ACTA UNIVERSITATIS AGRICULTURAE ET SILVICULTURAE MENDELIANAE BRUNENSIS

Volume LXI 245 Number 7, 2013
http://dx.doi.org/10.11118/actaun201361072197

ANALYSIS OF ESG INDICATORS FOR MEASURING ENTERPRISE PERFORMANCE

Zuzana Chvátalová, Iveta Šimberová

Received: April 11, 2013

Abstract

CHVÁTALOVÁ ZUZANA, ŠIMBEROVÁ IVETA: *Analysis of ESG indicators for measuring enterprise performance.* Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 2013, LXI, No. 7, pp. 2197–2204

In this article authors focus on the analysis of the whole set of environmental, social and corporate governance (ESG) indicators for the elimination of double or triple effects within the next construction of methods for measuring corporate performance. They build on their previously published results (in Acta univ. agric. et silvic. Mendel. Brun., 2012). The partial actual selected results of a recently undertaken currently project entitled '*Construction of Methods for Multifactorial Assessment of Company Complex Performance in Selected Sectors*' were used. This project was solved the research teams of the Faculty of Business and Management of Brno University Technology and Faculty of Business and Economics of Mendel University in Brno since 2011. Further theoretical resources in the environmental, social and corporate governance area, known indicator databases (namely Global Reporting Initiative), comparative analysis, resp. syntheses for identifying possible of common indicator properties were identified to classify indicator subsets to preclude double or even triple effect based on mathematical set theory (Venn diagrams). The indicator analysis in constructed multi-factorial methods contributes to precise decision making in management to improve corporate performance.

double or triple effect, environmental, social and corporate governance indicators, gross domestic product, corporate performance, project, Venn diagram

The current emphasis only on the consumer-oriented economy is erroneous. Not only an increase in consumption, but also investments will lead the Czech economy out of the contemporary crisis. An economist (former Prime Minister) and now newly elected president Miloš Zeman suggested this at the 6th financial Forum Golden Crown in Prague (2010) (Čížek, 2010).

The gross domestic product (GDP) is the broadest and key indicator of the economic performance of country (state) in one time period (usually per year) in one country. GDP is an important measure of a country's economic performance which has a large influence on the market and the market economy. It consists of many partial reporting indicators (Chvátalová *et al.*, 2011). The economic performance of a state is closely linked to corporate performance. Managers, investors, researchers, creditors, politician (government) and other stakeholders (who are not indifferent to corporate performance) usually observe the development of GDP carefully. The economic performance of a company is complex and must be evaluated in conjunction with the effects of environmental, social and corporate governance indicators. The advantage is to understand what ways the corporate performance is monitored, measured and evaluated. We believe that it can be expected in our country that the investments will likely be more promoted in the near future. Reporting about the economic performance of a company is essential not only for own management (decision making, forms future business strategy) but it is also important for investors. Investments mean significant advantages for the economy of the company.

According to Zeman the basic deficiency in our economic system is a low propensity to invest and a high propensity to consume… Stable and long term

economic growth cannot be ensured by wasteful consumption, but only by rational investment. Only investments generate value representing the overlap into the future (Zeman, 2012). Hence the company performance reports are reasonable particularly for its current evaluation as well as for the prediction of future development. These reports are a valuable source of information for top management but also for investors. Naturally, investors have an interest in understanding the corporate performance evaluation in the deeper context.

Therefore it is necessary to select or to design appropriate methodics (methods), namely, the reports must adequately inform about the company health, have to have comparative value and have to be understandable. They must be able to detect opportunities and threats etc. It is clear that this is not easy. Factors that are measured and used to determine the corporate performance cover more society areas. Therefore for the construction of method we must choose very carefully those in order not to leave out a significant factor. However, some factors although from different areas can have a joint effect. We must try to eliminate such which may have double or triple effect. Therefore we must put emphasis on the selected set of suitable indicators and identifying of interdependences of substructures in used method. It cannot be unambiguous (such as from the viewpoint of diversity according to the classification in the CZ-NACE). Therefore the development of methods for the assessment of complex company has to respect their multi-factor character, the implementation modifiability and the structural clarity, not only for the company management but also for the possibility of investment plans. The issues of identification of the double or triple indicator effect (for subsequent possibility of their elimination / minimization) are discussed in this paper.

Sustainable development respects the environmental, social, economic areas and corporate governance. Some authorities and institutions create lists of indicators that should help to monitor the corporate sustainability performance, compare the different levels or reports. We encountered many interesting facts in processing the project '*Construction of a complex multi-methods evaluation of performance in selected sectors*', which is funded by the Czech Science Foundation (Reg. No. P403/11/2085). We believe that some indicators cannot be clearly categorized only in one sector. The project deals with the determination of corporate sustainability performance, the specification and the definition of key performance indicators, their units and other contexts. Using quantitative methods in a measurement of a company performance can be supported by the implementation of suitable information systems, (Chvátalová, Hřebíček, 2012). A clear explanation why the responsible and sustainable development of corporate resources is the basis for comprehensive company strategies and make visible investment plan for investors is introduced in Project (Project, 2010). If we respect double or even triple indicator effects from different fields then this method might not be effective enough. We analyze this fact in the paper. Using the Venn diagram we tried to classify such environmental, social and corporate governance indicators into common subsets.

METHODS AND RESOURCES

Outputs of the first and partly of the second phase (2011 and first half of the year 2012) of the project became the core for its investigation in the second half of the year 2012 and beginning of last phase (first half of the year 2013), when the sub-objectives are specified by the following partial real steps (selected project's partial targets[1]):

Gradual process modeling of the constructed method (multifactor measurement of complex company overall performance in chosen economic activities) using various quantitative, qualitative (a rational sophisticated use of the metrics) and other methods. At the same time to target for their practical implementation ability, elimination of duplication among the relevant ESG indicators, real functionality, weighting of variables, relationships on basis of an expert assessment (an application feedback for corrective adjustments – should any adjustments be necessary), etc. *Practical application of the method* for multifactor measurement of company overall performance in practice, feedback from practice obtained by implementation in companies for possible correction aimed at further improvement. To develop the methodology with respect to the universality of the application in practice – broad use generally (in the commercial, institutional and state government sectors), comparative importance of the outputs, support for the implementation of ISO standards, reporting companies, etc. (Project, 2010).

During the project the researchers have identified one of the possible consequences that could reduce the relevance of the methodology with respect to the universality of the application of the methods in practice especially for the top management of companies and for (potential) investors.

In this paper, the authors follow results published in (Chvátalová, Šimberová, 2012). They closer specify and analyze the cases of the joint influence of the indicators. In this paper they focus for three areas: environmental, social and corporate governance performance (i.e. ESG indicators). They have used analogous methods as in (Chvátalová,

1 http://www.fbm.vutbr.cz/gacr/project-aims

Šimberová, 2012), but in a broader and more complex contexts.

Therefore, the methodology used in this paper was based not only on studies of theoretical sources, but mainly on expert analyses and estimates, field observations of possible indicators, their comparison, analysis, synthesis for classification of content; authors also used set theory (Venn diagrams), etc.

In the first step we created a basic set of *social* and a basic set of *environmental factors* in Tab. I and Tab. II with respect to the selected sectors and suitable companies and to the fulfillment of the main objectives of the project (Project, 2010). For reasons of clarity and efficiency and exclusion of jointed indicators in this post we will preserve the basic classification according to the classification GRI (for social indicators there are dividing into four areas: Society, Product Responsibility, Labor Practices & Decent Work, Human Rights) (Chvátalová, Šimberová, 2012), (Hřebíček *et al*., 2011a), (Klímková, Hornungová, 2012).

Note: Core Performance Indicators (CPI) has been developed through GRI's multi-stakeholder processes, which are intended to identify generally applicable Performance Indicators (PIs). GRI PIs are first organized by a general sustainability *Category* (economic, environmental and social: related to labor, human rights, society, and product responsibility), and then they are further arranged under *Aspect headings* which more specifically reflect the issue each indicator is designed to measure (Hřebíček *et al*., 2011), (Hřebíček *et al*., 2012). In order for them to be comparable across all organizations, and thus useful for mainstream investment analysis, it is important that financial, environmental, social and governance (ESG) data are transformed into consistent units and presented in a balanced and coherent manner in KPIs indicators (Garz, Schnella, Frank, 2010).

The establishment a basic set of corporate governance performance indicators was based on the empirical analysis of the Code of corporate governance of OECD (2004) and the Czech Republic (2004) in Tab. III, further on many other sources, which were listed in detail in (Chvátalová, Šimberová, 2012), (Šimberová *et al*., 2012).

RESULTS AND DISCUSSION

The results of the current monitoring of ESG indicators are presented in the tables (after a number) I, II and III. Units and specifying sources in (Hřebíček, 2011a), (Chvátalová, Šimberová, 2012). Right three columns in each table are intended to capture the possible merger of the respective indicator and the indicators of two remaining areas. We can clearly illustrate this using Venn diagrams, bellow.

Clearly we can illustrate this using Venn diagrams in Fig 1. This categorization of indicators easily informs about possible duplication impact of indicators. Subsequently then we can to provide other additional analysis. It can be seen that the basic set of indicators is very large. So we have to make a sensitive restriction or a suitable sorting of indicators.

We can for example make the suitable elimination or the chaining of duplicate indicators. Another approach to respect of possible duplications is introducing weights for indicators. The appropriate application of tools of linear algebra (matrix theory) can solve this problem. Another option the survey is that we will soften nature of the identified duplicates so that we will identify their relations (or their properties such as reflexivity, transitivity, symmetry, antisymmetry, etc.) between the operating indicators together by use the logic theory. Thus, we can better see into the internal structure of the set of indicators. These are the incentives for future research approaches.

I: *List of Selected SOCIAL Indicators*

Domain	Subdomain	Title (Aspect GRI)	No. GRI	Description GRI	SOC	ENVI	CG
SOCIAL INDICATORS	Society	Community	SO 1	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting.	x	x	
		Corruption	SO 2	Percentage and total number of business units analyzed for risks related to corruption.	x		x
			SO 3	Percentage of employees trained in organization's anti-corruption policies and procedures.	x		x
			SO 4	Actions taken in response to incidents of corruption.	x		x
		Public Policy	SO 5	Public policy positions and participation in public policy development and lobbying.	x		
		Anti-Competitive Behavior	SO 7	Total number of legal actions for anti- competitive behavior, anti-trust, and monopoly practices and their outcomes.	x		
		Compliance	SO 8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	x	x	

Domain	Subdomain	Title (Aspect GRI)	No. GRI	Description GRI	SOC	ENVI	CG
SOCIAL INDICATORS	Product Responsibility	Customer Health and Safety	PR 1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.	x	x	
			PR 2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services, by type of outcomes.	x	x	
		Product and Service Labeling	PR 3	Type of product and service information required by procedures and percentage of significant products and services subject to such information requirements.	x		
			PR 4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	x	x	
		Marketing Communications	PR 6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.	x		
			PR 7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes.	x		
		Customer Privacy	PR 8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	x		
		Compliance	PR 9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.	x	x	x
	Labor Practices & Decent Work	Employment	LA 1	Total workforce by employment type, employment contract, and region, broken down by gender.	x		x
			LA 2	Total number and rate of new employee hires and employee turnover by age group, gender, and region.	x		x
			LA 3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation.	x		
		Labor/ Management Relations	LA 4	Percentage of employees covered by collective bargaining agreements.	x		x
			LA 5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.	x		
		Occupational Health and Safety	LA 7	Rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	x	x	
			LA 8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	x	x	
		Training and Education	LA 10	Average hours of training per year per employee, by gender, and by employee category.	x		
			LA 12	Percentage of employees receiving regular performance and career development reviews, by gender.	x		
		Diversity and Equal Opportunity	LA 13	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	x		x
		Equal Remuneration for Women and Men	LA 14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.	x		x

Domain	Subdomain	Title (Aspect GRI)	No. GRI	Description GRI	SOC	ENVI	CG
SOCIAL INDICATORS	Human Rights	Investment and Procurement Practices	HR 1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening.	x		
			HR 2	Percentage of significant suppliers, contractors, and other business partners that have undergone human rights screening, and actions taken.	x		
			HR 3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	x		
		Non-discrimination	HR 4	Total number of incidents of discrimination and corrective actions taken.	x		x
		Freedom of Association and Collective Bargaining	HR 5	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.	x		x
		Child Labor	HR 6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.	x		
		Forced and Compulsory Labor	HR 7	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor.	x		
		Security Practices	HR 8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.	x		
		Indigenous Rights	HR 9	Total number of incidents of violations involving rights of indigenous people and actions taken.	x	x	

[Source: Owen work, GRI[2], (Chvátalová, Šimberová, 2012)]

II: *List of Selected ENVIRONMENTAL Indicators*

Domain	Title (Aspect GRI)	No. GRI	Description GRI	SOC	ENVI	CG
ENVIRONMENTAL INDICATORS	Materials	EN 1	Materials used by weight or volume.		x	
		EN 2	Percentage of materials used that are recycled input materials.		x	
	Energy	EN 3	Direct energy consumption by primary energy source.		x	
		EN 4	Indirect energy consumption by primary source.	x	x	x
		EN 5	Energy saved due to conservation and efficiency improvements.	x	x	x
		EN 7	Initiatives to reduce indirect energy consumption and reductions achieved.	x	x	
	Water	EN 8	Total water withdrawal by source.		x	
		EN 10	Percentage and total volume of water recycled and reused		x	
	Biodiversity	EN 11a	Biodiversity.	x	x	
	Emission, Effluents, and Waste	EN 16	Total direct and indirect greenhouse gas emissions by weight.		x	x
		EN 20	NOx, SOx, and other significant air emissions by type and weight.	x	x	x
		EN 21	Total water discharge by quality and destination.	x	x	x
		EN 22	Total weight of waste by type and disposal method.		x	
		EN 22a	Total weight of hazardous wastes.		x	
	Products and Services	EN 27	Percentage of products sold and their packaging materials that are reclaimed by category.		x	
	Compliance	EN 28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.		x	x
	Overall	EN 30	Total environmental protection expenditures and investments by type.		x	x

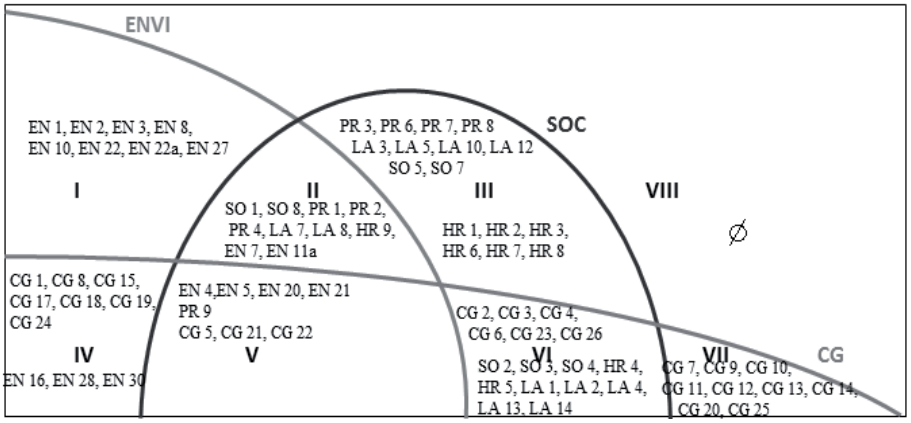
[Source: Owen work, GRI[2], project support materials]

2 https://www.globalreporting.org/Pages/default.aspx

III: *List of Selected CG Indicators*

Domain	Title	No. Own	Description	SOC	ENVI	CG
CG INDICATORS	Management	CG 1	Frequency of the executive body sessions.		x	x
	Ownership concentration	CG 2	Concentration of owners – right to vote per models.	x		x
		CG 3	Percentage distribution of the ownership per various categories of the investors.	x		x
	Members of the board	CG 4	Number of members from the point of the professional competences.	x		x
		CG 5	Percentage representation from the point of the international representation.	x	x	x
		CG 6	Percentage representation of the members from the point of both sexes.	x		x
	Stakeholder effective ness	CG 7	Percentage representation of the independent members.			x
		CG 8	Separation of the posts CEO/chairman.		x	x
		CG 9	Independency of the board members and audit bodies.			x
		CG 10	Duration of the membership in the board.			x
		CG 11	Remuneration of the board –stimuli.			x
		CG 12	Remuneration of the board – quantity of bonuses.			x
		CG 13	Remuneration of the board – offer (purchase, sale of shares).			x
		CG 14	Remuneration of the board – quantity of shares versus salary.			x
		CG 15	Remuneration of the board – long term and short term obstacles.		x	x
		CG 16	Percentage of women in the board.			x
		CG 17	Signs of the risk management and policy implementation - division of competencies for the risk management.		x	x
	Stakeholder engagement	CG 18	Frequency of the involvement of the stakeholders		x	x
		CG 19	Existence of the mechanisms of the involvement of the stakeholders.		x	x
		CG 20	Methods of the responses to the feedback from the stakeholders.			x
	Conduct, litigation risk corruption	CG 21	Records on the breaching of the regulations and extra costs.	x	x	x
		CG 22	Corruption in comparison to the percentage of revenues in the region.	x	x	x
		CG 23	Corruption - number of the analyzed business units.	x		x
		CG 24	Total sum spent on the correction, penalties, expenses and putting out of operation.		x	x
		CG 25	Payments to the state and the total value of the financial and subsistence contributions to the political parties, politicians and allied institutions.			x
		CG 26	Right of vote equality.	x		x

[Source: Owen work, (Chvátalová, Šimberová, 2012), project support materials]



1: *Venn diagram for ESG indicators [Source: Owen work]*

SUMMARY

The economic performance of a state is closely linked to the economic corporate performance which must be evaluated in conjunction with the effects of environmental, social and corporate governance (ESG) indicators. This is particularly important for company top management and investors. The authors of this paper follow their previously published results (Chvátalová, Šimberová, 2012), and consider selected actual results of currently processed project '*Construction of Methods for Multifactorial Assessment of Company Complex Performance in Selected Sectors*' (Reg. No. P403/11/2085). The choice of sets of appropriate indicators (so that the method of measuring the performance was not extremely difficult, but sufficiently informative and harmonised) is essential. Increasingly complex conditions require understandable search performance appraisal forms. Therefore authors are looking for links between environmental, social and corporate governance indicators, namely for the elimination of possibilities of any double or even triple indicator effects. The used methodology is mainly based on studies of theoretical sources in corresponding areas, expert analyses of indicator databases, field observation, comparison analysis for determination analogical effects, synthesis, set theory and mathematical logic (Venn diagrams), etc. In the conclusion, the authors suggest the possibility of further analysis and improvement for the next high-quality operations with the set of selected indicators.

Acknowledgement

This paper is supported by the Czech Science Foundation. Name of the Project: Construction of Methods for Multifactor Assessment of Company Complex Performance in Selected Sectors. Reg. No. P403/11/2085.

REFERENCES

GARZ, H., SCHNELLA, F., FRANK, R., 2010: KPIs for ESG. A Guideline for the Integration of ESG into Financial Analysis and Corporate Validation. Version 3.0, Frankfurt, DVFA/ EFFAS, Cited from http://www.dvfa.de/files/ die_dvfa/ kommissionen/non_financials/ application/pdf/KPIs_ESG_FINAL.pdfGreenburyRecommendations [online]. Greenbury Committee, 1995 [cit. 2012-02-10]. Cited from http://www.kgsepg.com/ project-id/3391-recommendations-greenbury-committee.

ČÍŽEK, T., 2010: Zeman: Z krize nás vyvedou investice, nikoliv spotřeba (16.3.2010). *Mediafax, Finance.* [cit. 2013-02-15]. Cited from http://zpravy.kurzy.cz/ 215639-zeman-z-krize-nas-vyvedou-investice-nikoliv-spotreba-16-3-2010/.

HŘEBÍČEK, J., POPELKA, O., ŠTENCL, M., TRENZ, O., 2012: Corporate performance indicators for agriculture and food processing sector. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 60, 4: 121–132. ISSN 1211-8516.

HŘEBÍČEK, J., SOUKOPOVÁ, J., ŠTENCL, M., TRENZ, O., 2011: Corporate Key Performance Indicators for Environmental Management and Reporting. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 59, 2: 99–108. ISSN 1211-8516.

HŘEBÍČEK, J., SOUKOPOVÁ, J., ŠTENCL, M., TRENZ, O., 2011a: Integration of Economic, Environmental, Social and Corporate Governance Performance and Reporting in Enterprises. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 59, 7: 157–166. ISSN 1211-8516.

CHVÁTALOVÁ, Z. HŘEBÍČEK, J., 2012: Modelling of Economic Phenomena and Dependences for Corporate Sustainable Performance. In: *Proceedings of 30th International Conference Mathematical Methods in Economics*. Karviná: Silesian University, School of Business Administration. Karviná: Slezská univerzita Karviná, p. 350–354. ISBN 978-80-7248-779-0.

CHVÁTALOVÁ, Z., KOCMANOVÁ, A., DOČEKALOVÁ, M., 2011: Corporate Sustainability Reporting and Measuring Corporate Performance. In*: Environmental Software Systems. Frameworks of eEnvironment. 9th IFIP WG 5.11 International Symposium. ISESS 2011*. Heidelberg: Springer, p. 398–406. ISBN 978-3-642-22284-9.

CHVÁTALOVÁ, Z., ŠIMBEROVÁ, I., 2012: Analysis and Identification of Joint Performance Measurement Indicators: Social and Corporate Governance Issues. *Acta Univ. Agric. et Silvic. Mendel. Brun.*, 60, 7: 127–138. ISSN 1211-8516.

KLÍMKOVÁ, M., HORNUNGOVÁ, J., 2012: *Problematika sociálních indikátorů v rámci činnosti malých a středních podniků*. In: *Aktuálné problémy podnikovej sféry.* Bratislava: EKONÓM, s. 215–220. ISBN 978-80-7454-013-4.

Project '*Construction of a complex multi-methods evaluation of performance in selected sectors*' (Czech Science Foundation, Reg. No. P403/11/2085), 2010. *Faculty of Business and Management BUT.* [cit. 2013-02-09]. Cited from http://www.fbm.vutbr.cz/gacr/.

ŠIMBEROVÁ, I., KOCMANOVÁ, A., NĚMEČEK, P., 2012: Corporate Governance Performance Measurment – Key Performance I. *Economics and management,* 17, 4: 1585–1593. ISSN 1822-6515.

ZEMAN, M., 2012: Návrhové teze programu SPOZ od Miloše Zemana. Ekonomická reforma – preference investic před spotřebou (2012). *Zemanovci jsou tady pro Znojmo.* [cit.2013-02-15]. Cited from http://www.zemanovciznojmo.cz /index.php/aktuality/ 217-navrhove-teze-programu-spoz-od-miloe-zemana.

Address

RNDr. Zuzana Chvátalová, Ph.D., Institute of Informatics, ass. prof. PhDr. Iveta Šimberová, Ph.D., Institute of Management, Faculty of Business and Management, Brno University of Technology, Kolejní 2906/4, 612 00 Brno, Czech Republic, e-mail: chvatalova@fbm.vutbr.cz; simberova@fbm.vutbr.cz