

Modelling of Corporate Governance Performance Indicators

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crossref <http://dx.doi.org/10.5755/j01.ee.23.5.2865>

This article is focused on modelling of performance indicators for corporate governance, which are designed to measure the performance of a company along with environmental and social (ESG) indicators. The ESG indicators thus become important performance benchmarks for investors in the European Union and other parts of the world. Performance indicators in the Czech manufacturing industry were researched in Project No. P403/11/2085 "Construction of Methods for Multi-Factorial Assessment of Company Complex Performance in Selected Sectors" at the Faculty of Business and Management, Brno University of Technology (BUT FBM), funded by Grant Agency of the Czech Republic (GACR). The article intends to propose performance indicators of corporate governance suitable for companies in manufacturing industries per CZ-NACE. These performance indicators of corporate governance are the result of an extensive review and a theoretical assessment of numerous literary sources, various materials of international organizations (such as GRI, UNCTAD, IFAC, IFRS, EFFAS-DVFA, CFA), OECD Principles of Corporate Governance, and EU Green Paper, the essence of which was incorporated into the questionnaires used in the survey. Seventy-nine companies were selected from the compiled data base and personally contacted. These were legal enterprises with more than 250 employees by the EU criteria. Selection of significant indicators proceeded from the inlet database, analysed and verified by cluster analysis. The objective of cluster analysis working with all initial input indicators, obtained by the analysis of available expert sources and empirical research, was the identification of particularities of variables, having any impact on the results of other methods of subsequent research stages. Selection of significant indicators for reviewed industry from the input database was the aim. The purpose was not to substitute identified database, but to establish an alternative file of appropriate variables. The objective of further data processing was the reduction of original broad file of indicators, namely by expert analysis and subsequent decision made by the team of authors, representing the input for subsequent application of multi-dimensional statistical method. The factor analysis yielded four categories of corporate governance measurement areas: 1) Monitoring and Reporting 2) CG Effectiveness 3) CG Structure 4) Compliance. The company itself should select its key Corporate Governance indicators on the basis of their significance and from the point of its strategy. These performance indicators should facilitate the companies to prove the progress towards sustainability objectives and to guarantee their environmental, social and economic impact coverage. The application of key performance indicators in a particular organizational context can be demanding. The understanding of their application and most appropriate implementation into the internal management shall be necessary prior to company's decision regarding the measures of key performance indicators.

Keywords: *corporate governance, indicators, performance, sustainability, multi-dimensional statistical methods.*

Introduction

To evaluate and compare the overall performance of individual companies, it is necessary to devise some parameters that would indicate, with sufficient clarity, how a given company performs in the areas of environment, social relations, and corporate governance. Devising a reliable method of quantifying that performance, considering the variety of factors that bear on the subject, is essential for the stakeholders' decision-making process and for the corporate management as well. The ESG indicators require a definition of some fundamental performance parameters.

Indicator of the environmental performance of the company (indicator of the impact of the company's activities on the environment) is understood as specific statement, which allows measuring the environmental performance of the company e.g. (Hrebicek *et al.*, 2011) or (Urban & Govender, 2012). The social performance of a company is an important component of the company

performance also in the framework of ESG performance indicators. The trend, which emphasises the social aspects, is the concept of Corporate Social Responsibility (Aupperle *et al.*, 1985) or (Carroll & Ubius, 1999)

Partial results of this research into performance indicators in the areas of social relations, environment, and corporate governance are being published in a series of articles (Kocmanova & Nemecek, 2009), (Kocmanova *et al.*, 2011), (Kocmanova & Docekalova, 2012) or (Kocmanova *et al.*, 2012).

This article intends to propose the best way how to choose performance indicators of corporate governance at a company level that would make the investors' decision-making easier. The selected CG indicators are part of the ESG performance indicators and the proposed methodology is well illustrated by an example of CG performance indicators. These indicators utilize both financial and non-financial parameters.

An empirical analysis enables to formulate some CG performance indicators that are part of the ESG indicators. The key performance indicators are defined for companies in manufacturing sectors per CZ-NACE, using statistical methods. To determine these indicators of corporate governance, the rules and principles of CG in certain companies were analysed in light of the OECD Principles of Corporate Governance 2004, the EU Green Paper, IFAC, and GRI. An assessment of performance in corporate governance by quantitative and qualitative measures requires information about the company's impact on the society in which it exists.

Corporate Governance: The Conceptual Framework

An important contribution in the study of corporate governance is the work of Berle & Means (1933), who analysed the impact of corporations and their managers on the entire company. Mizuchi (2004) said the following about this work: "In their book, the authors warn against the concentration of economic power of the emerging class of powerful professional managers who are isolated and protected against pressures from the shareholders, but also from the society as a whole. Monks & Minow (1991) in turn focused on the structure and role of Boards of Directors and corporate supervisory boards.

Keasley *et al.*, (1997) defined CG as a complex of structures, processes, cultures and systems which stimulate a successful progress of the company. New trends in corporate governance can be seen, according to Kay & Silberston (1999), in a single common goal, which is to give the executive management the greatest possible freedom to develop long-term business in any way that seems appropriate once they will have exactly specified the responsibilities to all stakeholders involved in this business for their long-term performance. Herewith the hostile takeovers of companies will become really impossible; when the ownership of a majority of shares will not imply any rights for the appointment of executive management.

The relationship between the quality of management and success of the company has been, and still is, a hotly debated topic (Kakabatse *et al.*, 2001). Extensive surveys of British and American companies conducted in the late 1990s show that the relationship between the quality of corporate governance and its financial performance is neither clear-cut nor systematic (Kakabatse, 2001). However, a lot of new evidence has surfaced, documenting the fact that linkage between the quality of corporate governance and performance indicators actually exists (Bradley, 2004). The hypothesis of positive correlation between the quality of governance and the success of a business as evidenced by a rising value for the shareholders has been confirmed by a number of empirical analyses (Maly *et al.*, 2002). A new service for investors and companies called Corporate Governance Scores (CGS) has been introduced in 2001. CGS reflects the perception of the company's practices and management policies by Standard and Poor rating agency. This assessment can be done either publicly or confidentially, and it includes an analysis of both public and non-public information, and having working discussions with the CEO and other top

managers of a given company. In the end, the assessment is expressed on a CGS scale of 1-10 (lowest to highest) (Hucka *et al.*, 2007).

A study of corporate governance in 14 emerging markets found that corporate governance varies widely within the sample and that a typical level of corporate governance is lower in the countries with a weak legal system (La Porta *et al.*, 2000). Based on this research, they claim that the state of shareholders' rights and judicial efficiency in a country have a bearing on the company value. In this paper, we explore the differences in the mechanisms of corporate governance, their relationship to the country's legal climate, and the correlation between governance and performance. They concluded that (1) companies in countries with a generally weak legal systems have a lower average governance ratings (2) corporate governance correlates with the variables linked to the extent of asymmetric information and contracting imperfections facing the company, which we relate to company size, sales growth (a measure of growth opportunities), and intangibility of assets (3) companies whose shares trade in the US have a higher governance ratings.

According to Gompers *et al.*, (2003), the power sharing relationship between investors and managers is defined by the rules of corporate governance. Using the listing of 24 governance rules, they constructed a "Governance Index" reflecting the level of shareholders' rights in about 1500 large firms during the 1990s. They analysed the empirical relationship of this index with corporate performance and concluded that corporate governance correlates strongly with stock returns during the 1990s. The companies with stronger shareholder rights had a higher value, higher profits, and higher growth in sales, lower capital expenditures, and made fewer corporate acquisitions. If the 11.4 % point difference in company value was even partially "caused" by each additional governance provision, then the long-term benefits of eliminating multiple provisions would be enormous.

Governance for sustainability presents a difficult but unavoidable challenge. Kemp *et al.*, (2005) note that no broad transition can be accomplished quickly or easily, and that the human record in consciously designed, directed transitions is not good. If a transition to sustainability is to be successful, it must be pursued with as much humility as commitment, as much diversity as direction, and as much creative experimentation as resolute protection. Necessarily, much will depend on the credibility of the decision makers and the decision-making process. Governance for sustainability demands the involvement of many different players.

Corporate governance students Baker & Anderson (2010) examined the ways in which corporations are led, administered and controlled. Corporate governance also addresses the relations among the different internal and external stakeholders as well as the processes of corporate governance that are designed to help the corporations to achieve their objectives. Attention is paid to mechanisms and provisions intended to minimize or eliminate the problem of conflict of interest.

Deakin (2012) said that corporate governance is about the way how companies are directed and controlled. Good governance is an essential ingredient of corporate

success and sustainable economic growth. Research into governance involves an interdisciplinary analysis with emphasis on law and economics, and a good understanding of modern business practices that comes from detailed empirical studies of diverse national systems.

Corporate governance is the key element in improving economic efficiency and growth, as well as enhancing investors' confidence. Corporate governance involves a set of relationships between the company's management, its board of directors, its shareholders, and its stakeholders. Corporate governance constitutes a structure through which the company sets the objectives, identifies the means of attaining them, and establishes the performance monitoring. Due to cultural differences, the term corporate governance and its content vary from country to country. While different economies may define corporate monitoring differently, the underlying concept is universal: This is the mechanisms by which corporate managers are held accountable for corporate management and performance, and the mechanism by which business is organized, directed, and controlled (Krivogorsky & Dick, 2011).

Businesses are now cognizant of the fact that investors take into account if the company is aware of major environmental concerns, if and how it impacts the environment, and if it is environmentally effective (Bansal, 2005); Sharma & Henriques, (2005), that is to say the extent to which the company's economic activity is environmentally sustainable (Hart, 1995). A few studies have recently explored the influence of corporate governance mechanisms on the environmental performance of businesses (Berrone & Gomez-Meji, 2009) or (Russo & Harrison, 2005). These studies have analysed the way how some corporate governance mechanisms resolve the divergence of interests between the company owners (principals) and the managers (agents) with regard to environmental practices.

A theoretical perspective of stakeholder-agency allowing to explore the impact of particular corporate governance mechanisms on the company's environmental performance is the subject of an empirical research by Kock *et al.*, (2011) starting with the work of Hill & Jones, (1992), who speak of a stakeholder-agency paradigm in which the managers can be seen as the agents of various stakeholders. The results of this research indicate that the corporate governance mechanisms employed affect the company's environmental performance by increasing the managers sensitivity towards the stakeholders' environmental preferences. More specifically, the empirical evidence shows that companies that have a greater exposure to the market for corporate control also have a lower protection from the regulatory system, better market-based CEO compensation, greater representation of pro-stakeholders directors in their boards, and a superior level of environmental performance. This evidence is consistent with the theoretical logic we embrace in this study, which suggests that the divergence between the stakeholders and the managers' environmental interests is affected by the presence and nature of both internal and external mechanisms of governance.

The existence of either positive or negative correlation between the corporate governance and corporate social

responsibility (CSR), contingent on satisfaction with the company's performance, was studied by (Arora & Dharwadkar, 2011). The previous research has come under increasing criticism for combining the positive and the negative dimensions of CSR. The results indicate that effective governance has a symmetric effect on CSR in that both positive and negative CSR are thereby reduced. Secondly, our results also suggest that a greater slack and a positive attainment discrepancy lead to a higher positive CSR, and a lower negative CSR. Finally we find that the associations between effective governance and positive or negative CSR depends on the level of slack and the positive attainment discrepancy. That means the impact of governance on positive CSR is more pronounced under low slack conditions and the impact on negative CSR is more pronounced under high slack conditions. To measure the administration and management of a specific company is fairly problematic since subjective judgment may interfere with the evaluation. Nevertheless, there are certain methods to measure objectively the quality of individual companies, sectors, or countries (Ciemleja & Lace, 2011).

The dimensions that lead to the deeper analysis of relations between performance measurement system and environment of organization are very important for today organizations. According to this aspect, it could be stated that performance measurement system (PMS) which covers financial and non financial measurement and fits with environment of organization should be critical for today's organizations and need deeper and continue researches (Gimzauskiene & Kloviene, 2011).

Measuring the effectiveness of corporate governance, Arguden (2010) says that the essence of good corporate governance is ensuring that trustworthy relations exist between the corporation and its stakeholders. Obviously, good governance involves a lot more than compliance. Good corporate governance is a culture and a climate of Consistency, Responsibility, Accountability, Fairness, Transparency, and Effectiveness that is Deployed throughout the organization (the 'CRAFTED' principle of governance). Corporate governance is important in attaining a certain style and sophistication in managing a company. The adoption of internationally accepted principles of corporate governance facilitates the company's communication with foreign partners, be it in the daily business or during mergers and acquisitions, and inspires efforts to improve the corporate culture. Another benefit for the stakeholders is an increased transparency of the corporate management. The degree of respect for the principles of corporate governance tends to be an important consideration for the investors. The execution of corporate governance is a question of risk, or more precisely the leadership risk. We look for the following things in a company: governance structure and processes; profiles and competencies; culture, behaviour, and team dynamics.

Research Methodology

Sustainability is very closely associated with CG, which effectively changes the company and its culture. The corporate sustainability features three important dimensions: environmental responsibility, social responsibility, and

economic growth. However, the social and the environmental responsibilities cannot stand apart from the economic growth and the corporate governance. Defining sustainability relates to the concept of strategy called "strategy of sustainable development" by some authors (Hart, 1995; Shrivastava, 1995) or (Stead & Stead, 1995). Sustainability is therefore a strategic approach that strives for effectiveness, efficiency, company productivity, value creation for owners, competitiveness all with the environmental, economic, and social dimensions.

The methodology used in this study involves a combination of descriptive and multi-dimensional statistical methods. The evaluation of sustainable effectiveness of the company relies on the indicators defined in Global Reporting Initiative (2011), UN Global Compact, OECD, UNCTAD, CFA Institute, EFFAS-DVFA, IFAC, WBCSD, UNEP FI, Corporate EEA, EUROSTAT, CZO, ILO, and other sources. The determination of performance indicators for corporate governance was based on empirical analysis from the Cadbury (1992), Codex of Corporate Governance OECD (2004) and Czech Republic (2004), Green Paper, the EU Corporate Governance Framework (2011), International Federation of Accountants (2012) in Table 1 and from other sources that were analysed by CA, CFA Institute, ASSET4 ESG, FEE and EFFAS-DVFA, including the theory analysis (Schaltegger & Wagner, 2006), (Bassen & Kovacs, 2008) or (Perrini & Tencati, 2006).

Table 1

Comparison of OECD Principles of Corporate Governance 2004, Green Paper - EU Corporate Governance Framework 2011, and IFAC 2011

OECD Principles of Corporate Governance 2004	"Green Paper" EU	IFAC
Management	Board composition	Board effectiveness LA13 in GRI
The Rights of Shareholders and Key Ownership Functions	Availability and time commitment	
	Board evaluation	
The Equitable Treatment of Shareholders	Directors remuneration	
The Role of Stakeholders in Corporate Governance	Risk management	
Disclosure and Transparency	Lack of appropriate shareholder engagement	Stakeholder engagement
The Responsibilities of the Board	Short-termism of capital markets	Conduct, litigation risks, corruption SO2, SO4, SO6 in GRI
	Other possible obstacles to engagement by institutional investors	
	Shareholder identification	
	Monitoring	

The Sustainability Performance Management, per Schaltegger & Wagner, (2006), emphasizes the economic, environmental and social aspects of managing the company. At present, the strategy of sustainability

encompasses a broad approach related to environmental, social, and economic integration, including the practice of corporate governance. Shrivastava & Berger, (2010) surveyed the sustainability principles within the context of evolving literature about sustainable development. It describes their purpose and content, the rationale for their creation, and who adopts them. Such principles are needed to cover additional areas. For example, in the world moving toward information and knowledge-oriented economies, the areas where the principles are needed include office work, information processing, communication technologies, service industries, and the government sector. It is necessary to understand what economic, social, ecological, and political theories or values can make such principles appealing and compelling to organizations and their stakeholders. We must measure the impact of these principles on company performance.

Bartkus & Grunda, (2011) were engaged in modelling the business sustainability assessment requiring data, which can be gathered from various information sources. The model of business sustainability evaluation, used in most studies, is based on the idea, that companies have impact in the environment. Business impacts in the model are grouped into three groups: positive, negative and situational. To ensure the possibility to compare the results of two studies, both of them were executed using the same methodology.

Empirical Analysis of Corporate Governance

The empirical analysis is mainly anchored in the international standards of corporate governance, which were implemented at the national level via Codex of Corporate Governance. In the Czech Republic, the Codex of Corporate Governance, based on the principles of OECD, was first published in 2001, then in 2004. The main principles espoused by the Codex are: *Directors personal responsibility; transparency of the Board of Directors actions; management's accountability to its shareholders, to the public, and to the government.*

The process of modelling CG indicators involved several stages. The empirical analysis focused on the determination of key performance indicators for CG in manufacturing industries CZ-NACE. Another condition was indicator availability.

The research relied on descriptive statistical methods in the area of quantitative research as well as multi-dimensional statistical methods in the qualitative research area, particularly the factor analysis using Principal Components Analysis (PCA). All calculations were analysed in the SPSS program for Windows, version 20. A synthesis of the individual factors resulting from the empirical analysis enabled to identify the key indicators of CG performance, which should be part of the ESG indicators.

The empirical analysis was done via a questionnaire-based survey. A questionnaire entitled "*COMPANY PERFORMANCE: THE ENVIRONMENTAL, SOCIAL, AND ECONOMIC GOVERNANCE*" was based on a theoretical knowledge of international sources, on defining the problem under consideration, and on specific objectives, so that the responses could meaningfully

contribute to the determination of CG performance indicators in manufacturing industries per CZ-NACE.

Seventy-nine companies were selected from the compiled data base and personally contacted. These were legal enterprises with more than 250 employees by the EU criteria, i.e. electrical engineering and manufacturing, engineering, medical products: 31 companies (38.5 %), electricity, gas, water and waste processing: 12 companies (15.4 %), foundry production: 11 companies (14.1 %), textile and leather manufacturing: 9 companies (11.5 %), chemical manufacturing: 8 companies (10.3 %), food processing: 8 companies (10.3 %). The manufacturing companies were carefully selected with regard to data compatibility and a large presence in the environmental, social, and economic arenas.

As for the management tools popular in manufacturing industries, ISO 9000 standard is used in 89.9 % of companies, followed by ISO 14000 standard in 55.7 % of companies, and CSR in 25.3 % of companies. However, it has been introduced only in one half of the total number of companies, and the same applies to the OHSAS 18 000 at 48.1 % and MRP at 48.1 %. Other voluntary management programs are considered less significant. From the ownership perspective of all 79 companies, 44 (55.7 %) had exclusively domestic ownership, the remaining 35 (44.3 %) were split between the branches of supra-national corporations and companies with a foreign investor.

The respondents answered on a five-point Likert-type scale: 1 = no, 2 = definitely no, 3 = definitely yes, 4 = yes, 5 = I do not know. The survey indicated that 70 % of CG members in the Czech Republic are active in top management.

Cluster Analysis of Corporate Governance Indicators

The second phase of the research analysed 20 corporate governance indicators using cluster analysis regardless of the outcome of the previous statistical check. The intent was to identify the similarities among the variables, and possibly some separate and dissimilar values, which, in a comprehensive assessment, could bring specific information (Andel & Hebak, 1987).

The cluster analysis relied on the Ward method, which is based on the least sum of squares of distances. Distance between the variables was represented by the Euclidean distance (Meloun & Militky, 2006).

$$d(X_1(i), X_1(j)) = \sqrt{\sum_{k=1}^p (x_{ik} - x_{jk})^2} \quad (1)$$

where x_{ik} is the value of the k-th observation on the i-th element, and x_{jk} the value of the k-th observation on the j-th element. The cluster analysis utilized standardized values.

The analysis was performed on 54 observations (68.4% of the sample), since 25 observations (31.6%) had missing values at one or more variables. The clusters were formed using the Ward method on analysed variables. A dendrogram shows the process of successive clustering in Figure 1.

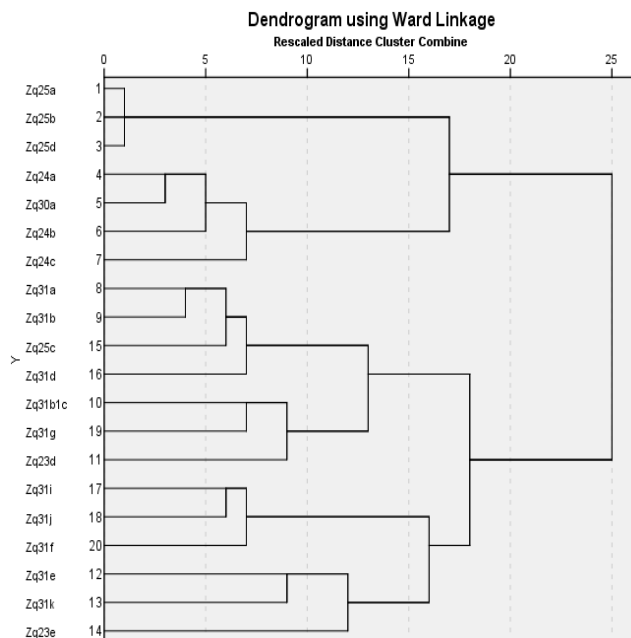


Figure 1. Results of Cluster Analysis for Indicators of Corporate Governance as Variables (A Ward Method Dendrogram)

The analysis by the Ward method yielded 4 clusters, each of them containing some greatly similar indicators of corporate governance.

Cluster I contains indicators 25a. Information about the company goals, 25b. Information about financial results, 25d. Verification activities information.

Cluster II contains indicators 24c. Reporting activities in a certain area, 24a. Defence of activities, 24b.

Submitting a collective report, 30a. Ethical conduct, indicators *Cluster III* contains indicators 25c. Information about ownership changes, 31d. Shareholders' rights, 31a. CG structure, 31b. CG and top management (representation), 31b1c. Remuneration CG, 23d. Management Reporting, 31g. Equal opportunity: women-to-men ratio in CG. *Cluster IV* contains indicators 23e. Appointment of top management, 31e. Vision and strategy, 31k. Effectiveness of governance (Board of Directors), 31j. Conflict of interest, 31f. Corruption, indicator, 31i. Court decision was excluded from the database because of a 44 % variability.

The cluster analysis resulted in the selection of 9 CG indicators for companies in manufacturing industries.

Results and Discussion

The next phase of the research using factor analysis builds on the results of descriptive statistic and cluster analysis and involves a reduced set of indicators. The intent was to remove those variables that bring similar information to the solution as an additional variable or a group of variables from the monitored set. The indicators were evaluated by correlation analysis. The correlation coefficient value, which can be calculated for any pair of variables, lies in the range of -1, + 1 and testifies, among other things, to the strength of linear relationship between the two variables. The correlations were assessed on the basis of classification per (De Vaus, 2002). The correlation matrix contains 19 variables, see Attachment 1.

The correlations vary from - 0.03 (between 31f and 24a) to 0.76 (between 25b and 25a). Very strong mutual correlations exist among the following groups of variables: (24b, 24 c, 24a, 25d, 30a) (25b, 25a, 25d) (25d, 25b) (25d, 25c) (30a, 24a) (31d, 31b).

Indicator 31e (Vision and strategy) was excluded from the monitored set of 19 indicators due to low correlation, so that only 18 items entered the analysis.

The value of KMO = 0.642 for factor analysis appears to be average and suggests that using factor analysis for these items is questionable. Bartlett's Test of Sphericity: Approx. Chi-Square = 407.190, assumes the value of df = 153, Sig. = 0.000. This means that the hypothesis of the selective correlation matrix for the 18 studied variables being a unity matrix is rejected at an asymptotic significance level of 0.05. The factors were extracted with the aid of Principal Components Analysis method (PCA). The rotation was done with the Varimax method. Deciding on the number of factors is based on a theoretical basis. Four factors were elected on the basis of previous statistical analyses. The result of the analysis is a rotated factor loading matrix that allows the identified factors to be interpreted. An optimal situation occurs when all methods of factor extraction lead to the same rotated matrix. The Varimax orthogonal rotation yielded four factors explaining 58.086 % of variance. The CG factor analysis is summarized in Table 2.

The first factor is characterized by highly loaded variables: Verification activities information (0.793), Information about the company goals (0.761), Information about ownership changes (0.758), and Information about financial results (0.745). After the rotation, the first factor

receives 4.454 of the total dispersion (this equals 18, i.e. the number of variables) which is 24.74 % of the total variability for this set of variables. This factor may be called "*Monitoring and Reporting*".

Table 2

Rotated Solution of Factor Analysis for Performance Indicators of Corporate Governance

Rotated Component Matrix ^a				
Variable	Component			
	Monitoring and reporting	Effectiveness of CG	Structure of CG	Compliance
25d	0.793	0.323		
25a	0.761			
25c	0.758			
25b	0.745	0.310		
31a	0.519		0.459	
24a	0.315	0.822		
24b		0.743		
24c		0.646	0.312	
30a		0.627		
23e	- 0.340	0.396		
31b1c			0.798	
31b	0.472		0.535	0.373
23d			0.513	
31g			0.498	
31d	0.431		0.473	
31i				0.842
31f				0.708
31j				0.610
Eigen values	4.454	3.867	3.588	2.533
% of Variance	24,74	21,48	19,93	14,07
Cronbach's Alpha %	74.10	74.90	65.80	59.90

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
(Bold are burdens greater than 0.4)

A second factor explains 21.48 % of the total variability of the set of variables. High loads are achieved with the following variables: Defence of activities (0.822), Submitting a collective report (0.743), present a Reporting activities in a certain area (0.646), and Ethical conduct (0.627). This factor may be called "*CG Effectiveness*".

Other factors include "*CG Structure*" which explains 19.93 % of the total variability of this set of variables; a higher value of the factor characterizes "CG remuneration" (0.798), a lower proportion of CG and top management (representation), equal opportunities: the ratio of women/men in CG. Somewhat problematic seems to be the variable Management reporting, and Shareholders' rights. These variables should tend to correlate with factor CG Effectiveness rather than with the factor related to the CG structure. Apparently, the question regarding the variables should be formulated differently.

Factor "*Compliance*" explains 14.7 % of the total variability of the set of variables. Higher values of the factor scores are associated with Court decision (0.842), Corruption (0.708), and Conflict of interest (0.610).

In evaluating performance via CG indicators, it is necessary to monitor a number of indicators and analyse them from the managerial aspects. These aspects of both financial and non-financial indicators constitute an extensive data base. The factor analysis in Table 2 was therefore applied with the intent of reducing the data and

simplifying the large number of indicators, which are interrelated and grouped into factors. A rotated solution of the factor analysis of CG performance indicators was applied to get factors that are reliable (meeting the criteria for statistical relevance). The factor analysis includes 4 primary measurement areas: G1 - Monitoring and Reporting, G2 - CG Effectiveness, G3 - CG Structure, and G4 - Compliance. The factors thus selected, which had been identified by empirical research, constitute four indicators: monitoring, effectiveness, structure, and compliance that agree with international CG indicator-defining sources IFAC, EU Green Paper, and EFFAS-DVFA.

The methods of factor analysis in indicator research are used by OECD (2005, 2008) and have been used in the past by Ommani (2011), Hosseini *et al.*, (2011), Petrosyan (2010) in relationship to sustainability.

Multivariate data analysis techniques have been instrumental in the design or analysis of composite indicators. Further details may be found in literature (Hair *et al.*, 2006), (Nardo, *et al.*, 2006) or (Vermunt & Magidson, 2005).

This article describes the selection of key indicators for CG performance that can help companies demonstrate progress towards sustainability. The use of key indicators of CG performance in a specific corporate context can be demanding. Before deciding on the key indicators of CG performance, the company needs to understand how best to utilize them and incorporate them into the internal management, and how to promote integrated sustainable reporting. The evaluation and measurement of company's performance characterizes most successful companies.

The factor analysis established 8 Corporate Governance performance indicators for companies in the manufacturing industry, see Table 3.

Table 3

Determination of Key Indicators of Corporate Governance Performance by Factor Anal

Measurement Area	Corporate Governance Key Performance Indicators	
	Indicator	Measure and (Unit)
Monitoring and reporting	CG1 Information about the company.	Information about the objectives of the company Information on the financial results Information from control activities (Annual Reports, the accounts, internet pages, media). [occurrence]
Effectiveness of Corporate Governance	CG2 Responsibility Corporate Governance.	Profitability of the total capital from CF = CF *100/ Total capital. [CZK] Submit a collective report. [occurrence] Report on the activities in economic, environmental and social areas. [occurrence]
	CG3 Ethical behaviour.	Code of ethics. [occurrence] (Relations and responsibility towards a professional community, to staff, to clients, to investors).
Composition Corporate Governance	CG4 Remuneration Corporate Governance.	The total financial amount of the Board and the Supervisory Board remuneration *100 /Total labour costs. [CZK]
	CG5 Effective composition of Corporate Governance. LA 13 in GRI	The number of independent members CG * 100/ Number of members top management of the company. [%] (CG members are not members of top management there is no significant institutionalized interest of the link between the company)
	CG6 Equal opportunities: Ratio of women/men in Corporate Governance.	Perceptual representation of women and men to the total number of CG. [%]
Compliance	CG7 Corruption.	% of disputes.
	CG8 Observance of legal standard. SO 8 in GRI	Cash value of more significant fines and the total number of non-monetary penalties for non-compliance with laws and regulations. [CZK]

The proposed CG indicators are established for the overall evaluation of the ESG performance indicators. The indicators are selected so as to meet some basic requirements: *clarity, simplicity, actual verifiability of data for its determination, ability to express a complex problem, and representativeness.*

Conclusions

This article deals with the design of CG performance indicators for companies in the manufacturing sector per CZ-NACE. A review of literature implies an interest in measurable performance indicators that include environmental and social aspects.

The importance of CG indicators lies in the fact that they can portray the sustainable performance of a

company. CG indicators influence the company strategy. They can show how the company approaches a comprehensive performance evaluation, the management, the integrated reporting, sustainability, etc. The proposed indicators were chosen from a wide range of CG performance indicators, drawing on the available international sources. That was done by applying multi-dimensional statistical methods, particularly cluster analysis, correlation analysis and factor analysis.

The application of Principal Components Analysis (PCA) method found four common factors behind the nineteen monitored variables. The factors related to Monitoring and reporting, CG Effectiveness, and Compliance are very well defined by linear combinations of always three groups of variables, while the factors related to CG Structure are not so unequivocally defined

because of the Reporting management and Shareholders' rights variables. An appropriate solution to this problem appears to be an alternate formulation of this item.

CG performance indicators are an integral part of the ESG indicators, which include performance analyses in the area of environment, social responsibility, and corporate governance, possibly also the business risks and investor opportunities. The integration of ESG indicators is probably the best way to increase the market share of socially responsible investments. Matching the targets for non-financial indicators with the ultimate

financial goals of the company is bound to contribute significantly to better, and in the long run sustainable, performance while enhancing the corporate competitive position.

Acknowledgment

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. Registration No.P403/11/2085.

Correlation Matrix

Attachment 1

Pearson Correlation		23d	23e	24a	24b	24c	25a	25b	25c	25d	30a	31a	31b	31c	31d	31e	31f	31g	31i	31j	
23d	Management Reporting	1																			
23e	Appointment of top management	-0.06	1																		
24a	Defence of activities	0.30*	0.18	1																	
24b	Submitting a collective report	-0.01	0.16	0.60**	1																
24c	Reporting activities in a certain area	0.26*	0.04	0.51**	0.41**	1															
25a	Information about the company goals	-0.02	-0.12	0.38**	0.32*	0.15	1														
25b	Information about financial results	-0.03	-0.13	0.41**	0.29*	0.21	0.76**	1													
25c	Information about ownership changes	0.06	-0.18	0.35**	0.14	0.19	0.43**	0.39**	1												
25d	Verification activities information	0.09	-0.03	0.51**	0.40**	0.19	0.64**	0.66**	0.53**	1											
30a	Ethical conduct	0.24	0.02	0.61**	0.45**	0.39**	0.34*	0.29*	0.21	0.44**	1										
31a	Structure of Corporate Governance	0.32*	-0.16	0.38**	0.24	0.19	0.38**	0.28*	0.45**	0.35**	0.32*	1									
31b	Corporate Governance and top management (representation)	0.32*	-0.17	-0.05	-0.04	0.05	0.28*	0.08	0.45**	0.40**	0.13	0.45**	1								
31c	Remuneration Corporate Governance	0.20	-0.01	0.07	-0.05	0.17	0.29*	0.12	0.19	0.03	0.09	0.39**	0.29*	1							
31d	Shareholders' rights	0.11	0.05	0.12	0.17	0.19	0.31*	0.09	0.38**	0.38**	0.29*	0.38**	0.50**	0.26*	1						
31e	Vision and strategy	0.03	0.03	0.09	0.06	0.03	0.24	0.08	0.09	-0.01	0.21	0.08	0.07	0.01	0.32*	1					
31f	Corruption	0.20	-0.03	-0.03	-0.13	-0.06	0.02	-0.13	-0.05	0.07	0.17	0.06	0.34*	0.02	0.12	0.22	1				
31g	Equal opportunities: ratio of women/men in CG	0.15	0.03	0.15	0.05	0.18	0.32*	0.10	-0.07	0.08	0.23	0.18	0.14	0.36**	0.09	0.15	0.13	1			
31i	Court decision	0.14	-0.19	0.11	0.18	-0.07	0.02	0.01	0.04	0.28*	0.09	0.28*	0.20	-0.29*	0.02	-0.11	0.36**	0.12	1		
31j	Conflict of interest	0.09	0.08	0.14	0.19	0.14	0.19	0.09	0.06	0.17	0.12	0.11	0.25	0.14	0.13	0.05	0.35**	0.39**	0.39**	1	

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

c. Listwise N=55

Correlation coefficients greater than 0.5 are highlighted.

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Kolektyvinio valdymo veiklos rodiklių modeliavimas

Santrauka

Kolektyvinio valdymo veiklos pagrindo esmė ta, kad jis ne tik didina kompanijos gerovę, bet kartu didina ir jos atsakomybę. Atsiradus pasaulinėms rinkoms, investuotojų veikla didėja, todėl reikia aukštesnių atskaitomybės, veiklos ir įvykdymo standartų. Investuotojai vis dažniau ieško galimybių kompanijoms tarptautinėse rinkose. Tačiau kompanijos, bandančios uždirbti pinigų tarptautinėse kapitalo rinkose, dažnai sužino, kad kapitalas yra prieinamas tik tiems, kurie atitinka priimtus tarptautinius kolektyvinio valdymo ir informacijos paskelbimo standartus. Tai tik keletas priežasčių, kurios atskleidžia būtinybę tobulinti visuotinio kolektyvinio valdymo standartus. Kolektyvinis valdymas Čekijos respublikoje yra toks, kad kompanijos nenoriai priima kolektyvinio valdymo modelius, kuriuos rekomenduoja tarptautiniai standartai. Dėl šios priežasties dažnai jų konkurencingumas rinkoje yra mažesnis, lyginant su tarptautinėmis kompanijomis. Viena iš priežasčių, kodėl Čekijos respublikai nelabai sekasi konkurencingumą skatinti yra menka patirtis kolektyvinio valdymo srityje. Lyginant su išsivysčiusiomis vakarų šalimis, Čekijos respublika vis dar atsilieka priimdama ir taikydama tarptautinius standartus, taip pat keisdama savo požiūrį į jų naudingumą. Kolektyvinio valdymo tikslas iš esmės yra aiškus. Kolektyvinis valdymas suprantamas kaip pagrindinis elementas siekiant galutinio įvykdymo ir augimo, taip pat leidžiantis sustiprinti investuotojų pasitikėjimą. Finansinė krizė atskleidė kolektyvinio valdymo (CG – *Collective Governance*) trūkumus, kuriais remiantis, *Tarptautinė ekonominio bendradarbiavimo ir plėtros organizacija* (OECD - *Organisation for Economic Co-operation and Development*) pasiūlė keletą rekomendacijų. Viena iš šių rekomendacijų yra tobulinti esamų nacionalinių kolektyvinio valdymo kodų kontrolę ir vykdymą, t. y. atsiskaitymą. Šiuo metu diskusijos apie kolektyvinį valdymą daugiausiai yra nukreiptos į praktines problemas, įskaitant kolektyvinį sukčiavimą, piktnaudžiavimą valdžia ir socialinį neatsakingumą (Letza ir kt., 2004). Išsamaus tyrimo apie kolektyvinio valdymo problemas nėra. Paprastai tai būdavo tik skirtingų tyrimų rinkinys, kuriam trūko kolektyvinio ryšio. Remiantis profesionaliais moksliniais šaltiniais matyti, kad tyrimo rezultatai ir aplinkos reikalavimai dabar yra ypač svarbūs ne tik kalbant apie kompanijos veiklą, bet taip pat yra būtini, norint nustatyti kolektyvinio valdymo pagrindinius rodiklius (Kocmanová ir Němeček, 2009; Hřebíček ir kt., 2011; Kocmanová ir kt., 2011; Kocmanová ir Dočekalová 2012; Kocmanová, ir kt., 2012).

Kolektyvinio valdymo tyrimo rezultatai būtų viena iš pagrindinių ESG (plg. angl. *environmental and social*) įvykdymo rodiklių dalimi, kuri geriau atskleistų ir aplinkosaugos, socialines ir valdymo (kolektyvinio valdymo) temas, nagrinėjamas investuotojų. Tyrimo autorės tikslas, (Brno technologijos universitete, Verslo ir valdymo fakultete (BUT FBM) dirbančios su projektu Nr. P403/11/2085), sudaryti kompanijos kompleksinės veiklos pasirinktuose sektoriuose daugiaveiksnių įvertinimo metodą, (kurį finansuoja Čekijos respublikos dotacijų agentūra (GACR – *Grant Agency of the Czech Republic*)) ir nustatyti aktualiausias sritis bei pagrindinius veiklos rodiklius (KPIs – *key performance indicators*), skirtus ESG, kuriuos perduotų Čekijos respublikos gamybos sektoriaus korporacijos. Norint įvertinti ir palyginti veiklą kompanijose, reikia sudaryti tokius rodiklius, kurie tiksliai informuotų apie kompanijos aplinkosaugos, socialinę ir kolektyvinio valdymo veiklą. Nustatant šiuos rodiklius labai svarbu taikyti tikslią statistinę analizę, kuria remiantis galima būtų apibūdinti atskirai aplinkosaugos, socialinę ir kolektyvinio valdymo veiklas. Tyrimas turi įtraukti pagrindinius veiklos rodiklius (KPIs), kurie apibūdina pramonę pagal CZ-NACE. Pagrindiniai veiklos rodikliai turi atitikti pagrindinius kriterijus: našumas, aiškumas, rodiklio susekamumas, palyginamumas ir vienareikšmiškas interpretavimas. Pagrindinių veiklos rodiklių, pagrįstų siūloma metodika, apibūdinimas yra pavaizduotas kolektyvinio valdymo veiklos rodiklių pavyzdyje. Kolektyvinio valdymo rodiklių nustatymo pagrindą sudaro OECD (2004) ir Čekijos respublikos (2004) *Kolektyvinio valdymo* kodekso, ES *Kolektyvinio valdymo struktūros Žaliosios knygos* (2011) ir *Tarptautinės finansininkų federacijos* (2012) bei kitų dokumentų, kuriuos analizavo CA, CFA institutas, ASSET4 ESG, FEE ir EFFAS-DVFA, tarptautinių ir vietinių šaltinių empirinė analizė, įskaitant literatūros apžvalgą (Schaltegger ir Wagner 2006; Bassen ir Kovacs 2008; Garz ir kt., 2010; Perrini ir Tencati 2006; Nardo, Saisana ir Tarantola, 2006). Šio darbo tikslas – pateikti dabartinės kolektyvinio valdymo situacijos Čekijos respublikoje tyrimo rezultatus.

Tyrimo siekiama sumodeliuoti kolektyvinio valdymo veiklos rodiklių pasirinkimą kompanijos lygiu. Tai galėtų padėti priimančiam investuotojų sprendimui ir būti aplinkosaugos ir socialinių rodiklių dalimi. Ryšiai tarp kolektyvinio valdymo veiklos rodiklių buvo patikrinti atliekant anketinę apklausą 79 gamybinio sektoriaus kompanijose, Čekijos respublikoje (pagal CZ-NACE), kuriose yra daugiau kaip 250 darbuotojų. Duomenys buvo gauti atlikus empirinį tyrimą Čekijos respublikoje, kuris buvo baigtas 2012 metais. Sudarant rodiklius, buvo užbaigti keli sėkmingi etapai ir buvo panaudota daugiaveiksnių analizė. Pasirinkimas dvidešimties kolektyvinio valdymo rodiklių, yra paremtas informacine duomenų baze, kuri yra klasterio analizės objektas. Klasterio analizė parodė keturis klasterius, kurie pavaizduoti pirmame paveikslėlyje. Apibūdinamos keturios matavimo sritys: monitoringas ir atsiskaitomumas, CG našumas, CG struktūra, ir atitikimas. Kita duomenų apdorojimo fazė siekia sumažinti rodiklių kiekį būtent remiantis koreliacinės analizės 1 priedu ir ekspertų komandos sprendimu, kuris yra svarbus analizuojant veiksnius. Remiantis Bartlett ir KMO (*Kaiser-Meyer-Olkin*) rezultatais, buvo sudaryti testai, kuriais buvo patikrinta ar duomenys yra tinkami veiksnų analizei (KMO = 0.652; Bartlett = 407.190, Sig = 0.000). Pagrindinių komponentų analizės (PCA – *Principal Components Analysis*) metodui ir *Varimax* metodui (žr. 7 lent.). Keturi veiksniai buvo gauti panaudojus *Varimax* tiesiakampį sukimimą, paaiškinantį 58.086 % skirtumų. Pirmąją grupę, pavadintą *monitoringas* ir *atsiskaitomumas*, sudaro keturi punktai, o Cronbach-o alfa šiai grupei yra 0.741. Tai yra daugiau nei „pakankama“. Taip pat šis veiksnys paaiškino 24.74 % visų kintamųjų skirtumų. Antrąją grupę, kuri pavadinta *CG našumas*, sudaro keturi punktai, o Cronbach-o alfa šiai grupei yra 0.749. Tai yra daugiau nei „pakankama“. Taip pat šis veiksnys paaiškino 19.93 % visų kintamųjų skirtumų. Trečiąją grupę, pavadintą *CG struktūra*, sudaro trys punktai. Šio komponento Cronbach-o alfa lygi 0.658. Ji paaiškino 19.93 % visų kintamųjų skirtumų. Ketvirtąją grupę, pavadintą *atitikimas*, sudaro trys punktai. Šio komponento Cronbach-o alfa lygi 0.599. Ji paaiškino 14.07 % visus, 2 lentelėje pateiktus kintamųjų skirtumus.

Remiantis *Žaliosios knygos* (*Green Paper*) ir IFAC reikalavimais, CG veiklos rodikliai buvo nustatyti įtraukiant priemones ir vienetų gamybinio sektoriaus kompanijoms pagal CZ-NACE 3 lentelę.

Tyrimo rezultatai turėtų būti patvirtinti ir pagrindiniai veiklos rodikliai turi būti patikrinti kitose matavimo srityse: aplinkosaugos ir socialinėje. Pagrindinių veiklos rodiklių naudojimas tam tikroje kompanijoje gali būti iššūkiu. Dar prieš priimančiam sprendimą kompanijai įvertinti pagrindinius veiklos rodiklius, jai reikia žinoti, kaip juos panaudoti efektyviausiai ir kaip juos įtraukti į vidaus valdymą. Norint pagerinti verslo veiklą ir konkurencingumą dabartinėse rinkose, būtina plėsti išsamią veiksnų įvertinimo sistemą, kuri remiasi vidaus skyrių komandų bendradarbiavimu, turinčiu įtaką bendram verslo veiklos augimui. Neabejotinai, tai atsispindės kompanijos veikloje: didesnė tiekimo vertė ir rūpinimasis rinka daliai vartotojų, didėjantis pasitenkinimas ir lojalumas iš vienos pusės, iš kitos pusės: geresnis kompanijos ir jos verslo partnerių įvaizdis, siekiant pagerinti jų pozicijas ir gerovę. Veiklos įvertinimo sistema kiekvienam siūlo daug geresnę plėtros dinamiką. CG veiklos rodikliai gali padėti kompanijoms planuojant ir valdant, nustatant jų prioritetus ir lyginant su kitais veiklos rodikliais, tokiais kaip aplinkos ir socialiniai rodikliai. Be to, šis nefinansinių rodiklių nustatymo, pasirinkimo ir įvertinimo procesas suteikia geresnį požiūrį į patvarumą. Geras kolektyvinis valdymas padėtų kompanijoms pasiekti tvarumą.

Raktažodžiai: kolektyvinis valdymas, rodikliai, veikla, patvarumas, daugiamačiai statistiniai metodai

The article has been reviewed.

Received in November, 2012; accepted in December, 2012.