in the setting of wages and the evaluation of work following the introduction of the single European currency since 1st January 2009, were, in accordance with the structure of national economy, studied with the focus mainly on small and medium-sized enterprises, which are included in the manufacturing sector. The readiness of enterprises, in particular of the specific personnel responsible for the introduction of the euro as official currency in Slovakia, also formed an important part of the survey. Due to the chosen method we managed to get from diverse opinions, which formed a basis for analyzing the given problem, a narrower range of assumptions about the further development.

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4 *Research is a part of scientific grant project „Labour price in small and medium sized companies in the Slovak Republic and Poland today and after implementation of EURO currency".*

5 *From the point of view of the Slovak Republic it is unambiguously historical event with a long term impact on the whole national economy.*

2 The choice of the research method

The economics is about expectations of all parties involved. However, due to the hardly predictable effects of the turbulent external environment, only the future will show whether, from the medium and long - term point of view, with the introduction of the euro, it will be Slovakia which obtains greater competitive advantage, or the other countries of the V4 by postponing it.

Entrepreneurial entities must, however, base their decisions on the real market conditions, or more precisely on the assumed development. Despite the regular analysis of the internal and external environment and the use of available econometric models, this situation is for Slovak entrepreneurial entities not standard. To achieve the objectives of this work, the author, therefore, used one of the expert methods - Delphi method, also called the method of the expertise evaluation. It is particularly suitable for predicting events in case we do not have a clearly confirmed theory, or we do not recognize patterns, by which the development process is characterized. The method means the gradual detection and comparison of the prognoses of the experts, based on their anonymity, controlled feedback of information and statistical information to identify the majority consensus. Opinions of experts are based on the personal experience, the personal knowledge as well as on the personal intuitive assumptions. It is the specificity of the Delphi method, which is the reason that it is also call the method of the experitse evaluation.

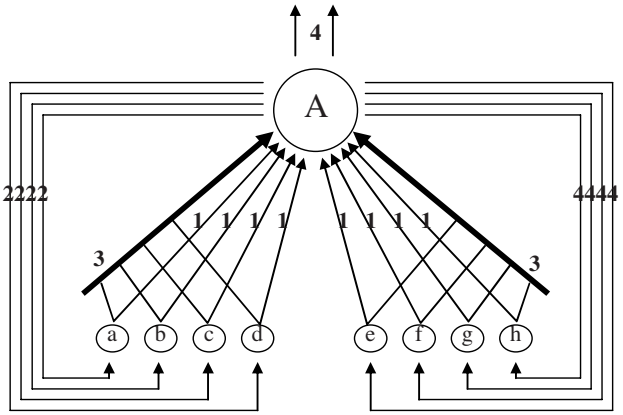
Opinions of experts perform a similar function as a theory constructed on the basis of objective knowledge of the rules and patterns in the exact sciences. The characteristics of the Delphi method implies the need for careful, versatile selection of a team of experts, who determine the value of the prognosis (Ivanička, 2000, p. 65).

The examined issue belongs among the more complex ones, not having an exact solution. Therefore it is not possible to assume a clear consensus in the statements of experts. This method, however, allows a qualitative shift in the correlation of the opinions of involved experts, measured according to the methodology of James Shanteau.[6]

The process of the views unification is within the Delphi method a very important one. Possible development variants are set up collectively based on the feedback information resulting from the expertis opinions based on which some variants are left as unrealistic, alternatively the new synthetic variants are worked out (see Picture 1):

6 *In detail see SMITH, SHANTEAU, JOHNSON (2004).*

Picture 1: Delphi method – definition of expert method



Source: IVANIČKA, (2000), p. 67.

3 The choice of the research sample and the description of the research course

Each of the three phases of the survey involved 30 identical respondents[7]. One of the main criteria for selecting respondents was that they represent their company also in managerial positions of professional organizations (affecting the formation of economic state policy) or they are members of the advisory board of the Ministry and the export of their organizations represents more than 75%. The survey also examined the typology of enterprises in which they work. The results showed that the survey was attended mainly by experts from medium-sized enterprises (total 55%). Together 65% of the companies have up to 1 000 employees, however the research was joined also by the authorities from the companies with up to 4 000 employees. The yearly turnover of the researched companies is different - up to 9 billion SKK. Very strong was also the representation of the companies whose prosperity is dependent on the automobile industry not only in Slovakia.

The first phase of the survey was carried out in two rounds, the second and third phase in three rounds. The first round consisted of the data collection – in the form of the questionnaire, the analysis of the results and the incorporation of the views of the assumed (or more precisely real) impacts of the implementation of the euro on the SR industry, national economy and on the development of the labor costs.

The presentation of the results of this round in graphical form was then assigned to individual questions as a guide when deciding on the subject (question) in the questionnaire for the next round. In the second and the third phase of the research the opinion spectrum was quite imbalanced therefore it was necessary to make the third round. The author attributes this fact mainly to:

7 *Research was finished in March – April 2008 (I. phase), December 2008 (II. phase) and October 2009 (III. phase).*

- the concerns of most respondents resulting from the turbulent changes in the global economy and their reduced ability to predict their medium-term scope and the impact on the national economy, industry and entrepreneurial entity, as well as the overall share of the new currency influence to these changes (II. phase),
- the concerns of most respondents resulting from 'putting off' the impact of the global economic crisis (government intervention) and from the lack of relevant information to predict the start of recovery (III. phase).

In the individual rounds, the respondents expressed gradually their views on the status and development in the following areas:

- anticipated (actual) impacts of the euro implementation in Slovakia on their company and in particular on the development of the labor price,
- anticipated impacts of the euro implementation on the sector in which they operate, as well as on the entire national economy, particularly with regard to the development of employment and labor costs (in this paper the author does not pay particular attention to this area and does not provide further details).

4 The evaluation of the research and the interpretation of the selected results

From the results of extensive research, which reflects the opinion spectrum of experts before the first real impacts of global economy crisis, as well as real impacts just before and half a year after implementation of new currency in the Slovak Republic, more detailed attention will be paid to presentation of chosen outcomes, focused on the most important factors influencing labour price in small and middle-sized enterprises.

4.1 The impact of the euro implementation on the level of wages in enterprises

Most of the respondents in the research assumed that wages in small and middle sized enterprises in the Slovak Republic (11) will be slowly, in the horizon of couple of years, comparable with the wages in competing enterprises within EU. However, in the next 10 years we will not reach the level of average wages equal to the average wages in the original EU countries. The decrease in the number of responses in the categories "no impact" and "low impact" can be mainly attributed to the expected long-term changes in the situation on the labour market which are directly affected by the common currency.

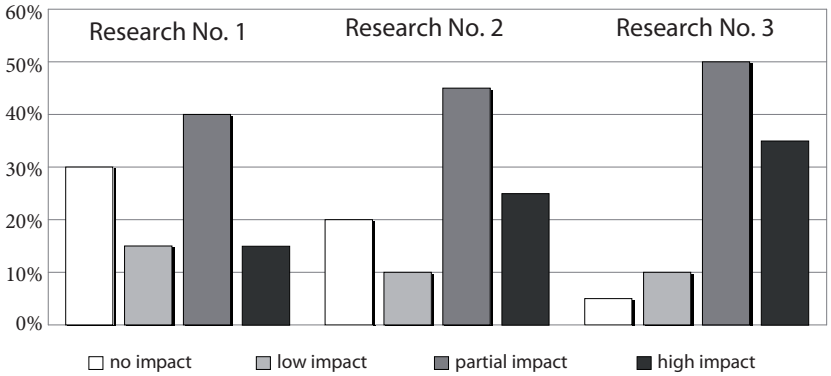
They will be according to most experts caused by:

- bigger competition thanks to a wave of returns of large proportion of qualified Slovaks working abroad and their wage expectations,
- number of workers in companies, which will not be, after the wave of redundancies, increased again and the growth in production will be almost exclusively provided by labour productivity growth (the need for new investments) – it is the initial as-

sumption of wages approximation without the increase of personal costs and without transaction influences,

- gradual approximation of overall costs, connected with the cancelation of work positions in the operations of multinational companies, operating in the original and new EU Member States,
- already assumed pre-accession process of other European Union members (e.g. the Czech Republic, Hungary, Poland etc.) to the euro zone should gradually fix conversion rate to reduce the risk of the influence of the strong euro on a labour price to the detriment of Slovak companies[8].

Diagram 1: The assumption of the influence of the implementation of the euro on the height of wages in the companies



Source: own creation.

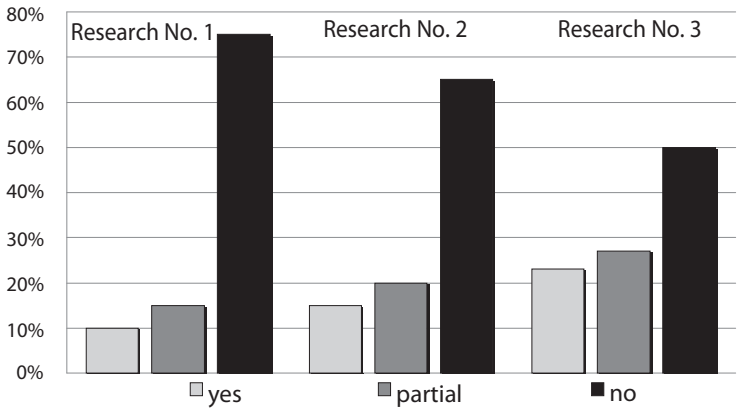
4.2 The remuneration of employees before and after the introduction of the euro

Most of the respondents agreed in the opinion that the traditional system of remuneration of employees will not be radically changed, even after the implementation of the euro. They justify it particularly by the use of the same remuneration system as their domestic and foreign competitors. A gradual increase in the number of respondents who assumed a partial or important influence on the remuneration system of employees after implementation of the euro in the second and third period of the research (this is obvious in the Diagram 1) resulted from setting a lower conversion rate of "koruna" against their original expectations (as shown in the Diagram 2). This leads some parts of the companies, in the case of recession assumption, into the search for new systems of remuneration which will enable them to survive. Despite the fact that the respondents consider the existing remuneration system to be

8 *73% respondents assume that despite the fact of the impact of economy crisis on decrease of macroeconomic indicators and temporary problems in fulfilling the criteria by candidates for joining the euro zone, the mutual economic dependence of member of EU countries will assist to faster overcoming and embodying into euro zone.*

flexible enough even during the economy crisis, especially in the third phase of the research, almost 90% of them admit that they expect active help from state (financial, legislative)[9].

Diagram 2: The assumption of the influence of the implementation of the euro on the remuneration system in companies



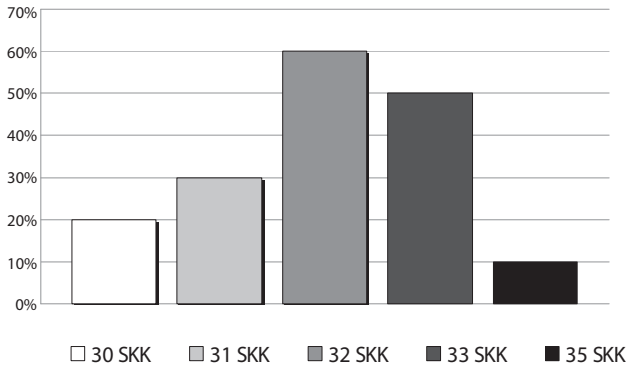
Source: own creation.

The Slovak koruna entered the rate mechanism ERM II, the so called waiting rooms for the euro, in November 2005 with central parity at 38.455 SKK/EUR. The continuous strengthening of the Slovak currency finally prompted the first change of central parity, which in March 2007 revalued by 8.5% to the level of 35.4424 SKK/EUR. The shift of Slovak koruna into ever stronger values, however, did not stop, and accelerated significantly in May 2008, after The European Commission (EC) positively assessed the readiness of Slovakia to join euro zone in the scheduled term on 1 January 2009. At the time when the rate of the Slovak currency closely approached the lower limit of a permitted range of the movement i.e. 30.126 SKK/EUR, the second revaluation of the median rate of Slovak koruna, leading directly to this level, occurred on 28 May 2008.

This dramatic shift also meant a shift in the opinions of respondents in the second and third phase of research. To illustrate that we, therefore, also show conversion rates expected by respondents which were only studied in the first phase of the research (March-April 2008). Optimistic expectations of the conversion rate for companies are obvious from Diagram 3:

9 *E.g. in the form of realized overpaying of certain part of wage in the case of shortened work week, if the subject according to this fact did not start to fire a part of the employees. Besides mentioned kurzsearbeit there is also langarbeit used abroad (missed production is balanced via longer work time), more precisely shift on 4-day work week with 10 hour working time (save of time and costs on employee). Paradoxly, as well as the big economy crisis in 30-ties meant the beginning of the end of 6-day working week, the same impact on the shortage of the number of working days is assumed by experts also in present global economic crisis.*

Diagram 3: The assumption of specifying of the exchange course SKK/EUR (March-April 2008)



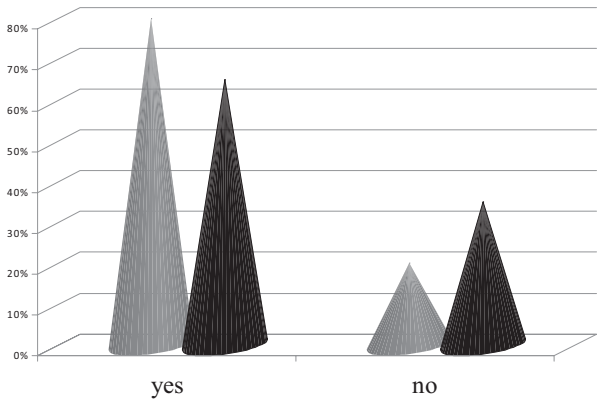
Source: own creation.

4.3 The increase of the wages of employees in dependence on labour productivity in the company and the demand for the goods

The research was focused also on the perceiving the influence of another important factor conditioning the level of wages – labour productivity. The direct dependence is at present times obvious to 75% of respondents (80% in I. phase). The assumption of the direct dependence between a percentage growth of labour productivity and an increase of wage was, however, not confirmed. Lower percentage growth of wages (lagged) compared to the growth of labour productivity, was justified by respondents particularly because of:

- the pressure of the direct competition,
- the efforts to keep jobs and
- expectations of a gradual shortening of economic cycles.

Diagram 4: The assumption of the importance of the growth of labour productivity and the main factor by increasing of the wages of employees (I. and III. phase)



Source: own creation.

Conclusion

The paper analyzed the opinions of experts from Slovak enterprises responsible for determining the labour costs, which were received from the long-term representative research. The general assumption, that the experts from the perspectives of their enterprises or more precisely industries, reported before adopting the euro especially positive facts regarding the implementing of a new currency in the Slovak Republic and are currently in their opinions more reserved, was confirmed. On the contrary, their view on the overall national economic situation in all three phases of the research was much more sceptical. They also admit long-term negative impacts.

The research results show that companies insufficiently perceive the risks arising from the transition to the single European currency. They perceived the implementation of euro before 1st January 2009 only as a problem of adopting to the administration, accounting, or just from the point of view of the necessary software changes. They was prone to perceive only the positive benefits of the new currency for the enterprise or their industry – eliminating the risk of rate differences, facilitation of the export, facilitation of the international trade. Among the risks, which they were able to predict already before the euro implementation, they uniformly included namely the temporary strengthening of the currency against the other states of V4, which are only getting ready for the implementation of the euro and also the temporary increase of real wages because of the favourable exchange rate. The seriousness of the impacts of strengthening of the currency on most of the spheres of national economy and temporary execution of more than 33% of purchase of population abroad was not with respond until in the third part of the research[10].

The assumption that the adoption of the single european currency will increase the pressure on the slight increase, or gradual alignment of wages with the wages in other EU countries was confirmed also by the respondents of the research. This trend of gradual approximation will, however, be due to the global economic crisis bi-directional – with a moderate growth of nominal wages in Slovakia (not counting their growth in 2009[11]) a real decrease of nominal wages in the countries of EU[12] will appear. Today it is problematic, moreover, because of growing economy crisis almost impossible, to estimate the

10 Strong euro compared to Polish zloty or Hungarian forint meant for some multinational companies the following situation – it was worthy for clients to purchase their products mostly abroad. For example small Slovak builders started to buy building material of Schmid Industrie Holding in Hungary or in Poland, which led to not only partial drop out in Slovak production, but to a paradox – holding was competing with itself (for details see Šebejová, 2009, p. 37).

11 In 2009 according to the development of wages or more precisely labour price in national economy, growth of index of average nominal wage by 2,8% and index of real wage by 1,2%.in 11 month is assumed. (Statistic Authority of SR, 2010b).

12 Chairman of International Monetary Fund D. Strauss-Kahn warns, that „after financial crisis does not follow only economy crisis, but also social crisis, which peak we did not reach yet". (see details Schmitz, Steingart, 2009, p. 118).

effect of return of thousands of Slovaks from abroad (mostly agency workers), the efforts of protectionism in individual EU member states[13].

Respondents have also agreed that this pressure on the real growth should be differentiated in accordance to the size of the enterprise, as well as the sector of the national economy. It is, however, already clear today that due to the structure of Slovak enterprises, there will be a gradual change in its composition for the benefit of increasing the percentage share of the domestic consumption.

Most of the addressed experts agreed, in the individual interviews conducted in the second and third phase of the research, that there is a tendency among employees, as well as among candidates, favouring the job in a stable company. The preference of the career choice based on the highest wage offered is nowadays receding into background.

To conclude, it is necessary to claim that the implementation of the euro at the time of the global economy crisis increased the number of factors, whose influence on the Slovak economy can't be disambiguated (positive or negative influence). Any used development model loses its "universality"[14].

However, thanks to the turbulent external influences (environment) only the future will show, if from the medium-term and long-term perspective, the Slovak Republic will gain more by implementing euro than countries of V4 by the delay of the implementation[15] of it.

The paper relates to the scientific grant project VEGA – The labour price in small and middle-sized enterprises in the Slovak Republic and in Poland today and after the implementation of the single EURO currency. (La valeur du travail de petites et moyennes entreprises en Slovaquie et en Pologne (éventuellement dans d´autres pays) aujourd´hui et après Ĺacceptation de la monnaie commune EURO. EEIG-EU/P-Kr/09.03/07.)

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13 *It is not possible to estimate the influence of these factors not only on the Slovak labour market, but also on the labour markets in individual EU countries where Slovaks have worked, or are still working. Entrepreneurial community in many EU state members before the economic crisis fulfilled more or less the criteria which Lačný (2008, p. 82) defines as ethical heterogeneity cultural complex, resulting from the character of global community in which it functions and which it defines. Due to the fact that business influences more aspects of nowadays life in households on national and multinational level, possible unwillingness of managers to employ members of different states could mean possible waste of talents which the company needs. On the other side it is not possible to neglect the reactions of the public. They are defined as the negative social facilitation by Allport. Špániková and Janigová (2008, p. 322) calls them gradation of the refusing of the foreign groups.*

14 *Model of export, based on low wages, today gradually loses foundation in european countries. This successful development model was used in long term e.g. in China and according to French economists Brender and Pisan (2009) besides of its state politics and thanks to bottomless fountain of cheap work power.*

15 *In the future, however, the importance (height of wages) of the factors taken into account could change. In addition, there could appear new factors which would influence the euro opinion even more heavily.*

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PREVIEW /PŘIPRAVUJEME:

*In the next issue of the scientific reviewed journal ACTA VŠFS will be published articles focusing on current problems of the Czech economy, namely the article about stimulation of demand in the market of continuing adult education (author: **H. Vychová**), the article about the sustainability of pension systems through the assessment of the pension base calculation (author: **M. Holub**) and the article which deals with assessment of consistency of the Czech tax law with community law (author: **K. Brychta**). The article dedicated to information security in small and medium-sized companies is the welcome enrichment of the thematic focus of this issue (author: **D. Král**).*

*V příštím čísle vědeckého recenzovaného časopisu ACTA VŠFS budou publikovány stati zaměřené na aktuální problémy české ekonomiky, a to stať **H. Vychové** o poptávkové stimulaci na trhu dalšího vzdělávání dospělých, stať **M. Holuba** o důchodovém systému ve světle zohlednění skutečně získaných příjmů ve výši důchodu a stať **K. Brychty**, zabývající se souladností českého daňového práva s právem komunitárním. Vítaným zpestřením v tématickém zaměření časopisu je stať **D. Krále** věnovaná bezpečnosti informací v malých a středních firmách.*

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