An Empirical Examination of the Relationship between Corporate Governance Ratings and Listed Companies' Performance

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Abstract

This study examines the relationship between corporate governance ratings and firm performance, including both a global measure of corporate governance and four sub-indices corresponding Audit, Board Structure, Shareholder Rights and Compensation, provided by Institutional Shareholder Services (ISS). The corporate governance ratings represent a proper approximation of the quality of corporate governance practices from inside the companies. This fact determines the investors which seek to hold shares in certain companies for a long term to be interested in the quality of corporate governance practices related to those companies. Using the cross-sectional multiple linear regression model for a random sample of 155 U.S. companies listed at New York Stock Exchange, NASDAQ and NYSE Amex Equities, belonging to twenty industries, in 2011, our research emphasizes a negative relationship between corporate governance global rating and firm performance. Also, we find a negative relationship between corporate governance sub-indices and firm performance, with some exceptions. However, when we removed the companies from financial and real estate sectors, respectively 29 companies, resulting another sample of 126 companies, the results support the same findings. This study reveals that the commercial corporate governance ratings, like Governance Risk Indicators (GRId), provided by Institutional Shareholder Services (ISS) are affected by measurement errors. This research is important to the shareholders and investors globally, who are using commercial corporate governance ratings, in order to identify and quantify the risks of their investments. Our study suggests that shareholders and investors should not base entirely on commercial corporate governance ratings in their investment decisions, because they couldn't take the proper investment decision each time.

Keywords: corporate governance, corporate governance ratings, audit sub-index, board structure sub-index, shareholder rights sub-index, compensation sub-index, firm performance

1. Introduction

The guidelines regarding the corporate governance definition are divided into two categories. On the one hand, it is envisaged the actual behaviour of corporations regarding performance, efficiency, growth, financial structure, relations with shareholders and stakeholders. On the other hand, there are concerns regarding the rules, respectively the regulations which are influencing the corporate activity. In fact, "the focus would be on how outside investors protect themselves against expropriation by the insiders, including minority right protections and the strength of creditor rights, as reflected in collateral and bankruptcy laws" (Claessens, 2003). "Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment" (Shleifer & Vishny, 1997), in the U.S.A. being one of the best corporate governance systems from all over the world, with the U.K., Germany, and Japan, even if the last two have a different type of corporate governance system than the first two.

"The study of corporate governance is the examination of mechanisms that deter and correct managerial slack". We distinguish the separation of these mechanisms into internal and external disciplinary forces. "A firm's internal control system includes its board of directors (particularly outside directors), the proxy voting process, shareholder proposals and fiduciary duties owed by directors to the firm. The external discipline comes from the markets in which the managers and their firms compete and include: the managerial labor markets, capital

markets (notably the market for corporate control) and product markets" (Triantis & Daniels, 1995).

From our knowledge this is the first study which research the relationship between corporate governance and firm performance using Institutional Shareholder Services (ISS) sub-indices, based on the GRId 1.0 methodology, fact which justify our work. ISS Governance Risk Indicators (GRId) could be used to evaluate the corporate governance practices of a company, considering the following areas: Audit, Board of Directors, Compensation/Remuneration, and Shareholder Rights. However, there are many previous studies which used Corporate Governance Quotient (CGQ, provided by the Institutional Shareholder Services) as a global measure of corporate governance or another commercial corporate governance ratings. Our interest is related to the fact if the investors should base or not on commercial corporate governance ratings when they must take investment decisions.

The rest of the paper is organized as follows. In the next section, we review some relevant literature and then we describe our hypotheses, the data and our methodology. We then present our findings and finally our conclusions.

2. Literature Review

We distinguish two types of studies regarding the investigation of the relationship between corporate governance and firm performance, which used corporate governance ratings. Thus, there are studies which used ratings based on a personal methodology and studies which used commercial corpoate governance ratings provided by specialized companies as Audit Integrity, Institutional Shareholder Services, GovernanceMetrics International or The Corporate Library. However, the empirical research using an index to measure the quality of corporate governance have been conducted in various countries such as Australia (James-Overheu & Cotter, 2009), Canada (Gupta, Kennedy & Weaver, 2006), Germany (Drobetz, Schillhofer & Zimmerman, 2004), Greece (Kanellos & George, 2007), Hong Kong (Cheung, Connelly, Limpaphayom & Zhou, 2005), India (Pitabas Mohanty, 2004; Balasubramanian, Black & Khanna, 2008; Varshney, Kaul & Vasal, 2012), Korea (Black, Jang & Kim, 2006; Black, Kim, Jang & Park, 2009), Russia (Black, Love & Rachinsky, 2006), Switzerland (Beiner, Drobetz, Schmid & Zimmermann, 2004), Thailand (Hodgson, Lhaopadchan & Buakes, 2011), United States (Gompers, Ishii & Metrick, 2003; Bebchuk, Cohen & Ferrell, 2004; Brown & Caylor, 2004; Moore & Porter, 2007; Bhagat & Bolton 2008; Daines, Gow & Larcker, 2008; Epps & Cereola, 2008) and, Ukraine (Vitaliy Zheka, 2006).

Below, we summarize the findings of some relevant studies regarding the relationship between corporate governance ratings and firm performance in the United States, for which we will give additionally empirical evidence.

Gompers, Ishii & Metrick (2003) built a corporate governance index (G) including 24 provisions, divided into five groups: tactics for delaying hostile bidders (Delay), voting rights (Voting), director/officer protection (Protection), other takeover defenses (Other), and state laws (State), for 1,500 large firms, listed at New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ during the 1990s, the data being derived from publications of the Investor Responsibility Research Center. Through the G index there was possible a global highlight of the corporate governance regime, on the strength of the multitude of the considered variables. They found a strong correlation between corporate governance and stock returns during the 1990s. Thus, the authors developed an investment strategy which consisted in purchasing the shares in the lowest-G firms ("Democracy" firms, identified through strong shareholder rights) and selling the shares in the highest-G firms ("Dictatorship" firms, identified through weak shareholder rights). However, through the strategy mentioned previously, there were recorded abnormal returns of 8.5 percent per year or 71 basis points (bp) per month. The Democracy Portfolio earned a positive and significant abnormal return of 29 bp per month, while the Dictatorship Portfolio earned a negative and significant abnormal return of –42 bp per month. Thus, the firms with stronger shareholder rights were identified through higher firm value represented by Tobin's Q, higher profits, higher sales growth, lower capital expenditures, and made fewer corporate acquisitions. There have been noted that at the beginning of the sample, there was already a significant relationship between valuation and governance. Thus an increase of G with one-point was associated with a decrease in Tobin's Q of 2.2 percentage points. However, by the end of the decade, the difference has increased significantly, an increase of G with one-point was associated with a decrease in Tobin's Q of 11.4 percentage points.

Brown & Caylor (2004) created a corporate governance index (Gov-Score), representing a composite measure of 51 factors encompassing eight corporate governance categories: audit, board of directors, charter/bylaws, director education, executive and director compensation, ownership, progressive practices, and state of incorporation, using the data delivered by Institutional Shareholder Services, for a sample of 2,327 U.S. firms, corresponding 2002. For measuring the performance, the authors have decided to use a set of indicators corresponding to three categories, respectively: operational performance (return on equity, net profit margin,

sales growth), valuation (Tobin's Q) and shareholder payout (dividend yield and stock repurchases). The results showed that poorly-governed firms were identified with lower operating performance (lower return on equity and lower net profit margin), lower valuations (lower Tobin's Q) and paid out less cash to their shareholders (lower divided yield and lower stock repurchases). Better-governed firms, overtaken by Gov-Score, were identified with a significant performance, identified through all the indicators, with the exception of sales growth. On the other hand, corporate governance as measured by G-Index, created by Gompers, Ishii & Metrick (2003), is associated with performance only for sales growth.

Bebchuk, Cohen & Ferrell (2004) constructed two corporate governance indices: an "entrenchment index" (E index) which covered six provisions: staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments, and the "other provisions index" (O index) which covered other 18 provisions not included in the E index, having the data from Investor Responsibility Research Center, during 1990-2003 period. The sample consisted between 1,400 and 1,800 companies, a part of them being included in the S&P 500, and representing more than 90 per cent of the total U.S. stock market capitalization. Thereby an increase of the E index level was monotonically associated with economically significant decreases in firm valuation, identified with Tobin's Q, as well as large negative abnormal returns during the 1990-2003 period. Similarly Gompers, Ishii & Metrick (2003), the authors have designed an investment strategy, consisting in purchasing the shares in the lowest-E firms (E=0) and simultaneously selling the shares in the highest-E firms (E = 5 or E = 6), resulting an abnormal return of 7.4 percent per year or 61 bp per month.

Moore & Porter (2007) have studied the relationship between corporate governance and firm performance using the Corporate Governance Quotient (CGQ) provided by Institutional Shareholder Services (ISS), for a sample of 392 companies included in the S&P 500, for the second quarter of 2004. The rating covered six criteria within eight governance categories for U.S. companies. These categories included Board, Audit, Charter/Bylaws, State of Incorporation, Executive and Director Compensation, Qualitative Factors, Ownership and Director Education. The authors researched the association between corporate governance and firm performance in a simultaneous equations framework. This research method was selected in order to take into account the fact that the corporate governance regime and firm performance may be endogenous. Thus, there resulted that CGQ rating is not associated with cross-sectional firm performance. However, firms can achieve similar agency cost control with different combinations of corporate governance mechanisms.

Bhagat & Bolton (2008) found that better governance as measured by Gompers, Ishii & Metrick (2003) and Bebchuk, Cohen & Ferrell (2004) through their ratings, stock ownership of board members, and CEO-Chair separation is significantly positively correlated with better contemporaneous and subsequent operating performance. Contrary to claims, in Gompers et. al (2003), and Bebchuk et. al. (2004), none of the governance measures are correlated with future stock market performance.

Differently of previous studies, Daines, Gow & Larcker (2008), used commercial corporate governance ratings provided by specialized companies as RiskMetrics/Institutional Shareholder Services, GovernanceMetrics International, and The Corporate Library, to analyse their predictive ability, during the period 2005-2007. Thus, for a sample of 6,827 unique U.S. firms, the authors used the following commercial ratings: Audit Integrity (AGR), RiskMetrics/ISS (CGQ), GovernanceMetrics International (GMI), and The Corporate Library (TCL). There were considered three measures of performance: operational performance (represented by return on assets), Tobin's Q, and excess stock returns. Commercial corporate governance ratings have recorded a low predictive ability, even if when there resulted a statistically significant relationship with future performance, the economic effect being diminished. When Corporate Governance Quotient (CGQ) was statistically significant, it has an unexpected sign, respectively higher CGQ seemed to be associated with lower Tobin's Q. There were several interpretations regarding the weak and mixed predictive results for CGQ, GMI, and TCL. Thus, the authors mentioned that it was possible that corporate governance was an endogenous choice by firms that optimally adjust the costs and benefits of these governance choices. Additionally, another interpretation of the weak and mixed results was that "the commercial ratings contained a large amount of measurement error, which attenuated the estimated coefficients in simple regressions and produced mixed estimation results depending on the covariance structure of the variables included in multivariate regressions".

Epps & Cereola (2008) analysed the relationship between corporate governance and firm performance using Corporate Governance Quotient, provided by Institutional Shareholder Services, during the 2002-2004 period, using a sample of 256 companies in 2002, 359 companies in 2003, and 273 companies in 2004, included in the S&P 500, representing 70 per cent of the total U.S. stock market capitalization. Measuring operational performance with return on assets and return on equity, and using as control the logarithm of price to book value,

there resulted no relationship between firm performance and corporate governance rating.

3. Hypothesis Development

The main goal of this study is the investigation of the relationship between corporate governance, represented through a global index (Corporate Governance Index, CGI) and four commercial sub-indices (Institutional Shareholder Services's sub-indices, ISS), and the performance of the companies listed at U.S. Stock Exchanges.

The Institutional Shareholder Services's sub-indices correspond to the following categories: Audit, Board Structure, Shareholder Rights and Compensation. The corporate governance ratings offers to shareholders and investors, globally, a proper approximation of the quality of a company's corporate governance practices. Thus, the investors seeking to hold shares in a company for a long term are interested in the quality of corporate governance practices corresponding to that company, because they know that if the company have a good corporate governance system, this fact leads to high corporate performance.

Thus, we will consider a positive relationship between corporate governance and firm performance.

4. Data and Sample Selection

In order to investigate the relationship between corporate governance and firm performance, we used a random sample of 155 U.S. companies, selected by the Institutional Shareholder Services. Also, we used this sample in another research in order to examine the relationship between corporate governance mechanisms and listed companies' performance (Vintilă & Gherghina, 2012). For this sample we have received the values of the four sub-indices computed by the ISS in accordance to the GRId 1.0 methodology, released at September 15, 2010. However, since March 6, 2012, ISS released GRId 2.0 methodology. After that, for the companies from the sample, we collected data regarding firm performance, data regarding the firm size, and data regarding the gearing, from the financial portals advfn.com and barchart.com.

The empirical research corresponds to the year 2011. The companies from the sample are listed at three major U.S. Stock Exchanges: New York Stock Exchange (55 companies), Nasdaq (94 companies), and American Stock Exchange (6 companies), and belong to twenty industries.

Given the fact that financial and real estate sectors record better coporate governance practices, we removed the companies from financial and real estate sectors, respectively 29 companies (12 banks, 9 companies from financial services sector, 5 insurance companies, 3 companies from real estate sector). Thus, there resulted another sample of 126 companies.

Institutional Shareholder Services (ISS) is a subsidiary of MSCI Inc. since 2010. ISS is a top provider of investment decision support tools to investors globally, in order to inform them, to take proper investment decisions. Also, MSCI is a top provider of investment decision support tools to customers worldwide, ranging from large pension plans to boutique hedge funds. MSCI provide indices, portfolio risk and performance analytics and governance tools, from brands as Barra, RiskMetrics and ISS. Corporate governance ratings realised by ISS since Sepetember 2010, named Governance Risk Indicators (GRId) are successors of Corporate Governance Quotient (CGQ). GRId are delivered in order to assist the shareholders and investors to identify and quantify the risks of the investments. However, CGQ was eliminated from computation at the end of June, 2010.

At the core of the GRId methodology for assessing governance-related risk are 59 to 95 questions for each market covered. Currently, GRId is computed for the following markets: U.S., Canada, the U.K., France, Germany, Sweden, and the Netherlands. For the U.S. companies, the valuation is based on 63 variables, divided in four categories specific corporate governance: Audit, Board Structure, Compensation, and Shareholder Rights. Also, each category is divided in more subsections, including variables expressed as questions, as below. For the U.S. companies, the Audit area comprise Audit Fees (21.25%), Controversies (57.5%), and Other Issues (21.25%). The Board Structure comprise Board Composition (25%), Committee Composition (15% spread evenly among Nomination, Compensation, and Audit Committees independence questions), and Board Practices (60%). The Shareholder Rights comprise One Share One Vote (10%), Takeover Defenses (50%), Voting Issues (17%), and Voting Formalities (23%). The Compensation category comprise Remuneration-Executive Short Term (3%, which focuses on whether a company discloses performance measures, hurdle rates and target payout thresholds for short-term cash incentive plans), Remuneration-Executive Long Term/Equity (32%), and Remuneration-Other (65%).

According to the GRId methodology, each answer will receive a score along a 10 point scale ranging from "-5" to "5", with "0" representing a neutral score. GRId will apply unique weightings for answers to questions, as well as for subsections, to reflect market nuances. A neutral score would suggest the fact that the company meets, though not necessarily exceeds, local governance standards and/or ISS' benchmark policy on the issue. A

negative score would suggest the fact that concerns are obvious, while a positive score would suggest the fact that the company exceeds local best practice guidance.

After that, each category's weighted sum of subsection points are normalized on a scale of 0-100 in order to provide an easy-to-understand score of concern levels for the Audit, Board, Shareholder Rights and Pay practices categories. Normalization of scores is based on the following formula: $S' = 100*(S - S\_min)/(S\_max - S\_min)$, where S' is the normalized score, S_min is the minimum score that a company could get in a category and S_max is the maximum score.

Once collected, scored, weighted, and summed, governance datapoints underlying GRId are outputed in final form as "concern levels": "low", "medium", and "high", displayed by category on ISS proxy analyses. Thus, a "low" concern level signify the fact that the relevant practices are followed. A "medium" concern level suggest the fact that there are some practices not pursuant with market standards. A "high" concern suggests that there is a significant difference between the practices of the company and market standards. For the last scenario, according to Mishra (2010), "investors should explore further whether the company's practices raise questions about long-term risk".

Table 1. Classification of U.S. companies according to "concern levels" displayed by category on ISS proxy analyses

Category	High concern	Medium Concern	Low Concern
Audit	0-75	75-90	90-100
Board Structure	0-55	55-70	70-100
Shareholder Rights	0-35	35-60	60-100
Compensation	0-55	55-70	70-100

Descriptions: Table 1 reveals the Classification of U.S. Companies according to "concern levels" displayed by category on ISS Proxy Analyses, respectively three "concern levels".

Corporate Governance Quotient (CGQ) used in previous studies by Moore & Porter (2007), Daines, Gow & Larcker (2008), and Epps & Cereola (2008), is the foregoer of Governance Risk Indicators (GRId), delivered by Institutional Shareholder Services (ISS) and it covered eight specific corporate governance categories: Board (structure and independence), Audit, Charter/Bylaws, Anti-takeover provisions, Executive and Director Compensation, Progressive practices (performance and succession planning), Ownership, and Director Education. CGQ offered only global corporate governance scores relative to GRId which offers distinct scores for each specific corporate governance category. Thus, in case of CGQ, two ratings were generated on each company: CGQ Index Score (computed after the comparison between corporate governance practices of a company, on the one hand and relevant market index including S&P 500, Mid-Cap 400, Small-Cap 600, Russell 3000, on the other hand), and CGQ Industry Score (resulted after the comparison between corporate governance practices of a company and industry peer group using 24 Standard S&P "GICS" groups).

Table 2. Variables covered in the empirical research

Variable Name	Description of the variable	Source
1. Data regarding corporate governance		
Audit	Audit Sub-index Score.	Institutional
Board_structure	Board Structure Sub-index Score.	Shareholder Services
Shareholder_rights	Shareholder Rights Sub-index Score.	(ISS)
Compensation	Compensation Sub-index Score.	www.issgovernance.com
CGI	Corporate Governance Index Score.	Own calculations

2. Data regarding firm performance

Q	Tobin's Q, as the ratio between the market value and replacement value of the same physical asset.	uk.advfn.com/
PBV	Price to book value, as the ratio of the market value of equity to the book value of equity.	
ROA (%)	Return on Assets shows how profitable a company is relative to its total assets. It is calculated by dividing a company's annual earnings by its total assets, expressed as a percentage.	www.barchart.com
ROE (%)	Return on Equity measures the rate of return on the ownership interest (shareholders' equity) of the common stock owners. It measures a firm's efficiency at generating profits from every unit of shareholders' equity (also known as net assets or assets minus liabilities). ROE is equal to a fiscal year's net income (after preferred stock dividends but before common stock dividends) divided by total equity (excluding preferred shares), expressed as a percentage.	
PER	Price-earnings ratio tells us how many times the market price of a share is vis-a-vis its earning. It is calculated as the ratio between the market price of the share and the earning per share.	

3. Data regarding the firm size

Assets	Total Assets (Logarithmic values).	uk.advfn.com/

4. Data regarding the gearing

Financial_leverage	Financial Leverage is calculated as the ratio of total debt to equity. The greater the amount of debt, the greater the financial leverage. A high financial leverage ratio indicates possible difficulty in paying interest and principal while obtaining more funding.	uk.advfn.com/

Descriptions: Table 2 lists all the variables used in this study and gives exact definitions for each of them.

We developed a global rating of corporate governance, named Corporate Governance Index Score (CGI). For calculating the Corporate Governance Index Score (CGI), similarly to the methodology described by Moore & Porter (2007), used to hammer out the Corporate Governance Quotient (CGQ), we weighted each specific corporate governance category: Audit (10%), Board Structure (40%), Shareholder Rights (20%), and Compensation (30%). Similarly Black, Jang & Kim (2003), and Klein, Shapiro & Young (2004), we used total assets (logarithmic values) to control for the size of the companies, respectively financial leverage to control for gearing. The size of the companies take into consideration the potential advantages from the economies of scale, economies of scope, and from the market for corporate control and the market opportunities (Klein, Shapiro & Young, 2004). However, in order to measure firm level performance, we used both accounting ratios as return on assets and return on equity, and market-based ratios as Tobin's Q, Price to book value and Price-earnings ratio.

5. Research Methodology

In the corporate governance literature, there are a lot of empirical studies which are subject to criticism because of the presence of the endogeneity that characterizes the corporate governance ratings. The presence of endogeneity in a regression model is detected when the independent variable is correlated with the disturbance term. According to Larcker & Rusticus (2009), "endogeneity is a potential problem because most of the governance constructs are choice variables". When the endogeneity is present, there will be ascertained inconsistent estimates for both the coefficients and standard errors. As result, "the companies which follow to finance their increase are tempted to improve their corporate governance mechanisms in order to reduce the cost of the capital". However, there is a standard remedy to endogeneity, which consist in the implementation of some type of instrumental variables estimation procedure.

In particular, a set of variables that are assumed to be exogenous is selected and then n-stage least squares estimation is used to estimate the coefficients in the regression model. This solution to endogeneity works if the

researcher can find instrumental variables that are correlated with the endogenous regressor, but uncorrelated with the error in the structural equation. In most applied settings, it is extremely difficult to identify such instrumental variables (Larcker, Richardson & Tuna, 2007). On the other hand, when the instrument is only weakly correlated with the regressor, IV methods can produce highly biased estimates when the instrumental variable is even slightly endogenous. In those cases, it is likely that IV estimates are more biased and more likely to provide the wrong statistical inference than simple OLS estimates that make no correction for endogeneity. Thus, OLS estimates have better statistical properties than two-stage least squares estimates when the instrumental variables are not proper setup (Larcker & Rusticus, 2009). In this study we tried to remove this deficiency by taking into consideration the control variables: LogAssets and Financial_leverage.

Table 3. The variables from the econometric research

Dependent Variables	Independent Variables
	CGI
Q	Audit
PBV	Board_Structure
ROA	Compensation
ROE	Shareholder_rights
PER	*Control Variables*
	LogAssets
	Financial_leverage

Descriptions: Table 3 provides the dependent variables, independent variables, and control variables from the econometric research.

In order to examine the influence of corporate governance on firm performance, in the corporate governance literature, we have found the usage of the following type of models: multifactorial linear regression model, simultaneous equation models, as estimating through generalized method of moments. To test the hypotesis mentioned above we decided to use the cross-section multiple linear regression, following the general model, because our data correspond to one period, respectively the year 2011:

$$y_i = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_m x_{mi} + \varepsilon_i$$

where: y_i = the dependent variable, represented by the firm performance;

α = this parameter is called the constant or intercept and represents the expected response when $x_i = 0$. It quantify the influence of all determinants of firm performance with the exception of the independent variables introduced in the model (and which were not taken into consideration through an explanatory variable, but which are characterized through some stability in time);

$\beta_1, \beta_2, \ldots, \beta_m$ = this parameter is called the slope, and represents the expected increment in the response per unit change in x_i;

x_{ji} = the independent variable j for each company i;

ε_i = the residual term of the regression, quantifying the influence of factors with random action (not systematically), characterized by the fact that the mean is zero and the variance is constant;

i = the company = 1, 2, ..., 155.

6. Results and Analysis

6.1 Descriptive Statistics

From Table 4 there result that Corporate Governance Index Score (CGI), relative to average values of Corporate Governance Quotient (CGQ), recorded by Moore & Porter (2007), Daines, Gow & Larcker (2008), and Epps & Cereola (2008), in their investigations, is identified through better average values.

In 2011, considering the mean value of Audit Sub-index Score (84.78), in average, the companies from the complete sample are recording a medium concern level with the audit standards which correspond the best practices. This fact signifies that there are some inconsistencies in audit practices, though not very accentuated, which could implicate a medium investment risk in that companies.

Table 4. The mean values of the corporate governance ratings from the previous studies

Authors	Corporate Governance Index	Year	Number of observations	Average
Moore & Porter (2007)	CGQ	2005	392	51.39
Daines, Gow & Larcker (2008)	CGQ	2005	5,059	51.61
Epps & Cereola (2008)	CGQ	2002	256	52.09
		2003	269	52.67
		2004	273	55.47
Current investigation	CGI	2011	155	67.45

Descriptions: Table 4 provides the mean values of corporate governance ratings from prevoius studies in order to compare with our index, Corporate Governance Index Score.

Additionally, in the complete sample, by analysing the mean values of Board Structure Sub-index Score (74.28), in average, there result a low concern level. This fact suggest that, in average, the relevant practices regarding the board of directors, in the companies from the complete sample, are conform with standard market practices established by ISS' benchmark voting policy. Besides, also at the complete sample level, of 155 companies, we observe that the mean values of Shareholder Rights Sub-index Score (55.88) and Compensation Sub-index Score (60.28) indicate, in average, a medium concern level. This fact suggest that some practices appear not to be conform with market standards.

Table 5. Descriptive statistics of the variables. Complete sample (155 companies)

Variable	No. observations	Minimum	Maximum	Mean	Median	Std. Deviation
Q	155	.02	17.56	1.78	.87	2.48
PBV	155	-17.1	28.7	3.23	1.89	4.73
ROA	155	-.94	.36	-.03	.01	.18
ROE	155	-10.68	3.57	-.20	.06	1.25
PER	155	-325.4	908.33	20.40	12.38	87.76
Audit	155	76	89	84.78	86	4.54
Board_structure	155	35	98	74.28	76	10.97
Shareholder_rights	155	14	92	55.88	53	19.60
Compensation	155	33	84	60.28	60	8.90
CGI	155	46.3	82.2	67.45	67	6.58
Financial_leverage	155	-11.8	47.4	4.25	2.1	6.99
LogAssets	155	2.97	11.9	6.62	6.51	1.62

Descriptions: Table 5 provides descriptive statistics for all the variables from our study, corresponding to complete sample of 155 companies.

Thus, if we remove the companies from the financial and real estate sector, the remaining companies, respectively 126 companies, record concern levels with standard market practices established by ISS' benchmark voting policy, in mean, very close to those from the complete sample. However, the accounting ratios represented by return on assets and return on equity record lower values, fact which signifies an impairment of the profitability of the 126 companies. The price to book ratio record better mean values, which signifies that the shares of the 126 companies are relatively cheaper for the investors, with modest growth opportunities. Mean values of market based ratios (Tobin's Q and PER) are higher than those from the complete sample, manifesting attractivity for the investors.

Table 6. Descriptive statistics of the variables. Sample without companies from financial and real estate sector (126 companies)

Variable	No. observations	Minimum	Maximum	Mean	Median	Std. Deviation
Q	126	.04	17.56	2.11	1.18	2.64
PBV	126	-17.1	28.7	3.71	2.29	5.13
ROA	126	-.94	.36	-.04	.03	.20
ROE	126	-10.68	3.57	-.27	.06	1.38
PER	126	-138	908.33	22.49	13.32	88.94
Audit	126	76	89	84.98	86	4.5
Board_structure	126	35	98	73.80	74	11.19
Shareholder_rights	126	14	92	54.11	50	19.52
Compensation	126	33	84	59.96	60	8.99
CGI	126	46.3	82.2	66.83	66.7	6.38
Financial_leverage	126	-11.8	47.4	3.77	1.9	7.41
LogAssets	126	2.97	11.00	6.37	6.3	1.53

Descriptions: Table 6 provides descriptive statistics for all the variables from our study, corresponding to sample without companies from financial and real estate sector (126 companies).

6.2 Correlation Results

Table 7. Pearson's correlation matrix for all variables as they enter the regression model. Complete sample (155 companies)

	1 Audit	2 Board_structure	3 Compensation	4 Shareholder_rights	5 CGI	6 Q	7 PBV	8 ROA	9 ROE	10 PER	11 LogAssets	12 Financial_leverage
1	1	.06	.15	-.09	.12	-.09	-.01	.15	-.01	-.03	-.01	-.06
		.39	.05	.25	.12	.26	.90	.05	.84	.67	.87	.39
2	.06	1	.08	-.06	.67**	-.25**	-.17*	.02	-.04	-.10	.26**	-.05
	.39		.26	.45	0	.00	.03	.71	.62	.20	.00	.52
3	.15	.08	1	.04	.50**	-.09	-.07	.16*	-.01	-.05	.27**	-.07
	.05	.26		.55	0	.23	.33	.04	.90	.53	.00	.37
4	-.09	-.06	.04	1	.56**	-.06	-.13	.07	-.05	-.01	.07	.05
	.25	.45	.55		0	0.39	.09	.33	.47	.89	.38	.50
5	.12	.67**	.50**	.56**	1	-.25**	-.23**	.14	-.06	-.09	.33**	-.03
	.12	0	0	0		.00	.00	.07	.41	.22	0	.65
6	-.09	-.25**	-.09	-.06	-.25**	1	.47**	-.28**	.03	-.08	-.46**	-.14*
	.26	.00	.23	.39	.00		0	0	.65	.30	0	.01
7	-.01	-.17*	-.07	-.13	-.23**	.47**	1	-.10	.14	-.006	-.23**	.42**
	.9	.03	.33	.09	.00	0		.20	.07	.94	.00	0
8	.15	.02	.16*	.07	.14	-.28**	-.10	1	.23**	.13	.37**	.03
	.05	.71	.046	.33	.07	0	.20		.00	.08	0	.64
9	-.01	-.04	-.01	-.05	-.06	.03	.14	.23**	1	.03	.04	-.12
	.84	.62	.90	.47	.41	.65	.07	.00		.7	.61	.13
10	-.03	-.10	-.05	-.01	-.09	-.08	-.006	.13	.03	1	.10	.02
	.672	.20	.53	.89	.22	.30	.94	.08	.7		.203	.72
11	-.01	.26**	.27**	.07	.33**	-.46**	-.23**	.37**	.04	.10	1	.13
	.87	.00	.00	.38	0	0	.00	0	.61	.20		.08
12	-.06	-.05	-.07	.05	-.03	-.19*	.42**	.03	-.12	.02	.13	1
	.39	.52	.37	.50	.65	.01	0	.64	.13	.72	.08	

**. Correlation is significant at the 0.01 level (2-tailed) *.Correlation is significant at the 0.05 level (2-tailed).
Descriptions: Table 7 presents the Pearson's correlation coefficients, for the complete sample. Each box contains two values: the value of the correlation coefficient and the probability.

We observed the fact that the variables through which the performance is measured are correlated, with the exception of PER. The Corporate Governance Index is negatively correlated (-.03), but not statistically significant, with the financial leverage. This result is similar with Moore & Porter (2007), who identified a negative correlation coefficient (-.08), also not statistically significant, between Corporate Governance Quotient and financial leverage. On the other hand, Corporate Governance Index is positively correlated (.33) and statistically significant, with the company size, represented by LogAssets, contrary Moore & Porter (2007), which identified a statistically significant and negatively correlation coefficient between Corporate Governance Quotient and total assets, measured at book value (-.24). Additionally, CGI is negatively correlated and statistically significant with Tobin's Q (Pearson correlation coefficient = -.25), similar Moore & Porter (2007), which identified a correlation coefficient of -.17. This result is contrary Brown & Caylor (2004) (Pearson correlation coefficient between Tobin's Q and Gov-Score of .05). Also, Gompers, Ishii & Metrick (2003) identified a negatively correlation coefficient, but not statistically significant, between Tobin's Q and G-Index, of -.04, this fact being also sustained by Brown & Caylor (2004) (negatively correlation coefficient, but not statistically significant, between Tobin's Q and G-Index, of -.03).

6.3 Regression Results

Tables 8-11 report the results for all the 155 U.S. firms, considering as dependent variables, in separate regression equations, the variables related to firm performance. In each table we considered three different versions of the models as below: the first two versions considering separately each control variable (LogAssets and Financial_Leverage) and the last version in which we included both control variables.

Table 8. Regressions of Tobin's Q on CGI and controls (complete sample: 155 companies)

Dependent variables→ Explanatory variables↓	Q			Q			Q		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	9.04	4.95	.00***	8.79	4.46	.00***	9.34	5.15	.00***
CGI	-.04	-1.50	.13	-.09	-3.42	.00**	-.04	-1.68	.09†
LogAssets	-.66	-5.71	.00***				-.62	-5.38	.00***
Financial_leverage				-.07	-2.64	.00**	-.05	-1.98	.04*
R Square		.23			.10			.25	
Adjusted R Square		.22			.09			.23	
F		22.79			9.06			16.80	
Sig.		.00***			.00***			.00***	

Statistical significance: †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

Table 9. Regressions of PBV on CGI and controls (complete sample: 155 companies)

Dependent variables→ Explanatory variables↓	PBV			PBV			PBV		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	14.97	3.93	.00***	12.47	3.56	.00***	13.13	3.87	.00***
CGI	-.12	-2.09	.03**	-.15	-3.00	.00**	-.09	-1.78	.07†
LogAssets	-.50	-2.10	.03**				-.73	-3.37	.00***
Financial_leverage				.28	5.80	.00***	.30	6.46	.00***
R Square		.08			.22			.27	
Adjusted R Square		.06			.21			.26	
F		6.58			22.03			19.47	
Sig.		.002**			.00***			.00***	

Statistical significance: †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

Table 10. Regressions of ROA on CGI and controls (complete sample: 155 companies)

Dependent variables→ Explanatory variables↓	ROA			ROA			ROA		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	**-.34**	**-2.42**	**.016***	-.30	-2.01	.04	**-.34**	**-2.39**	**.01***
CGI	.001	.26	.79	.004	1.78	.07	.001	.24	.80
LogAssets	**.04**	**4.57**	**.00*****				**.04**	**4.52**	**.00*****
Financial_leverage				.001	.52	.60	.000	-.17	.86
R Square		.13			.02			.13	
Adjusted R Square		.12			.009			.12	
F		**12.22**			1.69			**8.10**	
Sig.		**.00*****			.18			**.00*****	

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.

Table 11. Regressions of PER on CGI and controls (complete sample: 155 companies)

Dependent variables→ Explanatory variables↓	PER			PER			PER		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	99.03	1.36	.17	106.22	1.45	.14	98.90	1.35	.17
CGI	**-1.97**	**-1.74**	**.08†**	-1.29	-1.20	.23	-1.97	-1.73	.08
LogAssets	**8.21**	**1.79**	**.07†**				8.201	1.76	.08
Financial_leverage				.30	.30	.76	.02	.02	.98
R Square		.03			.01			.03	
Adjusted R Square		.017			-.003			.01	
F		**2.35**			.78			1.56	
Sig.		**.09†**			.46			.20	

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.

Thus, examining the relationship between Corporate Governance Index (CGI) and firm performance measured by Tobin's Q, for the complete sample of 155 companies, by taking into consideration both control variables (LogAssets and Financial_leverage), we observed that a one percent increse of CGI, cause, in average, a four percent decrease of Tobin's Q (Table 8: β= -.04, p < .10). Also 25 percent of Tobin's Q variation, identified through R Square, could be explained through the linear relationship with CGI. Besides, the sense between Tobin's Q and Corporate Governance Index is the same by taking separately into consideration, in the regression model, the Financial_leverage control variable.

When we used price to book ratio, to quantify the performance and both control variables, for the complete sample, there resulted that a one percent increase of Corporate Governance Index, cause, in average, a decrease of 9 percent of price to book value ratio (Table 9: β= -.09, p < .10).

Using return on assets as proxy for firm performance, we have not identified any statistically significant relationship between corporate governance and firm performance, both for the complete sample and the reduced sample (Table 11: β= -.001, Sig. = .80, and Table 12: β= -.001, Sig. = .74). Additionally, for return on equity we could not validate none model, reason for which we have not reported the results. However, our results are similar Epps & Cereola (2008), who have identified no relationship between Corporate Governance Quotient and ROA and ROE.

The last performance measure we have used was price-earnings ratio. Thereby, there resulted a statistically significant relationship between Corporate Governance Index and price-earnings ratio, for the complete sample, only when we have cotrolled for the company size. Thus, a unit increse of Corporate Governance Index cause a

decrease, in average, of 1.97 units of PER (Table 11: β= -1.97, p < .10). When we removed from the sample the companies from the financial and real estate sector, we could not validate the model, reason for which we have not reported the results.

Table 12. Regressions of Tobin's Q, PBV and ROA on CGI and controls (sample without companies from financial and real estate sector: 126 companies)

Dependent variables→ Explanatory variables↓	Q			PBV			ROA		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	10.65	4.78	.00***	13.47	3.25	.00***	-.43	-2.42	.01*
CGI	**-.05**	**-1.69**	**.09†**	**-.10**	**-1.62**	**.10†**	.001	.33	.74
LogAssets	**-.69**	**-4.89**	**.00*****	**-.63**	**-2.40**	**.01***	**.05**	**4.50**	**.00*****
Financial_leverage	**-.05**	**-1.91**	**0.05†**	**.33**	**6.29**	**.00*****	.00	.09	.92
R Square		.24			.30			.16	
Adjusted R Square		.22			.28			.14	
F		**12.98**			**17.51**			**7.83**	
Sig.		**.00*****			**.00*****			**.00*****	

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.

Descriptions: Table 12 reports the regressions results of Tobin's Q, PBV and ROA on CGI and controls for the sample without companies from financial and real estate sector.

We report only the results for valid models, taking into consideration the significance of F-test. Thus, if we remove the companies from the financial and real estate sector, at a one percent increse of CGI, the Tobin's Q will decrease, in average, with 5 percent (Table 12: β= -.05, p < .10). However, when we removed the companies from the financial and real estate sector, we observed that at a one percent increase of Corporate Governance Index, price to book ratio, decrease, in average, with ten percent (Table 12: β= -.10, p < .10). However, according to Lehn, Patro & Zhao (2007), "the companies with lower values of price to book value ratio are likely to be poorly managed, being confronted with the risk to be acquired by other companies. Thus, the companies adopt anti-takeover provisions which cause a reduction of corporate governance indices".

Table 13. Regressions of Tobin's Q, PBV and ROA on corporate governance sub-indices provided by ISS (complete sample: 155 companies)

Dependent variables→ Explanatory variables↓	Q			PBV			ROA		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	10.93	2.76	.00**	12.86	1.68	.09†	-.74	-2.50	.01**
Audit	-.04	-.90	.36	-.002	-.02	.97	**.006**	**1.74**	**.08†**
Board_structure	**-.05**	**-3.164**	**.00****	**-.07**	**-2.22**	**.02***	.00	.16	.87
Compensation	-.01	-.72	.47	-.03	-.68	.49	**.003**	**1.64**	**.10†**
Shareholder_rights	-.01	-1.11	.26	**-.03**	**-1.80**	**.07†**	.001	1.06	.29
R Square		.08			.05			.05	
Adjusted R Square		.05			.03			.02	
F		**3.32**			**2.18**			**1.98**	
Sig.		**.01***			**.07†**			**.09†**	

Statistical significance: †p < .10; *p < .05; **p < .01; ***p < .001.

Descriptions: Table 13 reports the regressions results of Tobin's Q, PBV and ROA on Corporate Governance Sub-indices provided by ISS for the complete sample.

Table 14. Regressions of Tobin's Q, PBV and ROA on corporate governance sub-indices provided by ISS (sample without companies from financial and real estate sector: 126 companies)

Dependent variables→ Explanatory variables↓	Q			PBV			ROA		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
(Constant)	**13.10**	**2.80**	**.00****	16.12	1.75	.08	-.92	-2.54	.01
Audit	-.06	-1.16	.24	-.02	-.22	.82	.008	1.87	.06
Board_structure	**-.06**	**-2.84**	**.00****	-.09	-2.17	.03	.00	.00	1.00
Compensation	-.01	-.54	.58	-.02	-.56	.57	.003	1.54	.12
Shareholder_rights	-.01	-.79	.42	-.03	-1.60	.11	.001	.91	.36
R Square		.08			.05			.06	
Adjusted R Square		.05			.02			.02	
F		**2.87**			1.82			1.91	
Sig.		**.02***			.12			.11	

Statistical significance: †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

Descriptions: Table 14 reports the regressions results of Tobin's Q, PBV and ROA on Corporate Governance Sub-indices for the sample without companies from financial and real estate sector.

By analysing the relationship between ISS Corporate Governance Sub-indices and Tobin's Q, there resulted that at a one percent increase of Board Structure Sub-index, the Tobin's Q will decrease (Table 13: β= -.05, p < .01), in average, with 5 percent (complete sample), respectively will decrease (Table 14: β= -.06, p < .01), in average, with six percent (sample without companies from financial and real estate sector).

Our results are similar with Gompers, Ishii & Metrick (2003), who identified that at the beginning of the sample each one-point increase in G was associated with a decrease in Tobin's Q of 2.2 percentage points and by the end of the decade, a one-point increase in G was associated with a decrease in Tobin's Q of 11.4 percentage points. However, the results are also sustained by Bebchuk, Cohen & Ferrell (2009), who identified that at a one percent increase of E-index, the Tobin's Q decreased, in average, with 4.4 percent. The results are contrary Brown & Caylor (2004), who identified that a one-point increase in Gov-Score was associated with an increase in Tobin's Q of 2.05 percent. Additionally, Moore & Porter (2007), used the Corporate Governance Quotient, similary Corporate Governance Index, but estimated the coefficients through the three-stage least squares and used as endogenous the Tobin's Q and CGQ. They have not identified any relationship between corporate governance and firm performance, but they have concluded an inverse relationship between corporate governance index and financial leverage, similar to our study. By analysing the relationship between CGI and Tobin's Q, our results are also similar with Daines, Gow & Larcker (2008), who have concluded that high Corporate Governance Quotient ratings determined low values of Tobin's Q.

Also, there resulted a negative relationship between Board Structure Sub-index, Shareholder Rights Sub-index and price to book value ratio, as reported in Table 13, for the complete sample. However, for the sample without the companies from financial and real estate sector, the model was not valided (Table 14: F=1.82, Sig.= .12).

Otherwise, when we used as dependent variable return on assets, for the complete sample, there resulted a positive relationship between Compensation Sub-index and ROA (Table 13: β= .003, p < .10), although only five percent from return on assets variation could be explained through influence factors. After we have removed the companies from financial and real estate sector, we have identified no relationship between ISS Corporate Governance Sub-indices and return on assets, because we could not validate the model (Table 14: F=1.91, Sig.= 0.11).

Also, when we have investigated the relationship between ISS corporate governance sub-indices and PER, we could not validate the model.

Thus, the hypothesis of a positive relationship between corporate governance and firm performance is rejected. The results indicate a negative relationship between Corporate Governance Index (CGI) and firm performance. Additionally, the results indicate a negative relationship beween ISS Corporate Governance Sub-indices, provided by Institutional Shareholder Services (ISS) and firm performance. This fact would signify that when

the score of Corporate Governance Index and sub-indices increases, the firm performance decreases. This situation is contrary to the existing corporate governance literature. Thereby, commercial corporate governance indices are not the better benchmarks which investors can use in the investment decision.

7. Concluding Remarks

Our main goal of this study was the examination of the relationship between corporate governance, represented through a global rating (Corporate Governance Index) and four Corporate Governance Sub-indices across four areas: Audit, Board of Directors, Remuneration, and Shareholder Rights (provided by Institutional Shareholder Services, ISS), and firm performance. Thus, we identified a negative relationship between coporate governance and firm performance, measured by five ratios, both accounting ratios and market-based ratios. After we tested the relationship between Corporate Governance Index and firm performance, for the complete sample, of 155 companies, there resulted a negative relationship beween CGI and firm performance measured through Tobin's Q, price to book value, and price-earnings ratio. When we used return on assets as performance measure, we have not identified any relationship between CGI and ROA. Additionally, when we tested the relationship between firm performance, measured by return on equity, and Corporate Governance Index and ISS Corporate Governance Sub-indices, we could not validate the models, considering the significance of F-test.

After we removed from the complete sample the companies from the financial and real estate sector, the negative relationship between Corporate Governance Index and Tobin's Q, respectively price to book ratio remained unchanged, while for price-earnings ratio the relationship dissapeared.

When we tested the relationship between Corporate Governance Sub-indices provided by Institutional Shareholder Services (ISS) and firm performance, for the complete sample, there resulted a negative relationship between Tobin's Q, price to book value, and Board Structure Sub-index. However, there resulted a negative relationship between price to book value and Shareholder Rights Sub-index. The only positive relationships were identified between return on assets and Audit Sub-index, and between return on assets and Compensation Sub-index. After we removed the companies from financial and real estate sector, the only statistically significant relationship remained between Tobin's Q and Board Structure Subindex.

Thus, we confirm Daines, Gow & Larcker (2009) conclusion, according whom "the commercial ratings are affected by a large amount of measurement error, which attenuated the estimated coefficients in simple regressions and produced mixed estimation results depending on the covariance structure of the variables included in multivariate regressions". However, this fact is valid also for ISS corporate governance sub-indices computed in accordance with GRId 1.0 methodology.

The novelty of this study is related to the fact that we used Governance Risk Indicators (GRId) computed by Institutional Shareholder Services according to GRId 1.0 methodology. This research is important to the shareholders and investors globally, who are using commercial corporate governance ratings, in order to identify and quantify the risks of their investments. Our study suggests that shareholders and investors should not base entirely on commercial corporate governance ratings in their investment decisions, because they couldn't take the proper investment decision each time.

As future research directions, we mention that we could research the relationship between corporate governance and firm performance, but using another econometric approaches as simultaneous equations model as well as estimating through generalized method of moments or modelling via neural networks.

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