

## CORPORATE GOVERNANCE AND FINANCIAL STRUCTURES OF COMPANIES IN DEVELOPING COUNTRIES

Bogdan Dima<sup>1</sup>  
Alin Ionescu<sup>2</sup>  
Petru Tudoreanu<sup>3</sup>

*ABSTRACT: The main purpose of this paper is to test the impact of corporate governance quality on the financial structure of companies using a dataset covering 35 developing countries from Central and Eastern Europe as well as from Asia. Five variables related to corporate financial structure and eleven governance quality variables provided by World Bank Database are grouped in two synthetic descriptors by involving a Principal Components Analysis approach. In order to test the existence of a possible linkage between these descriptors we used Generalized Linear Models framework. To check robustness of results, accordingly to the standard capital structure theories, we considered some control variables.*

*The main output consists in the thesis that the financial structure of the companies is significantly influenced by the quality of corporate governance. Also, we find that the exclusion from the explanatory variables of the proportion of investments financed by other financing variable improves the robustness of the results.*

**Keywords:** Corporate Governance, Financial Structure, Indexation Model, Developing Countries

**Jel codes:** G32, G34

### Introduction

Corporate governance (CG) area in finance literature is a considerable interest for both academic community as well as for practitioners. It is a growing area in financial-economic research and hence is rapidly growing soon after global financial crises to minimize risk of financial defaults.

Corporate governance definitions are very widely. In many cases, a detailed analysis of the literature reveals that some definitions contain a certain degree of subjectivity, according to the values embraced by the author of that definition. However, a generally accepted idea is that corporate governance has developed as a concept closely related to the structure and the management of a company. Thus, initially, corporate governance was considered a system by which companies are conducted and controlled (Cadbury, 1992). Subsequently, was considered that the role of corporate governance is to highlight the distribution of rights and responsibilities between stakeholders (OECD, 2004).

More recently, some authors (Claessens & Yurtoglu, 2012) group this concept in two set of definitions: the first in the normative framework; the rules under which firms are operating - with the rules coming from such sources as the legal system, the judicial system, financial markets, and factor (labor) markets. The second set of definitions is of a behavioral pattern; the actual behavior of corporations, in terms of such measures as performance, efficiency, growth, treatment of

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<sup>1</sup> West University of Timisoara, Romania, e-mail: bogdan.dima@feaa.uvt.ro

<sup>2</sup> West University of Timisoara, Romania, e-mail: alinionescu86@yahoo.com

<sup>3</sup> West University of Timisoara, Romania, e-mail: petrurazasul@yahoo.com

shareholders and other stakeholders, and financial structure. Most of theoretical and empirical works are especially focused on the second type of definition.

The choice of the financial structure of companies is also a burden topic in countries without a mature and sound financial infrastructure. A growing stream of literature analyzes various determinants of such choice. Although in the financial system, corporate governance is one of the key factors that determine the health of the system and its ability to survive economic shocks (Bollard, 2003), less attention has been paid in the area with respect to the influence of institutional architecture of the companies and, in particular, of the characteristics of their governance. In fact, problem represents the main argument of our paper. In the same time, some authors consider that effective corporate governance mobilizes the capital annexed in order to sustain of efficient use of resources. Also, a good level of corporate governance can contribute in attracting lower cost investment capital by improving domestic as well as international investor's confidence (Rehman & Mangla, 2010). In the literature can be found also other authors that had tested the linkage between financial structure of the companies and the quality of corporate governance, from which can be highlighted some postulates: large debt is associated with larger boards of companies (Jensen, 1986), between managerial ownership and investment-cash flow sensitivities exist an inverse U-shaped relation (Hadlock, 1998). Similar results were obtained by other authors who showed that exist a significant and positive associations between capital structure and board size, board composition, and CEO duality (Abor, 2007). The results were obtained by using a sample of 22 firms listed on the Ghana Stock Exchange (GSE) during the six- year period (1998-2003). Unlike this, other authors considered a much broader corporate governance index and tested the impact of ownership structure, managerial share ownership and other corporate governance variables on capital structure decisions of firms on the GSE (Godfred & Arko, 2009). It should be noted that mentioned study uses cross-sectional data during the six- year period (2002 to 2007). The regression results reveal that managerial shareholding significantly positively influences the choice of long-term debt over equity. Among the corporate governance variables, board size is found to be positively and statistically significantly related to capital structure choices.

This paper tests CG quality and its favorable impact on selection of financial structure, as this is measured by the weight of borrowed financial resources in total companies' resources. All of the analyzed papers findings are largely consistent with theories of capital structure decisions observed in the literature and overlap with hypothesis of our paper. Still, this relationship applied on a set of developing countries has not been enough explored and discussed, so a final conclusion on this topic cannot be developed.

The next section of this research describes the data and methodology framework, Section 3 provides details on the methodology framework. Section 4 reports empirical results. The last section suggests some concluding remarks and further research.

### **Data and Methodology**

In order to test our hypothesis between CG quality and financial structure we firstly need to construct two indices: Financial Structure Index (FSI) and Corporate Governance Index (CGI). These two indicators were calculated for 35 developing countries from Central and Eastern Europe, Asia, Oceania for 2009 (*high income*- Czech Republic, Estonia, Hungary, Latvia, Poland, Slovak Republic, Slovenia; *upper middle income*- Azerbaijan, Bosnia and Herzegovina, Bulgaria, Macedonia FYR, Kazakhstan, Lebanon, Lithuania, Montenegro, Romania, Russian Federation, Serbia; *lower middle income*- Armenia, Bhutan, Fiji, Indonesia, Kosovo, Micronesia Fed. Sts., Moldova, Mongolia, Philippines, Samoa, Syrian Arab Republic, Timor-Leste, Tonga, Vanuatu, Vietnam; *low income*- Kyrgyz Republic, Nepal). The first index is designed to reflect financial sector using 5 variables provided by World Bank Database (WBD, [www.enterprisesurveys.org](http://www.enterprisesurveys.org)) (described in table1). The second index reflects corporate governance system using 11 variables

supplied by the same provider (described in table1). Also we used such governance as well as financial control variable to check robustness of our assumptions.

Table no. 1.

**The list of variables used in the estimated model**

<b>Financial structure variables</b>	<b>Corporate governance variables</b>
Proportion of investments financed internally (%)—Average- <i>fixed assets that was financed from internal funds/retained earnings.</i>	Proportion of private domestic ownership in a firm (%) - Average
	Proportion of private foreign ownership in a firm (%) - Average
Proportion of investments financed by banks (%)—Average - <i>fixed assets that was financed from bank loans.</i>	Proportion of government/state ownership in a firm (%) - Average
	Percent of firms with legal status of publicly listed company - Average
Proportion of investments financed by supplier credit (%) Average - <i>fixed assets that was financed by suppliers credit and advances from customer</i>	Percent of firms with legal status of privately held Limited Liability Company – Average
	Percent of firms with legal status of Sole Proprietorship - Average
Proportion of investments financed by other financing (%)—Average- <i>fixed assets that was financed by other source s, i.e. loans from non-bank financial institutions; issued new debt; moneylenders, friends, relatives, etc.</i>	Percent of firms with legal status of Partnership - Average
	Percent of firms with legal status of Limited Partnership - Average
	Percent of firms with an annual financial statement reviewed by external auditors – Average
Proportion of loans requiring collateral (%)—Average - <i>Loans requiring collateral in order to get the financing.</i>	Percent of firms having their own Web site - Average
	Senior management time spent dealing with the requirements of government regulation (%) - Average

Source: <http://www.enterprisesurveys.org>

The variables included in these two indicators are different. In terms of FSI, it is composed from variables as (i) proportion of investments financed internally, (ii) proportion of investments financed by banks, (iii) proportion of investments financed by supplier credit, (iv) proportion of investments financed by other financing, (v) proportion of loans requiring collateral. Choosing these variables was that they are significant for the financial structure of any corporation.

Also, CGI is composed from variables related to: (i) ownership structure; (ii) different types of the enterprises; (iii) transparency or; (iv) senior management time spend dealing with the requirements of government regulation. Most of these variables are considered to be essential for quality of corporate governance. Some of them are provided in various international documents and standards. For example, we believe that percent of firms having their own web site is significant because this can be considered an element of transparency and openness for companies. In fact, according to Chapter V of “*The OECD Principles of Corporate Governance*”, entitled “Disclosure and Transparency”, “channels for disseminating information should provide for equal, timely and cost-efficient access to relevant information by users”.

In the paper was analyzed in two stages the linkage between financial structure and corporate governance components. First, a preliminary principal component analysis (PCA) was applied in order to identify the possible grouping configuration between different financial structure, respectively corporate governance variables and was constructed FSI, respectively CGI. Second, was used the Generalized Linear Models (GLM) in order to examine the relations

established among these two indicators. The GLM framework permits flexible conditions of the model and “for non-normal data without clustering, generalized linear models are an appropriate alternative to linear models” (Tuerlinckx et al, 2006). This flexibility is necessary for increase the robustness of estimation procedure.

In order to retain only the relevant variables we start by analysing them relevance. Furthermore, using principal components analysis, were cumulated all relevant variables to produce a global disclosure indicator. The method deals with the assumption of an underlying causal structure: The factor analysis, from this approach assumes that the co-variation in the observed variables is due to the presence of one or more latent variables (factors) that exert a causal influence on these observed variables (Dima et al, 2010).

This framework was used because: (a) the idea of this approach is to decrease the dimensionality of a set of interrelated variables, maintaining as much as possible from the variation which is present in set of data (see for details, Jolliffe 2002); (b) the analysis modeling the variance structure of dataset by using a linear combinations of the data; (c) we are expecting the variables to be highly correlated; (d) component scores permit to consider the relative importance of individual variables, because they are forming as a linear reunion of the remarked variables weighted by eigenvectors.

Thus, in many respects, it can be find several similarities with the exploratory factor analysis but between this type of analysis and PCA exists considerable conceptual differences. Perhaps the most important of these differences refers to causal structure. Thus, factor analysis consider that the covariation in the analyzed variables is due to the existence of one or more latent variables (factors) that exercise causal impact on these observed variables.

In order to estimate the impact of corporative governance variables on financial structure, we are involved a model, proposed by Nelder and Wedderburn (1972) and Wedderburn (1974), which is a flexible approach for the generalization of ordinary *least squares* regression.

In the paper, were analysed the characteristics of the fitted data. So in the implementation of GLM we account for the characteristics of them. Firstly, because the data are characterized by heterogeneity, we are using for distribution the *Poisson distribution* which may be used to systems with rare and a large number of possible events.

Secondly, we choose a *log* link function-  $\log(\mu)$ , to ensuring series of restrictions on fitted mean. At the same time, to check robustness, was used in estimation the Newton-Raphson method.

**1. Empirical results**

In order to test variables that form FSI we have analyzed the correlation between each of them. Thus it could be identified two groups of correlation coefficients: one with values higher that 0.7 and one with lower that this value (table 2). Also, it can be noticed that the second group contain only variable named *Proportion of investments financed by other financing*.

Table no. 2.

**Correlation analysis of financial variables**

Variables		Correlation	t-Statistic	Probability
Proportion of investments financed by banks (%) -Average	Proportion of investments financed internally (%) - Average	0.79	7.42	0.00
Proportion of investments financed by supplier credit (%) - Average	Proportion of investments financed internally (%) - Average	0.71	5.85	0.00
Proportion of investments financed by supplier credit (%) - Average	Proportion of investments financed by banks (%) -Average	0.78	7.29	0.00
Proportion of investments financed by other financing (%) - Average	Proportion of investments financed internally (%) - Average	0.66	5.11	0.00

Proportion of investments financed by other financing (%) - Average	Proportion of investments financed by banks (%) -Average	0.70	5.73	0.00
Proportion of investments financed by other financing (%) - Average	Proportion of investments financed by supplier credit (%) - Average	0.48	3.18	0.03
Proportion of loans requiring collateral (%) -Average	Proportion of investments financed internally (%) - Average	0.93	15.23	0.00
Proportion of loans requiring collateral (%) - Average	Proportion of investments financed by banks (%) -Average	0.91	12.56	0.00
Proportion of loans requiring collateral (%) - Average	Proportion of investments financed by supplier credit (%) - Average	0.78	7.38	0.00
Proportion of loans requiring collateral (%) -Average	Proportion of investments financed by other financing (%) - Average	0.74	6.37	0.00

Notes: Included observations: 35; *Dunn-Sidak* multiple comparison adjusted probabilities; the test statistics and associated  $p$ -values reported are meant to test the hypothesis that a single correlation coefficient is equal to zero; degree of freedom adjusted.

The results from the appliance of principal components analysis are reported in Table 3. The “header” shows the sample of observations, the methodology involved to estimate the dispersion matrix, and information about the number of components retained (in this case, all five). The second section resumes the eigenvalues, displaying the values, the forward difference in the eigenvalues, and so on. The first principal component accounts for 80% of the total variance, while the second contributes with 11%. Together the first two components generated 91% of the global variance. Thus, this component can be used in order to construct a synthetic information index which groups the considered explanatory variables.

Table no. 3.

**Principal Components Analysis of financial variables**

<b>Eigenvalues: (Sum = 5, Average = 1)</b>						
Number	Value	Difference	Proportion	Value	Proportion	
1	4.01	3.49	0.8	4.01	0.8	
2	0.53	0.26	0.11	4.54	0.91	
3	0.27	0.11	0.05	4.81	0.96	
4	0.16	0.13	0.03	4.97	0.99	
5	0.03	-	0.01	5	1	
<b>Eigenvectors (loadings):</b>						
Variable				PC 1	PC 2	
Proportion of investments financed internally (%) - Average				0.46	-0.03	
Proportion of investments financed by banks (%) - Average				0.47	-0.07	
Proportion of investments financed by supplier credit (%) - Average				0.42	-0.62	
Proportion of investments financed by other financing (%) - Average				0.4	0.78	
Proportion of loans requiring collateral (%) - Average				0.49	-0.01	

Notes: Included observations: 35; Computed using: Ordinary (un-centred) correlations; Extracting 5 of 5 possible components.

In the second section was described the linear combination coefficients. The first principal component (labeled “PC1”) is a roughly-equal linear combination of all five of the financial variables; it might reasonably be interpreted as an indicator of the companies’ financial structure.

The second principal component (labeled “PC2”) has positive loadings for *proportion of investments financed by other financing* variable and negative loadings for the others. Hence, we will estimate both an overall indicator of the financial structures including all five financial variables as well as a second indicator (table 4) from which the financing from other sources is excluded.

Table no. 4.

**Principal Components Analysis of financial variables  
(Proportion of investments financed by other financing omitted)**

<b>Eigenvalues: (Sum = 4, Average = 1)</b>					
<b>Number</b>	<b>Value</b>	<b>Difference</b>	<b>Proportion</b>	<b>Value</b>	<b>Proportion</b>
1	3.46	3.13	0.86	3.46	0.86
2	0.32	0.13	0.08	3.78	0.94
3	0.19	0.16	0.05	3.97	0.99
4	0.03	-	0.01	4	1
<b>Eigenvectors (loadings):</b>					
<b>Variable</b>				<b>PC 1</b>	<b>PC 2</b>
Proportion of investments financed internally (%)—Average				0.5	-0.54
Proportion of investments financed by banks (%)—Average				0.5	0.07
Proportion of investments financed by supplier credit (%) Average				0.47	0.8
Proportion of loans requiring collateral (%)—Average				0.53	-0.27

Notes: Included observations: 35; Computed using: Ordinary (un-centered) correlations; Extracting 4 of 4 possible components

The first principal component accounts for 86% of the total variance (table 4) the second contributes with 8%. Together the first two components generated 94% of the global variance. Thus, this component can be used in order to construct a synthetic information index.

The PC1 is a roughly-equal linear combination of all four of the financial variables; it might reasonably be interpreted as an indicator of the companies’ financial structure. In conclusion both indicators are relevant that why we used in our research as FSI constructed with four respectively with five variables.

For construct the CGI we utilized the same procedure (PCA) and the result are illustrate in Table 5. The first principal component accounts for 64% of the total variance, while the second contributes with 10%. Together the first two components generated 74% of the global variance. The output of the principal components analysis can be used to construct global indicators of financial and governance variables.

Table no. 5.

**Principal Components Analysis of governance variables**

<b>Eigenvalues: (Sum = 11, Average = 1)</b>					
<b>Number</b>	<b>Value</b>	<b>Difference</b>	<b>Proportion</b>	<b>Value</b>	<b>Proportion</b>
1	7.02	5.89	0.64	7.02	0.64
2	1.13	0.15	0.10	8.15	0.74
3	0.98	0.55	0.09	9.13	0.83

4	0.43	0.02	0.04	9.56	0.87
5	0.41	0.03	0.04	9.97	0.91
6	0.38	0.07	0.03	10.34	0.94
7	0.31	0.16	0.03	10.65	0.97
8	0.15	0.02	0.01	10.79	0.98
9	0.12	0.05	0.01	10.92	0.99
10	0.07	0.06	0.01	10.99	1.00
11	0.01	--	0.00	11.00	1.00

Notes: Included observations: 35; Computed using: Ordinary (un-centered) correlations; Extracting 11 of 11 possible components.

Accordingly to the results reported in Table 6, the GLM methodology provides robust estimation of the impact exercised by corporate governance determinants on CGI. This denotes that construct of CGI, using PCA, is relevant representation of corporate governance. There could be noticed the estimated coefficients of all variables are statistical significant at 1%. Considering the values of the estimated coefficients and t-statistics, it confirms that the CGI is a relevant indicator for corporate governance. The robustness of this output can be checked by modifying the estimation procedure, in our case we refer to changes the methodology.

Table no.6.

**Determinants of corporate governance determinants**

Variable	OLS	GLM
Percent of firms identifying transportation as a major constraint -Average	1.08*** (0.33)	0.02*** (0.00)
Percent of firms using technology licensed from foreign companies*-Average	0.54** (0.18)	0.01*** (0.00)
Percent of firms using e-mail to interact with clients/suppliersm-Average	0.99*** (0.06)	0.04*** (0.00)
Number of visits or required meetings with tax officials—Average	6.59** (2.37)	0.45*** (0.02)
Percent of firms identifying an inadequately educated workforce as a major constraint -Average	-0.70*** (0.20)	-0.01*** (0.00)
Number of observations	35	35
Log likelihood	-141.71	-803.57
Modified Akaike Information Criterion	293.42	1617.15
Bayesian Information Criterion	301.19	1624.93
White's test for homoscedasticity $\chi^2(20)$	32.80	
Prob > $\chi^2$	0.036	
Pearson statistic		102.57

Notes: \*\*\*, \*\*, and \* represent statistical significance at 1%, 5%, and 10% level. Figures in bracket represent robust standard errors; For the Generalized Linear Model estimations: a) Family: Poisson; b) Link function: Log; c) Optimization algorithm: Newton-Raphson method.

Thus, column 1 of Table 6 present the results obtained from OLS estimation. Such estimation produces higher estimated coefficients for all the involved variables as compared with the GLM's coefficients. Some of them change their statistical significant from 5% to 1% (Percent of

firms using technology licensed from foreign companies and Number of visits or required meetings with tax officials).

From obtained results could be noticed OLS estimation are characterized with heavy-tailed scale errors which yield more imprecise estimates that GLM.

In conclusion us FSI such us CGI are susceptible to describe in a synthetic manner the all variables which was analyzed.

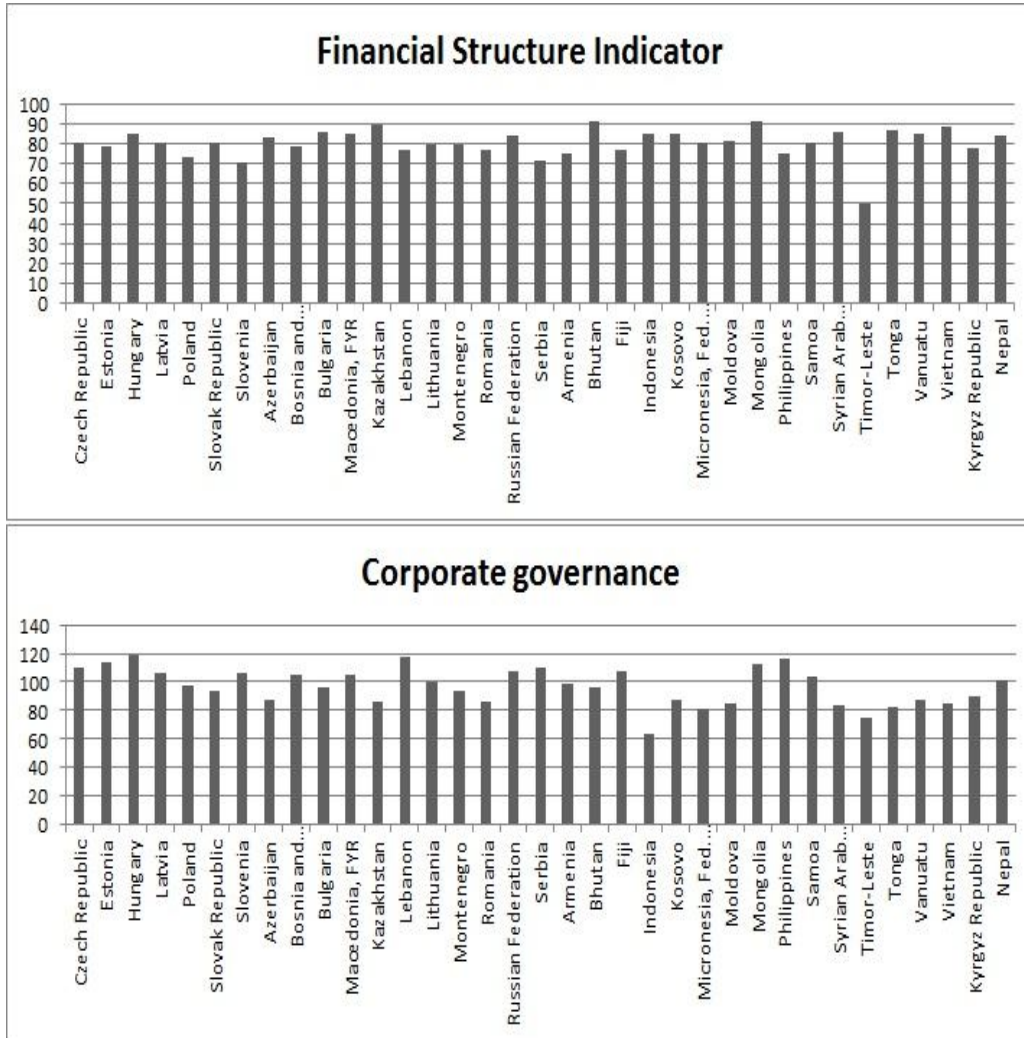


Figure no. 1. - Corporate governance and financial structure

In Figure 1 are represented those two indicators, for all 35 country separately. Regarding the FSI the lower value observed for Timor-Leste (around 50). Slovenia and Serbia are the next country whose indicators register values higher 70. It should be noted that the values registered by rest FSI are between 70 and 92. The representation for CGI shows more volatile than observed at financial structure indicator. The results suggest that there can be identified three groups of countries. First contain Indonesia and Timor-Leste with value less 80, second includes Czech Republic, Serbia, Mongolia, Estonia, Philippines, Lebanon and Hungary with value higher 110. Remaining countries are in the third group.

In order to assess the linkage between constructed indicators we used three financial control variables as follow *Lending interest rate* ( $V_{LIR}$ ), *Money and quasi money* ( $V_{M2}$ ) and *Consumer price*



index ( $V_{CPI}$ ). It must remark that used variables were calculated as mean value for last five years (2005-2009)<sup>4</sup>. Ex ante, we expect positive coefficients for  $V_{M2}$  and  $V_{CPI}$  and negative coefficient for  $V_{LIR}$ .

Table no.7.

**GLM estimation of Corporate governance impact on financial structure**

	<b>Panel A Dependent variable: overall financial indicator</b>	<b>Panel B Dependent variable: financial indicator with proportion of investments financed by other financing variable excluded</b>
Corporate governance indicator	0.006*** (-0.001)	0.006*** (-0.001)
Lending interest rate (%)	-0.013** (-0.005)	-0.014*** (-0.005)
Money and quasi money (M2) as % of GDP	0.002*** (0.001)	0.002*** (0.001)
Consumer price index (2005 = 100)	0.033*** (-0.001)	0.033*** (-0.001)
Number of observations	35	35
Pearson SSR	112.11	119.4
Log likelihood	-158.98	-163.11
Modified Akaike Information Criterion	325.96	334.22
Bayesian Information Criterion	332.07	340.32
Pearson statistic	3.74	3.98

Notes: a) Family: Poisson; b) Link function: Log; c) Optimization algorithm: *Newton-Raphson*

As shown in Table 7, the estimated coefficients of all variables are statistical significant at 1% if from dependent variable (FSI) excluded variable “*proportion of investments financed by other financing*” else the Lending interest rate became significant at 5%, the estimated coefficient increases to -0.13. Considering the values of the estimated coefficients and t-statistics, it appears that the CGI is an important explanatory variable for financial structure.

**Concluding remarks and further research**

In the present paper was analyzed the potential impact of corporate governance quality on the financial structure of companies. This analysis was carried out using a specific dataset covering a number of 35 developing countries from Central and Eastern Europe, Asia and Oceania.

The main contribution of this research to the existing literature is represented by development and deepening of the few existing papers. The main findings of our empirical study support the intuition that, in analysed countries, the financial structure of the company is sensitive and it can be influenced by the quality of corporate governance.

One possible reason of this influence it can be the appliance of agency theory, which represent the base of corporate governance. According to this, the influence between corporate governance quality and financial structure can be explained, because each party acts in its own self-

<sup>4</sup>In case in which we not had data for all five considered years, we calculated the mean of existing values for this period.

interest. In this regard, we can assume that the different stakeholders groups (like creditors or shareholders, for example) may be involved in choosing the financial structure as a possible tool for maximizing the company's market value.

In the end of this paper, we conclude that our work can be extended and implicitly can support future developments. In this way, further studies may consider the analysis of the impact generated by the corporate governance quality on the financial structure in other developed or developing countries. In conclusion, we consider that enlargement the area of countries and variables included in the study may be the one of the possible future developments of this paper.

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