CORPORATE OWNERSHIP & CONTROL

КОРПОРАТИВНАЯ СОБСТВЕННОСТЬ И КОНТРОЛЬ

EDITORIAL

Dear readers!

This issue of the journal is devoted to several issues of corporate governance.

Saurav Roychoudhury, Alexei V. Egorov relate corporate governance to firm's total factor productivity growth of U.S. firms from 1990 to 2004. Given technological constraints, some firms are very efficient whereas others are not and some firms have much faster rates of innovation and productivity growth than others. Are these differences due to chance or are there some factors contributing to higher total factor productivity growth? In this paper, we find evidence that firms with stronger shareholder rights have higher total factor productivity growth. By employing the governance index compiled by Gompers, Ishii, and Metrick (2003), we determine that the effect of governance on productivity varies positively with the quality of corporate governance. Furthermore, this relationship is strongest among firms which have the strongest shareholder rights.

Roshayani Arshad, Ruhaya Atan, Faizah Darus investigate the competing effects of board structure and institutional pressures on the extent and credibility of corporate voluntary disclosure during the period when public listed companies in Malaysia faced new corporate governance regulation. This study provides evidence that under the influence of dominant owners on board, management voluntary disclosure decisions are driven by mimetic pressures when their company is structured to meet expectations of good corporate governance. Managers' voluntary disclosure strategy to gain legitimacy seems to override their incentives to disclose credible information to outside investors. This inference is consistent with the evidence that management voluntary disclosures are not viewed as credible by outside investors. These findings contribute to a better understanding of the relationships between various board structures and institutional pressures on management disclosure decisions in particular agency settings.

Carol Wang, Wei Rowe fill in the void in the literature by addressing these issues. As a firm's operating efficiency is an important indicator of its managerial performance, we uses changes in managerial ownership as an argument to evaluate changes in firm value and hypothesizes that changes in managerial ownership affect firm's operating efficiency, which in turn drives firm value. Using a large panel data set (4,451 observations for 1,162 firms for year 1990-2001), we find significantly positive relation between changes in managerial ownership, operating efficiency and changes in firm value. Larger increase in managerial ownership provides greater alignment of managerial interests with those of shareholders, hence greater improvement in firm value. However, this relation is not monotonic. The positive impact on firm's value increases at a decreasing rate. Our simultaneous equation tests remove the endogeneity concern between managerial ownership and firm value.

Alexander Bassen, Stefan Prigge, Christine Zöllner contribute to the emerging research that analyzes the relation between performance and *single* components of broad corporate governance aggregates, such as governance codes and ratings. Available research is confined to the U.S., Japan, and emerging markets. We enlarge the geographical scope to the German Corporate Governance Code (GCGC). For a sample of 100 large listed German stock corporations, compliance with the GCGC at large is significantly associated only with one of our performance measures (Tobin's q); this connection is *negative*. Individual analysis of eleven GCGC recommendations reveals that for three of them, association with all performance measures is insignificant. Four (four) components are significantly positively (*negatively*) connected with at least one performance measure.

Daniel Jardim Pardini, Carlos Alberto Gonçalves, Luiza de Marillac Moreira Camargos and **Marcio Augusto Gonçalves** study the state organization IGAM (Water Management Institute of Minas Gerais - Brazil) taking in consideration the public governance mechanisms defined by the Organization for Cooperation and Economical Development - OCDE (2005). By means of the use of a specialist panel and a focal group undertaken with representatives of *stakeholders* involved in the Water Management it was possible to evidence the necessities for adjustment of the legislation concerning the supplying of semi-arid areas and the integration of the hydrographical basins' public policies. The conflicts appear more clearly in the interaction between some *stakeholders*. Those are discourses that question the utilitarian acting of the water, the technical ignorance of the members of Hydrographical Basin Committees and the defense of the democratic format of these decision organs.

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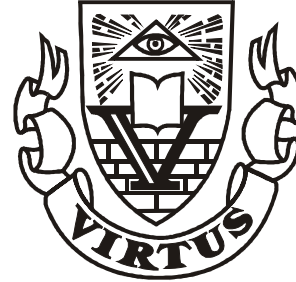
CORPORATE INNOVATION AND CORPORATE GOVERNANCE: A STUDY OF U.S. FIRMS

Saurav Roychoudhury, Alexei V. Egorov***

Abstract

The paper relates corporate governance to firm's total factor productivity growth of U.S. firms from 1990 to 2004. Given technological constraints, some firms are very efficient whereas others are not and some firms have much faster rates of innovation and productivity growth than others. Are these differences due to chance or are there some factors contributing to higher total factor productivity growth? In this paper, we find evidence that firms with stronger shareholder rights have higher total factor productivity growth. By employing the governance index compiled by Gompers, Ishii, and Metrick (2003), we determine that the effect of governance on productivity varies positively with the quality of corporate governance. Furthermore, this relationship is strongest among firms which have the strongest shareholder rights.

Keywords: corporate governance, innovations, US firms

*Corresponding author. School of Management & Leadership, Capital University, 1 Main and College, Columbus, OH 43209. Phone: (614) 236-7230. Fax: (614) 236-6540.
Email: sroychou@capital.edu. Web: http://capital2.capital.edu/faculty/sroychou/
**Assistant Professor of Economics, West Virginia University

I. Introduction

American workers are currently about seven times as productive as they were a century ago. Real wages and average family income are also roughly seven times higher than the corresponding levels in 1900. This increase in labor productivity has not been simply the result of endowing labor with more capital; it has also been the outcome of improved technology and efficiency. In Paul Samuelson's (1999) words, "it is the result of inspiration as well as perspiration" (pp. 28). This "inspiration" is often measured by total factor productivity (TFP) and is calculated using a residual – the difference between the growth rates of an index of output and an index of input.

The importance of TFP cannot be over emphasized. In his pioneering paper, Solow (1957) finds that some 80 percent of the rise in output per worker in the United States over the preceding half-century was explained by this mysterious residual which he called the *measure of our ignorance*. Since then many researchers have confirmed that sustained high economic growth is consistent with high values of this Solow residual or TFP. The novel thing about TFP is that it can be applied to compare economies, industries, and on a micro level, firms. In this paper we use the concept of TFP at the firm level as 'Corporate Innovation'.

Though 'innovation' is often measured from the U.S. Patent and Trademark office data (for eg., see Aghion et al., 2008) we would like to separate it from the term 'corporate innovation' which includes non-

capital and non-labor productivity factors like marketing efforts, brand equity, the quality of its management, etc. which may contribute either positively or negatively to a firm's performance. Such factors can substantially differentiate two firms with similar levels of capital and labor, and lead to very different levels of economic profit. Bartelsman and Doms (2000) point out that managerial ability; management/ownership changes, technology, human capital, and regulation are all factors that have been discussed in recent literature that influence productivity growth. The direct effect on the productivity growth of the firm emanates from the fact that managers make the choice of the firm's inputs, outputs, and technology. Lucas (1978) models labor productivity being the same across firms in equilibrium, due to diminishing returns to managerial skill. In contrast, according to Jovanovic's (1982) model, better managers have high efficiency parameters and higher productivity. However, it is difficult to come up with an objective measure of manager quality and performance (Bartelsman and Doms, 2000).

A growing body of literature has talked about how the corporate governance system influences managerial performance. If a firm has strong shareholder rights and minimal takeover defenses then, a managers could be risk-averse and may only select low return-low risk projects. In such case, innovation may actually carry a risk for the managers. If things go wrong, the board could fire the managers. This might create a natural aversion to take risky

projects. At the same time, if the company is not being innovative and is unable to generate high returns on projects, the market valuation of the firm is likely to decline in the future and which could also result in firing of the managers or the firm becoming more susceptible to takeovers. In such case, the managers of a firm having strong shareholder rights might actually be more efficient lest they might lose their job.[1] The justification for takeover threats (i.e. less anti-takeover provisions) is often seen as the strongest form of managerial discipline (Jensen, 1986). Lower agency costs due to stronger shareholder rights (GIM, 2003) could create an environment that may foster managerial efficacy.

On the other extreme, there are firms where the shareholders have very few rights. If there are stiff anti-takeover provisions, so that the firm is impregnable to outside takeovers, managers feel more secure. In such case, such managers may engage in risky behavior because the fear of being "taken" over by some firm is small. Managers would be willing to take more risks, and therefore, be innovative, which may translate into better future growth prospects, operating performance, and increased long term value of the firm. At the same time, with increased job security, managers may put in less effort, shirk, appropriate a part of the cash flows as high executive compensations, or invest in inefficient projects (Williamson, 1964). With weak shareholder rights, it is difficult or costly to replace managers, so managers may be more willing and able to extract private benefits (Jensen, 1986).

The recent empirical evidence supports the latter stream of reasoning (Blanchard, et al., 1994;, Lang, et al., 1991; Harford, et al., 2008). Those firms which have weak shareholder rights tend to make more acquisitions for empire building purposes, which destroy firm value (Masulis, et al., 2007). Similarly, Dittmar and Mahrt-Smith (2007) argue that poorly governed firms dissipate excess cash quickly in ways that significantly reduce operating performance. They also find that negative impact of large cash holdings on future operating performance is eliminated if the firm is well governed. The recent literature, including Gompers, Ishii, and Metrick (GIM, 2003), Bebchuk and Cohen (2005), and Cremers and Nair (2005), has found that firms having better corporate governance have higher long-term stock returns, firm value, and operating performance. We add to this literature by suggesting that a part of a firm's TFP growth or corporate innovation can be attributed to a better corporate governance system. We find robust evidence that the firms with stronger shareholder rights have higher rates of growth in TFP, even after controlling for factors such as the effect of intangibles, the scale effect due to size, age of the firm and industry. The results are robust for the sample period from 1990-

2004. This paper also contributes to the literature on sources of productivity growth by including corporate governance as a factor contributing to the growth in total factor productivity. To our knowledge, this is the first paper which uses the broad based and widely used governance index G, compiled by GIM (2003) to provide evidence on the relationship between shareholder rights and productivity growth.

II. Data and Methodology

A. *Governance Data*

Following GIM (2003), the recently developed and widely used governance index measures is used to measure the strength of shareholder rights.[2] GIM's governance index G is created on the basis of how many restrictive governance provisions are imposed on shareholder rights; the more restrictive the governance, the weaker the shareholder rights. Their primary data source is the Investor Responsibility Research Center (IRRC), which publishes detailed listings of corporate-governance provisions for individual U.S. firms in Corporate Takeover Defenses volumes (Rosenbaum, 1990, 1993, 1995, 1998, 2000, 2002 and 2004). The governance index is constructed as follows. For every firm, GIM adds one point for every provision that restricts shareholder rights and correspondingly increases managerial power; thus, the higher the score, the weaker the shareholder rights. According to GIM, the firms with weak shareholder rights are more likely to experience a wider divergence of ownership and control. Additionally, such firms are also more likely to have high agency costs and hence, poor corporate governance.

Each volume of Corporate Takeover Defenses includes about 1400 to 1500 firms, with some changes in the list of included firms from volume to volume. Since the IRRC does not publish volumes for every year, missing years are filled by assuming that the governance provisions reported in any given year were also in place in two years preceding the volume's publication. In the event that there was a gap in reporting, for example, if a firm is reported in 1990 and again in 1998, the years 1991-1993 are filled assuming it did not change its governance value from 1990. For years 1995-1997 the value from 1998 is used. This procedure is consistent with all the major studies involving the G index. Using different filling methods do not change the results qualitatively. This is due to the fact that that the G index is relatively sticky, as about 45% of the firms had some changes in its G level in the 15 years comprising the sample (1990-2004).

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[1] Typically when there is a hostile takeover, many of the target company's middle level and senior level managers are laid off.

[2] We thank Andrew Metrick for making this data publicly available. The data is directly obtained from Metrick's website at
http://finance.wharton.upenn.edu/~metrick/data.htm

A simple linear transformation of the G index is $CORPG = 24 - G$. The G index is based on 24 corporate governance provisions. A firm can have a maximum G value of 24 (which would essentially make the firm fascist). In the sample employed in this paper, the *CORPG* has a maximum value of 22 (there are no firms having zero, or one G index value) and a minimum value of 6 (which corresponds to value of 18 in the G index). Higher values of *CORPG* correspond to better shareholder rights.

B. Empirical Cobb-Douglas Model for Total Factor Productivity

The starting point of our empirical model of productivity growth is a Cobb-Douglas production function with two factor inputs. This specification, partly based on Nickell (1996), explicitly models the sources of total factor productivity. Specifically, the *level* of total factor productivity as a function of the firm's past corporate governance is modeled. In particular, it is assumed that firm's production function is given by[3]

$$Y_{it} = \Phi_{it} K_{it}^{\beta_{k,i}} L_{it}^{\beta_{l,i}} H_{it}^{\beta_{c,i}}$$
(1)

where Y_{it} is value added, measured as sales minus the cost of goods sold, Φ_{it} is a measure of total factor productivity, K_{it} is the tangible capital stock, L_{it} is the labor input, and H_{it} is the stock of intangible capital for firm i in year t. Since value added, defined as total sales less materials costs, is used as an output measure, this specification implicitly allows for materials as the fourth input.

The issue though is accounting for the different growth rates of labor and capital for firms in different industries. In other words, it would be naïve to assume that the factor inputs of labor and tangible and intangible capital have similar coefficients across industries. Just using industry dummies does not solve the problem as it is not able to isolate the effect of individual factor inputs. Instead, an alternative formulation that is able to capture the industry specific component on the factor inputs of labor, tangible, and intangible capital is employed.

For a firm belonging to a particular industry, the coefficient on tangible capital $\beta_{k,i}$ is treated as $\beta_{k,i} = \beta_k + \beta_{k,j(i)}$, to capture the industry adjusted coefficient on tangible capital and the coefficient on intangible capital is treated as $\beta_{h,i} = \beta_h + \beta_{h,j(i)}$ to capture the industry adjusted coefficient on intangible capital. Similarly, the

industry adjusted coefficient on labor $\beta_{l,i}$ is calculated as $\beta_{l,i} = \beta_l + \beta_{l,j(i)}$ where $j(i)$ denotes the industry of firm i. The regression terms for labor, tangible, and intangible capital factor inputs for firm i belonging to industry $j(i)$ are given by

$$\beta_l l_{i,t} + \beta_{l,j(i)} (l_{i,t} \times IND_{j(i)}),$$
$$\beta_k k_{i,t} + \beta_{k,j(i)} (k_{i,t} \times IND_{j(i)})$$
$$\beta_h h_{i,t} + \beta_{h,j(i)} (h_{i,t} \times IND_{j(i)})$$

where IND_j is the dummy variable for the jth industry. Unlike Nickell (1996), the restriction that factor coefficients to sum to 1 is not used, i.e., constant returns to scale are not assumed. This gives the basic log-linear empirical production function with y_{it}, k_{it}, l_{it}, h_{it} and ϕ_{it} denoting the logs of Y_{it}, K_{it}, L_{it}, H_{it} and Φ_{it}, respectively

$$\begin{aligned} y_{it} = & \phi_{it} + \beta_k k_{it} + \beta_l l_{it} + \beta_h h_{it} \\ & + \beta_{k,j(i)} (k_{it} \times IND_{j(i)}) + \beta_{l,j(i)} (l_{it} \times IND_{j(i)}) \\ & + \beta_{h,j(i)} (h_{it} \times IND_{j(i)}) + \mu_i + v_{it} \end{aligned}$$
(2)

Additionally, taking first differences eliminates the fixed firm effect μ_i which accounts for all unobserved company specific factors influencing the level of productivity. This gives the differenced growth version of the adjusted Cobb-Douglas production function

$$\begin{aligned} \Delta y_{it} = & \Delta \phi_{it} + \beta_k \Delta k_{it} + \beta_l \Delta l_{it} + \beta_h \Delta h_{it} \\ & + \beta_{k,j(i)} (\Delta k_{it} \times IND_{j(i)}) + \beta_{l,j(i)} (\Delta l_{it} \times IND_{j(i)}) \\ & + \beta_{h,j(i)} (\Delta h_{it} \times IND_{j(i)}) + \Delta v_{it} \end{aligned}$$
(3)

Finally, the sources of productivity growth are specified by using the level of corporate governance in year *t-1*. The level of corporate governance is proxied by *CORPG*. To control for value added growth differences between younger firms and older firms, the logarithm of a firm's age in years, which is the difference between the foundation date of the firm and the current date, is used. The coefficient on the age variable should be negative in line with the view that younger firms are likely to have a faster growth than the older firms (Evans, 1987b). An alternative measure of firm age as the log of years listed does not qualitatively alter the results.

In addition, time and industry dummies are included to account for time effects that capture shocks common to all firms and industry effects that capture shocks specific to the particular industry which a firm belongs to. Thus, total factor productivity growth is specified as

$$\Delta \phi_{it} = \lambda_1 CORPG_{it-1} + \lambda_2 \ln(Age) + \text{Year Effects} + \text{Industry Effects}$$

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[3] Results do not change qualitatively if a simpler specification without intangible capital is employed.

(4)

The above model specification defined by equations (3) and (4) is used for all regression results. The Industry dummy variable from equation (4) is excluded for the firm specific fixed effects model as industry dummies will be collinear with firm fixed effects.

C. Firm Specific Accounting Data

The inputs used to compute a firm's TFP are obtained from COMPUSTAT. In terms of data series used, a firm's gross profit or value added is defined as the difference between a firm's sales (SALES, COMPUSTAT industrial Annual data item 2) and its cost of goods sold (COGS, COMPUSTAT Annual data item 30). A firm's labor input is the number of its employees (EMP, COMPUSTAT industrial annual data item 29). The capital stock of a firm is measured using the Net Property, Plant, and Equipment (PPEN, COMPUSTAT industrial annual data item 8). PPEN is firm's net fixed assets. The book value of total assets is used to account for the size factor (ASSETS, COMPUSTAT industrial annual data item 6). Intangible is proxied by COMPUSTAT item 33 and represents the net value of intangible assets.[4] Long term liabilities (LTD, industrial annual data item 9) are taken as the value of debt. Also, EBITDA (earnings before interests, taxes, depreciation, and amortization) is taken from COMPUSTAT industrial annual data item 13) as a gross operating profit.

To capture industry wide differences across firms, we classify them into 10 industries (see Table 2) based on Fama-French (1997) classification system using SIC codes.[5] Intangible intensity (*INTANI*), defined as the ratio of intangible assets to net fixed assets (PPEN), is used as a control variable in our regressions as a robustness check. This is because the intangible-intensity varies largely among industries (Claessens and Laev, 2003). It would also account for some industry level differences in productivity. Table 2 displays the average intangible-intensity benchmarks for U.S. firms in 10 different industries. The average intangible-intensity during the sample period (1990-2004) is 128%. But there is a wide variation of intangible-intensity across industries, ranging from as low as 4% for utilities and 12% for petroleum, natural gas and coal products to as high as 267 % for the telecommunications industry and 224% for the healthcare industry. The variation concurs with notions of what constitutes relatively capital intensive versus more knowledge intensive industries.

D. Some Measurement Issues

The capital stock in a firm is difficult to measure with time series of investments required along with composition issues. However, Bailey, et al., (1992), find that in the productivity model, the use of sophisticated measures of capital instead of crude measures based on book values of capital stock do not change the results qualitatively. For labor input, there is no way to distinguish between "blue collar" and "white collar" workers and hence the measured employed assumes the same amount of labor productivity and ignores the composition issues.

All the variables in the Cobb-Douglas model are required to be either in nominal terms or real terms for consistency. We have nominal accounting values for all our variables except labor. The COMPUSTAT item "labor and related expenses" would have served the purpose, however COMPUSTAT does not report this data regularly and the labor and related expenses data amount to less than 5% of the sample. The widely used alternative is the number of employees as a measure of labor input, which is in real terms.

Since prices do not rise equally for all goods and services, finding the real values from the nominal book values is not simple. Rises in the price of oil are likely to affect the petroleum extraction industry much more than say consumer durables. Similarly, a decline in the prices of consumer durables may not result in similar decline in prices in the food industry. To convert nominal book values into real values, each firm's output and costs must be deflated by sub-industry specific producer prices. Also applying price deflators based on industry is only acceptable under perfect competition where price per unit of quality adjusted output is identical across firms. Bartelsman and Doms (2003) suggest that persistent dispersion of productivity and costs across firms even in the same industry, disputes the empirical validity of perfect competition. Refraining from attempting to take on such a complicated endeavor, a generic and widely used consumer price index is instead used to compute the real values of the nominal variables.

The data on the consumer price index is obtained from Bureau of Labor Statistics (BLS) website[6] of the U.S. Department of labor. The broadest, most comprehensive CPI, the consumer price index for all urban consumers (CPI-U) for the U.S. city average for all items with base 1982-84=100, is used here. We calculate the real values from the nominal book values of capital, intangibles, assets, net sales and cost of goods sold by deflating each variable each year by the corresponding yearly CPI-U index.

D. Descriptive Statistics

Table 1 presents the median, mean and standard deviation of the regression variables. The median firm age is 37 years and the mean is 58 years with a standard

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[4] Intangibles are assets that have no physical existence in themselves, but represent rights to enjoy some privilege. In COMPUSTAT, this item includes blueprints or building designs, patents, copyrights, trademarks, franchises, organizational costs, client lists, computer software patent costs, licenses, and goodwill.

[5] We thank Kenneth French for making this information available on his website.

[6] http://www.bls.gov

deviation of 28 years. The governance index G has a median value of 9 and a mean value of 8.40 with a standard deviation of 4.59 representing almost a normal distribution. The growth in value added has a median growth rate of 5.16% and a mean growth rate of 7.93% with a standard deviation of 16.53%. This reflects a high growth rate of output for the sample period from 1990 to 2004. The tangible capital stock and labor both have median growth rates of about 3.7%. Intangible capital stocks grew at a negative rate during the sample period and the standard deviation was 13%. The largest part of intangibles is often goodwill. This was likely due to a spate of high merger and acquisition (M&A) activities in late 1980s and a relative decline of the M&A activities in the 1990s. The intangible-intensity is also highly skewed with median of 54% and a mean of 128% with a standard deviation of 60%.

Table 2 presents the mean values of some firm statistics based on the 10 industries. The industries are categorized using 10 industry classifications from SIC codes by Fama-French (1997). The growth in value added during the period 1990-2004 is highest for the healthcare industry at 18.3%. This industry also has one of the highest intangible-intensities. The energy sector, which includes petroleum, natural gas, and coal products, had the second highest growth in value added at 17.8%. The EBMARGIN defined as EBIT/SALES, where EBIT is the earnings before interest and taxes, is highest for telecommunication industry at 33%, and lowest for wholesale and retail businesses at slightly over 9%. The gross profit margin (GPM) defined as the ratio of (Sales-COGS)/Sales follows a pattern similar to growth in value added. The average size of total assets varies from $1,676 million for consumer durables to $17,481 million for telecommunications industry. The leverage defined as the ratio of long term liabilities to book value of total assets is highest for the telecommunications sector at 33%. The mean leverage of the entire sample is 20%.

III. Results and Analysis

A. OLS estimation with robust standard errors

The starting point of this analysis is a pooled OLS regression of the model specified by equations (3) and (4). Breusch-Pagan/Cook-Weisberg tests reveal the presence of panel heteroskedasticity which is corrected by the use of a Huber-White Sandwich estimator for robust standard errors[7]. Wooldridge (2002) autocorrelation tests for panel data show autocorrelation in the levels but no serial correlation when first differences are used. As the model is a first differenced mode, the problems associated with autocorrelation are not a concern.

Column (1) in Table 3 reports the result of a simple pooled regression with the absence of individual firm effects and cross industry dummies for capital, labor, and intangibles. The coefficient on growth rates of the input factors is positive and significant at the 1% level. The coefficient of 0.0022 on the lagged *CORPG* term is also positive and highly significant. This implies that a one point increase in CORPG will increase the value added by 1%.[8] As expected, the coefficient on firm age is negative and is significant. However, there is a positive and significant (at 10%) intercept term which possibly indicates the presence of an omitted variable. The intercept becomes insignificant when cross industry dummies of the factor inputs are included in the regression as specified by equation (3). The coefficient on lagged *CORPG* is similar to the value in column (1) and significant at the 1% level. The coefficients for the factor inputs except capital are all insignificant, though a few of individual cross industry dummies for labor and intangibles are significant. The 30 cross industry dummies for factor inputs are not presented for brevity of exposition.

The regressions in Table 3, columns (3) and (4) expand the model to incorporate temporal and per-industry heterogeneity by adding year and industry dummies to the model. Column (3) reports a fixed time effects pooled regression model which includes year dummies. This helps in controlling for a time effect that makes errors spatially correlated. The coefficient on the governance variable is positive and significant at 1%. Column (4) reports the result of a pooled OLS regression with 10 industry dummies. The coefficient on *CORPG* is significant at 5%. The last column uses both fixed time and industry effects and finds similar results. The coefficient on *CORPG* in all the five pooled OLS regressions is stable and significant. Overall, the results imply a robust positive and significant effect of corporate governance on a firm's productivity growth.

B. Endogenously Issues

One of principal problems faced when creating an empirical model for governance studies is the problem of endogeneity. The variables that represent levels of corporate governance may be also determined simultaneously with dependent variables related to firm value and productivity. The simultaneous equations bias makes it difficult to determine the direction of causality. Corporate governance can affect productivity, but productivity can also generate a better governance structure (Hermalin and Weisbach, 2003).

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[7] We also use Roger's standard errors for robustness but the significance of the coefficient of the regressors does not change.

[8] A firm that is one standard deviation better than the average firm in terms of its corporate governance measure will have a 1% higher value added than the average firm in the sample, given by the product of the standard deviation and the coefficient on *CORPG*, which is 4.59 times 0.22%.

The problem of simultaneous equation bias could be empirically treated by the use of an instrumental variables or the Arellano-Bond (1991) approach, but such an instrument for G is not easily identified. GIM (2003) also report their inability to come up with a suitable instrument for G to use as an instrumental variable.

Using lagged values of *CORPG*, however, may partially reduce this endogeneity problem though it does not completely rule out reverse causality. Lagged governance index also ensures that the information set at the beginning of time t contains the prior year value of each firm's governance index, preventing a look-ahead bias. The endogeneity problem can also be reduced if productivity growth is included rather than productivity levels simply because productivity growth is less persistent than productivity levels (Nickell, 1996).

C. Panel Data Fixed Effect Model
An alternative solution for the endogeneity problem is the use of panel data fixed effect models. A source of endogeneity can be omitted variables related to firms, years, or industries. A combined time and firm fixed effect regression model eliminates omitted variables arising both from unobserved variables that are constant over time and unobserved variables that are constant across firms. With firm fixed effects, the regression coefficient on *CORPG* is driven by the extent of variation over time *within* each firm. Since the governance index for a firm being largely invariant over time (in our sample around 55% of the firms do not undergo a change during the sample period 1990-2004), the fixed effects regression coefficient on *CORPG* is mostly attributed to the variation of *CORPG* of the firms for which the governance index does change over time. If a firm's governance is sticky over time, that firm would not contribute to the coefficient estimation but will only introduce noise and lower test power (Chi, 2005). GIM rejects the use of panel data fixed effect in the sense of firm fixed effects with time-varying coefficients for the above-mentioned reason. Another problem with firm-fixed effects is that including all our firm dummies significantly reduces the degrees of freedom.

Hausman (1978) test suggests picking fixed effects over random effects. Though, both fixed and random effects regression results are presented to check for robustness. The GLS random effects results are discussed in the robustness section. Column (1) in Table 4 corresponds to the total sample. This sample is then divided over two sub-samples called *DEM* and *DICT* that correspond to the levels of lagged $G \leq 5$ and $13 \leq G \leq 24$, respectively.[9] Note that there are

no firms with G above 18 in the sample. With higher levels of *CORPG* corresponding to better corporate governance, the sub-samples *DEM* and *DICT* correspond to democratic and dictator firms in the previous year since they are based on lagged G values. Columns (2) and (3) of Table 4 correspond to sub-samples *DEM* and *DICT* respectively. In each column, regressions are for the growth of firm value added on firm's capital, labor and intangibles growth, and lagged corporate governance index *CORPG* with the log age of firms used as a control variable.

Regressors also include industry specific capital, labor, and intangibles components that are not reported in the table for brevity of exposition. For all firms and dictator sub-samples, the coefficient on lagged *CORPG* is positive but marginally significant at the 10% level. The coefficient on *CORPG* for all firms is higher in magnitude though lower in significance than the previous pooled OLS results in Table 3. Notice, that the t-values are lower than those reported in the pooled OLS models. This is because in the fixed effects model, only the time-series variation of governance is captured. For the democratic sub-sample, the coefficient on *CORPG* is 0.0054 which implies that a one point increase in *CORPG*, all else equal, have 2.47% higher value added[10]. For the dictator sub-sample, the coefficient on the governance variable is negative but insignificant. The results for the entire sample and for the democratic sub-sample are quite strong considering the fact that for a sizeable number of firms in the sample the corporate governance index does not change over time. Hence, the fixed effect regression only captures changes in *CORPG* for firms which undergo a change in its G index.

D. Robustness section
A series of robustness checks is included in this subsection. The results indicate that the empirical findings documented in the previous subsection are robust to different econometric model specifications, additional control variables, and yearly analysis.

D.1 Year-by-Year Regression
In the unlikely event that the results were influenced by the effect of a single year or few years, OLS regressions on the model specified by equations (3) and (4) are conducted for each year starting from 1990 to 2004. All regressions use the Huber-White sandwich estimator, which is robust to the presence of generic heteroskedasticity. Table 5 shows that in 14 out of 15 years in the sample, the coefficient of

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[9] We modify the GIM (2003) classification for Dictator firms by including firms from $G \geq 13$ instead of $G \geq 14$. This allows us to add about 500 firm years to the sample which makes our dictator sub-sample less skewed in

number of observations in comparison to the democratic sub-sample. Our results do not change qualitatively if the GIM (2003) classification is used though.

[10] A firm that is one standard deviation better than the average firm in terms of its corporate governance measure will have a 2.47% higher value added than the average firm in the sample, given by the product of the standard deviation and the coefficient on *CORPG*, that is 4.59 times 0.54%.

CORPG remains positive. In eight of the fifteen years it is positive and significant. The only year it is negative is 1997, but it is insignificant. The coefficient on *CORPG* is relatively stable throughout the years.

D.2 Generalized Least Squares Random–Effects Model

It is possible that the level of governance effects firm productivity not only in the time series but also in the cross section. A random effect model captures both the time-series and the cross sectional variations while modeling the error terms differently for each firm, and therefore generates more efficient estimates than a fixed effects model does. However, a Hausman (1978) specification test indicates that a fixed effects model is more efficient as there may be omitted variables present. Random effects regression results are also presented; as such specification is widely used in finance research[11]. The justifications for reporting the random effects model are as follows. First, the omitted variable may have nothing to do with the governance level. Second, as governance levels tend to be sticky over time, the fixed effects regression may not reveal the true picture. Third, fixed effects may work best when there are relatively fewer firms and more time periods, as each dummy variable removes one degree of freedom from the model. There are close to 2,000 firms with an average of only 9 yearly observations.

Table 6 reports the result of GLS random effects regressions. Column (1) indicates that lagged *CORPG* is positive and significant at 1% for the entire sample. For democratic firms represented by sub-sample *DEM*, the coefficient of lagged *CORPG* has a higher positive number and significance at the 1% level. This implies that the effect of the governance variable on productivity growth is the strongest for the democratic sub-sample. The coefficient on age is negative and significant at 5% for both the entire sample and democratic sub-sample. Column (3) shows the results of dictator firms represented by sub-sample *DICT*. The coefficient of lagged *CORPG* is negative but insignificant.

D.3 Additional Control Variables

There is a stream of literature[12] which includes lagged output as a control variable in the empirical Cobb-Douglas production function. In particular, it is assumed that firm i's production function is given by the standard Cobb-Douglas formulation (1) and (2). Following Nickell (1996), lagged output is included

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[11] Statistically, fixed effects are always a reasonable thing to do with panel data (they always give consistent results) but they may not be the most efficient model to run. Random effects will give better p-values as they are a more efficient estimator, so random effects should be employed if it is statistically justifiable to do so.

[12] For example, see Nickell (1996) and Köke and Renneboog, (2005).

in the empirical production function. This expansion takes into account potential persistence in output levels. This gives the basic log-linear empirical production function, with y_{it}, k_{it}, l_{it}, h_{it} and ϕ_{it} denoting the logs of Y_{it}, K_{it}, L_{it}, H_{it} and Φ_{it}, respectively

$$y_{it} = \phi_{it} + \beta_o y_{it-1} + \beta_k k_{it} + \beta_l l_{it} + \beta_h h_{it}$$
$$+ \beta_{k,j(i)}(k_{it} \times IND_{j(i)}) + \beta_{l,j(i)}(l_{it} \times IND_{j(i)})$$
$$+ \beta_{h,j(i)}(h_{it} \times IND_{j(i)}) + \mu_i + \upsilon_{it}$$
$$(2')$$

Secondly, taking first differences eliminates the fixed firm effect μ_i which accounts for all unobserved company-specific factors influencing the level of productivity. The differenced growth version of the adjusted Cobb-Douglas production function is thus obtained

$$\Delta y_{it} = \Delta\phi_{it} + \beta_o \Delta y_{it-1} + \beta_k \Delta k_{it} + \beta_l \Delta l_{it} + \beta_h \Delta h_{it}$$
$$+ \beta_{k,j(i)}(\Delta k_{it} \times IND_{j(i)}) + \beta_{l,j(i)}(\Delta l_{it} \times IND_{j(i)})$$
$$+ \beta_{h,j(i)}(\Delta h_{it} \times IND_{j(i)}) + \Delta\upsilon_{it}$$
$$(3')$$

where Δy_{t-1} controls for any growth or momentum effect that may obscure results of the regressions.

The inclusion of dynamics in the form of a lagged dependent variable captures the fact that, whenever there is a change in factor inputs of production, it takes some time for output to reach its new long run level. For example, if new capital goods are purchased, it may take a considerable amount of time for the new machines to be fully operational. Autonomous shocks to effort (such as increasing the speed of the production line) may induce a rise in output and a possible fall in employment. In fact, including Δy_{t-1} puts a downward bias on the right-hand side exogenous variables, so the results should be stronger if there is still a significant relationship between governance and productivity growth after controlling for potential persistence in output.

To control for growth effects related to firm size but unrelated to corporate governance, lagged log total assets is included. This is expected to make the coefficient on assets negative as small firms tend to grow faster than large firms (Hall, 1987). Also, intangible-intensity *INTANI* is included as a control variable. The modified equation including additional control variables is given by

$$\Delta\phi_{it} = \lambda_1 CORPG_{i,t-1} + \lambda_2 \ln(Age) + \lambda_3 \ln ASSETS_{i,t-1} + \lambda_4 INTANI_{i,t-1}$$
$$+ Year\ Effects\ +\ Industry\ Effects$$
$$(4')$$

Table 7 reports pooled OLS results with Huber-White sandwich estimators. Column (1) shows OLS

regression results without the cross industry dummies. All of the regressors except the lagged log assets are significant. Comparing these results with the results in Table 3, the coefficient on *CORPG* is still positive and significant though has declined from 0.0022 to 0.0019. The coefficient on log lagged assets is negative as expected. Intangible-intensity is positively related to growth in value added. The coefficient on *CORPG* is fairly stable and significant, though the magnitude of the coefficient and the level of significance has decreased after the inclusion of additional control variables.

D.3.1 Panel Data Fixed Effect and GLS Random Effects Model

How the coefficient on *CORPG* behaves in the presence of additional control variables for the entire sample and the sub-samples of *DEM* and *DICT* is particularly relevant. Column (1) of Table 8 reports the result of a fixed effects model for all firms. The coefficient on *CORPG* is positive but has declined from 0.0031 to 0.0024. For the random effects model in column (2), the coefficient on *CORPG* is 0.0023 and significant at 5%. For the democratic sub-sample, the fixed effect model generates a coefficient of 0.0042 but is now insignificant, as is seen in column (1) of Table 9. The corresponding coefficient for the dictator sub-sample in column (1) of Table 10 is negative as before and also insignificant. Column (2) in Table 9 shows that the result for the DEM firms on CORPG for the random effects model is positive and significant, whereas for the *DICT* firms it is negative but insignificant.

In general, the inclusion of additional control variables does not change the sign of the coefficient on the governance variable, though the magnitude and the significance declines.

IV. Conclusions

This paper shows that a firm's growth of total factor productivity is positively related to the quality of governance *CORPG* which proxies the strength of shareholder rights for a firm. The effect varies positively with the quality of governance, and is strongest among firms which have the strongest shareholder rights. As the governance quality becomes poorer, the strength of the effect declines. At very low levels of *CORPG*, corresponding to the weakest shareholder rights, the effect on productivity growth is less clear, and in some of the results there is a negative relationship between the level of governance and productivity growth. One possible explanation could be the much smaller size of dictator firms in the sample results in low power for testing.

To summarize, some firms are very efficient whereas others are not and some firms have much faster rates of innovation and productivity growth than others though they use similar factor inputs. There are some factors which contribute to higher total factor productivity growth that may determine this difference among firms. This paper provides evidence that the quality of corporate governance in a firm is a likely source of productivity growth. The channels through which it influences productivity growth are not directly investigated. However, it is suggested that good governance can have a positive influence on a manager's ability, which in turn contributes to productivity growth.

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Appendices

Table 1. Variable Description and Summary Statistics

Variable Name	Variable Description	Median, Mean (Std. Dev.)
$\ln(AGE)_{it}$	Log of Age (in years) of firm i, defined as the difference between the current year, t, and the date of formation.	37 years 58 years (28 years)
G	Governance index measure of a firm as constructed in GIM (2003). Higher values of G denote weaker shareholder rights.	9 8.40 (4.59)
$CORPG_{it}$	A Corporate Governance measure formed as a simple linear transformation of the G index. Higher values of *CORPG* signify stronger shareholder rights.	15 15.60 (4.59)
Δy_{it}	Growth rate of value added or the gross profit of firm i in year t, defined as the difference in the log values of gross profit, Y_{it} and Y_{it-1}.	5.16% 7.93% (16.53%)
Δk_{it}	Growth rate of the net capital stock of firm i in year t, defined as difference in the log values of net capital stock, K_{it} and K_{it-1}.	3.65% 6.34% (15.77%)
Δl_{it}	Growth rate of labor of firm i in year t, defined as the difference in the log values of number of employees, L_{it} and L_{it-1}.	3.7% 5.65% (11.4%)
Δh_{it}	Growth rate of intangibles of firm i in year t, defined as the difference in the log values of intangibles, H_{it} and H_{it-1}	-1.86% -3.07% (13.07%)
$\ln(ASSETS)_{it}$	Log of the Book value of Total Assets of firm i in year t.	$5389 million $45,746 million ($24, 284 million)
$INTANI_{it}$	Intangible intensity of firm i in year t. Defined as the ratio of Book value of Intangibles to the Book value of Net Fixed Assets for firm i in year t.	54% 128% (60.66%)

Note: The median, mean and standard deviation for age and assets are given without the logs. The assets are in the unit of millions of dollars. The industry groups are discussed in Table 2.

Table 2. Means and standard errors of selected variables based on industry

	G	Δy	EBMARGIN (EBIT/Sales)	GPM (Gross Profit/Sales)	ROE	ASSETS $ millions)	INTANG	LEV
Consumer Non-Durables	9	8.39%	16.77%	43.17%	24.40%	3925	1.37	0.22
		0.6%	*3%*	*4%*	*5.9%*	*288.020*	*0.065*	*0.006*
Consumer Durables	10	10.43%	12.22%	31.63%	12.38%	1676	1.10	0.23
		2.1%	*4%*	*6%*	*0.09%*	*167.908*	*0.178*	*0.012*
Manufacturing	9	7.46%	14.63%	32.36%	14.61%	3519	0.64	0.23
		0.5%	*0.1%*	*3%*	*1.0%*	*133.926*	*0.022*	*0.004*
Energy, Oil, Gas, and Coal Extraction	9	17.84%	27.09%	36.07%	8.78%	7720	0.12	0.23
		2.5%	*1.0%*	*1.0%*	*0 .5%*	*909.157*	*0.031*	*0.007*
Hitech- software and Electronic Equipment	7	14.70%	16.51%	42.52%	13.18%	2594	1.06	0.14
		0.9%	*0.3%*	*0.5%*	*1.7%*	*207.931*	*0.062*	*0.006*
Telecommuni-cations	8	16.34%	32.80%	48.03%	6.92%	17481	2.67	0.33
		1.5%	*6%*	*9%*	*1.4%*	*1890.681*	*0.223*	*0.013*
Wholesale, Retail, and Some Services	8	14.58%	9.24%	29.17%	12.33%	3051	0.92	0.19
		0.5%	*0.1%*	*0.4%*	*0.6%*	*192.697*	*0.097*	*0.004*
Healthcare, and Drugs	8	18.29%	22.58%	54.89%	15.82%	3712	2.24	0.15
		0.9%	*3%*	*7%*	*1.4%*	*308.749*	*0.194*	*0.005*
Utilities	9	9.31%	24.21%	24.67%	10.28%	12131	0.04	0.32
		1.8%	*5%*	*5%*	*0.4%*	*655.830*	*0.003*	*0.004*
Others	8	15.50%	19.41%	35.53%	14.61%	13962	2.11	0.18
		0.6%	*2%*	*3%*	*1.2%*	*1233.527*	*0.093*	*0.003*
Total Sample	9	12.3%	18.89%	38.2%	15.05%	5389	1.28	0.20

For governance index G , the numbers are for median values of G for each industry

Table 3. OLS regression with Robust Standard Errors

The panel data encompasses all firms which have a governance index value created by GIM (2003) for 1990-2004. The dependent variable is Δy_t or growth in value added. The regression result corresponds to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock Δk_t, growth rate of labor Δl_t, and the growth rate of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross–industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. *Ln (Age)* is the logarithm of firm age in years. Robust standard errors are due to Huber-White sandwich estimators. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)	(5)
			Fixed Time Effects	Fixed Industry Effects	Fixed Time and Industry Effects
	OLS	OLS			
Δk_t	0.228***	0.0346	0.4338***	0.0091	0.4505***
	(0.0244)	(0.1159)	(0.1097)	(0.1437)	(0.1148)
Δl_t	0.3544***	0.5654**	0.5688**	0.5642**	0.204*
	(0.0342)	(0.1899)	(0.1921)	(0.1897)	(0.0981)
Δh_t	0.0244***	-0.035	-0.0148	-0.0508	-0.015
	(0.0056)	(0.346)	(0.045)	(0.3546)	(0.0449)
$CORPG_{i,t-1}$	0.0022***	0.0024***	0.0024***	0.0023**	0.0022**
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Ln(Age)	-0.0124***	-0.0112***	-0.012***	-0.0083*	-0.0092**
	(0.0032)	(0.0033)	(0.0034)	(0.0035)	(0.0035)
Intercept	0.0483*	0.0345	0.021	0.0111	0.0035
	(0.0174)	(0.0206)	(0.0238)	(0.0283)	(0.0289)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	no	yes	yes	yes	yes
R-Squared	0.2174	0.2276	0.2404	0.2304	0.2432
No. of Firm Years	11122	10530	10530	10530	10530

Table 4. Fixed –Effects regression

The panel data fixed effect regression encompasses all firms which have a governance index value created by GIM (2003) for 1990-2004. The dependent variable is Δy_t or growth in value added. The regression result corresponds to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock Δk_t, growth rate of labor Δl_t, and the growth rate of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross–industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. Ln(Age)is the logarithm of firm age in years. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)	(3)
	ALL	DEM	DICT
Δk_t	0.3581	0.3689	0.4929
	(0.1920)	(0.6178)	(0.8093)
Δl_t	0.3458**	0.2637	0.0606
	(0.1325)	(0.4046)	(0.9139)
Δh_t	-0.2702	-0.1313	0.0127
	(0.3826)	(0.0908)	(0.1961)
$CORPG_{i,t-1}$	0.0031*	0.0054*	-0.0118
	(0.0014)	(0.0025)	(0.0152)
Ln(Age)	-0.0274*	-0.0174	-0.0567
	(0.0138)	(0.0251)	(0.072)
Intercept	0.0799	0.005	0.3809
	(0.0608)	(0.1463)	(0.333)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	yes	yes	yes
R-Squared (within)	0.1838	0.1545	0.2138
R-Squared (between)	0.2579	0.3645	0.1674
R-Squared (overall)	0.2235	0.2268	0.2303
No. of firm years	10530	3023	1010

Table 6. GLS Random –Effects regression

The panel data generalized least squares random effects regression encompasses all firms which have a governance index value created by GIM (2003) from 1990-2004. The dependent variable is Δy_t or growth in value added. The regression result corresponds to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock, Δk_t, growth rate of labor Δl_t, and the growth rate of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross–industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. Ln(Age)is the logarithm of firm age in years. Random effects use the Swamy-Aurora estimator for computing standard errors. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)	(3)
	ALL	DEM	DICT
Δk_t	-0.0129	0.7073	0.3915
	(0.1454)	(0.5389)	(0.7685)
Δl_t	0.0283	0.201	-0.2636
	(0.1248)	(0.3285)	(0.7931)
Δh_t	0.0015	0.0032	-0.0642
	(0.3458)	(0.0674)	(0.1791)
$CORPG_{i,t-1}$	0.0028***	0.0069***	-0.0182
	(0.0008)	(0.002)	(0.0116)
Ln(Age)	-0.0124**	-0.0167**	0.0198
	(0.0042)	(0.0054)	(0.0206)
Intercept	0.0343	-0.0281	0.1395
	(0.0237)	(0.0489)	(0.1482)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	yes	yes	yes
R-Squared (within)	0.1832	0.1472	0.2182
R-Squared (between)	0.2773	0.4588	0.0456
R-Squared (overall)	0.2274	0.2426	0.1915
No. of firm years	10530	3023	1010

Table 7. OLS regression with robust standard errors and Control variables

The data is comprised of all firms which have a governance index value created by GIM (2003) from 1990-2004. The dependent variable is Δy_t or growth in value added. The regression results correspond to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock Δk_t, growth rate of labor Δl_t, and the growth rate of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross–industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. The control variables are lagged value of log total assets $\ln ASSETS_{i,t-1}$, lagged intangible intensity $INTANI_{i,t-1}$, defined as the ratio of intangibles to net fixed assets, lagged growth in value added, $\Delta y_{i,t-1}$, and Ln(Age), the logarithm of firm age in years. Robust standard errors are due to Huber-White sandwich estimators. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	Fixed Time Effects	Fixed Industry Effects	Fixed Time and Industry Effects
Δk_t	0.2526***	0.1129	0.4402***	0.1024	0.4585***
	(0.0258)	(0.1034)	(0.1147)	(0.1086)	(0.1193)
Δl_t	0.3428***	0.5062**	0.5088**	0.5031**	0.5052*
	(0.0342)	(0.1942)	(0.1968)	(0.1938)	(0.1964)
Δh_t	0.0246***	-1.4897**	-0.0127	-1.5026**	-0.0131
	(0.0056)	(0.4629)	(0.0441)	(0.4621)	(0.0441)
$CORPG_{i,t-1}$	0.0019**	0.0019*	0.0016*	0.0017*	0.0015*
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
$\ln ASSETS_{i,t-1}$	-0.0033	-0.0042*	-0.0037	-0.0054**	-0.0048*
	(0.0018)	(0.0021)	(0.0021)	(0.0021)	(0.002)
$INTANI_{i,t-1}$	0.0023**	0.0021*	0.0022*	0.0019*	0.002*
	(0.0008)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
$\Delta y_{i,t-1}$	-0.0636*	-0.0641*	-0.0677*	-0.0681*	-0.0719*
	(0.0285)	(0.0291)	(0.0297)	(0.0292)	(0.0298)
Ln(Age)	-0.0108**	-0.0092*	-0.0107**	-0.0058	-0.0074*
	(0.0035)	(0.0037)	(0.0037)	(0.0038)	(0.0038)
Intercept	0.0799	0.04	0.0952	0.0259	0.084
	(0.024)	(0.0273)	(0.0304)	(0.0335)	(0.0353)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	no	yes	yes	yes	yes
R-Squared	0.2319***	0.2437	0.2558**	0.2461	0.2582*
Number of Obs.	10584	10011	10011	10011	10011

Table 8. ALL firms with control variables

The panel data fixed effects regression and GLS random effects regression encompasses all firms which have a governance index value created by GIM (2003) from 1990-2004. The dependent variable is Δy_t or growth in value added. The regression result corresponds to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock Δk_t, growth rate of labor Δl_t, and the growth rate of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross–industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. The control variables are lagged values of log total assets $\ln ASSETS_{i,t-1}$, lagged intangible intensity $INTANI_{i,t-1}$, defined as the ratio of intangibles to Net fixed assets, lagged growth in value added, $\Delta y_{i,t-1}$, and Ln(Age), the logarithm of firm age in years. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)
	(Fixed Effects)	(Random Effects)
Δk_t	-0.1234	0.0877
	(0.182)	(0.1419)
Δl_t	0.0544	0.0395
	(0.1263)	(0.121)
Δh_t	-0.9377	-0.0429
	(0.491)	(0.3458)
$CORPG_{i,t-1}$	0.0024*	0.0023**
	(0.001)	(0.0008)
$\ln ASSETS_{i,t-1}$	-0.0389***	-0.0059**
	(0.0068)	(0.0023)
$INTANI_{i,t-1}$	0.0027*	0.0021**
	(0.0011)	(0.0007)
$\Delta y_{i,t-1}$	-0.1292***	-0.0843***
	(0.0094)	(0.0086)
Ln(Age)	-0.0029	-0.01*
	(0.0159)	(0.0041)
Intercept	0.3352*	0.0544
	(0.1581)	(0.0314)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	yes	yes
R-Squared (within)	0.2138	0.2081
R-Squared (between)	0.1676	0.2829
R-Squared (overall)	0.2099	0.2429
No. of firm years	10011	10011

Table 9. Democratic firms with control variables

The panel data fixed effects regression and GLS random effects regression encompasses all firms which belong to the democratic portfolio characterized by G values of 5 or less based on a governance index value created based on firm anti-takeover amendments and charter provisions from the Investor Responsibility Research Center (IRRC). See GIM (2003) for a detailed explanation of this governance index. Democracies are defined as firms with 5 or fewer charter provisions having G values of 5 or less. The dependent value is Δy_t or growth in value added. The regression results correspond to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock Δk_t, growth rate of labor Δl_t, and the growth rate of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross–industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. The control variables are lagged value of log total assets $\ln ASSETS_{i,t-1}$, lagged intangible intensity $INTANI_{i,t-1}$, defined as the ratio of intangibles to net fixed assets, lagged growth in value added $\Delta y_{i,t-1}$ and Ln(Age), the logarithm of firm age in years. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)
	(Fixed Effects)	(Random Effects)
Δk_t	0.1009	0.5685
	(0.8838)	(0.3894)
Δl_t	0.2456	0.1589
	(0.3851)	(0.3095)
Δh_t	-0.1295	0.0042
	(0.0869)	(0.0125)
$CORPG_{i,t-1}$	0.0042	0.0058**
	(0.0032)	(0.0021)
$\ln ASSETS_{i,t-1}$	-0.0361**	-0.0073*
	(0.0134)	(0.0033)
$INTANI_{i,t-1}$	0.0031	0.0017
	(0.0017)	(0.001)
$\Delta y_{i,t-1}$	-0.1190***	-0.0032
	(0.0168)	(0.0144)
Ln(Age)	0.0071	-0.0112
	(0.0292)	(0.0057)
Intercept	0.2569	0.0156
	(0.1821)	(0.0628)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	yes	yes
R-Squared (within)	0.1808	0.2068
R-Squared (between)	0.5746	0.2045
R-Squared (overall)	0.2846	0.1950
No. of firm years	2924	2924

Table 10. Dictator Firms with Control Variables

The panel data fixed effects regression and GLS random effects regression encompass all firms which belong to the dictator portfolio characterized by G values of 13 or more based on a governance index value created based on of firm anti-takeover amendments and charter provisions from the Investor Responsibility Research Center (IRRC). See GIM (2003) for a detailed explanation of this governance index. Dictators are defined as firms with 13 or more restrictive charter provisions. The dependent value is Δy_t or growth in value added. The regression results correspond to the empirical Cobb-Douglas production function discussed in the paper. The regressors include the growth rate of tangible capital stock Δk_t, growth rate of labor Δl_t, and the rate of growth of intangible capital stock Δh_t. $\Delta k_t IND_i$, $\Delta l_t IND_i$ and $\Delta h_t IND_i$ give the cross-industry dummies associated with tangible capital, labor, and intangible capital respectively. The measure of corporate governance is given by *CORPG* where higher values of *CORPG* signify stronger shareholder rights in a company. The control variables are lagged value of log total assets $\ln ASSETS_{i,t-1}$, lagged intangible intensity $INTANI_{i,t-1}$, defined as the ratio of intangibles to net fixed assets, lagged growth in value added $\Delta y_{i,t-1}$ and Ln(Age), the logarithm of firm age in years. ***,**,* denote significance at 1%, 5% and 10% respectively.

	(1)	(2)
	(Fixed Effects)	(Random Effects)
Δk_t	-0.2209	-0.3517
	(1.3019)	(1.2659)
Δl_t	-0.1278	-0.1082
	(0.9021)	(0.7482)
Δh_t	0.1886	0.1911
	(1.6627)	(1.628)
$CORPG_{i,t-1}$	-0.0019	-0.0137
	(0.016)	(0.0115)
$\ln ASSETS_{i,t-1}$	-0.0318	-0.0012
	(0.0236)	(0.0086)
$INTANI_{i,t-1}$	-0.2209	-0.3517
	(1.3019)	(1.2659)
$\Delta y_{i,t-1}$	-0.1278**	-0.1082*
	(0.9021)	(0.7482)
Ln(Age)	0.1886	0.1911
	(1.6627)	(1.628)
Intercept	0.0019	-0.0137
	(0.016)	(0.0115)
$\Delta k_t IND_i$, $\Delta l_t IND_i$, $\Delta h_t IND_i$	yes	yes
R-Squared (within)	0.2503	0.2356
R-Squared (between)	0.0438	0.2809
R-Squared (overall)	0.1819	0.2649
No. of firm years	969	969

BOARD STRUCTURE, INSTITUTIONAL PRESSURES AND CORPORATE VOLUNTARY DISCLOSURES

Roshayani Arshad*, Ruhaya Atan**, Faizah Darus***

Abstract

Corporate disclosure has been subjected to calls for corporate transparency by corporate governance movement as a matter of good corporate governance. Managers face substantial pressure to make more transparent disclosure of their activities to promote efficient governance of their companies or risk losing legitimacy from the perspectives of the investors and other stakeholders. Using the annual reports of 155 Malaysian listed companies, this study investigates the competing effects of board structure and institutional pressures on the extent and credibility of corporate voluntary disclosure during the period when public listed companies in Malaysia faced new corporate governance regulation. This study provides evidence that under the influence of dominant owners on board, management voluntary disclosure decisions are driven by mimetic pressures when their company is structured to meet expectations of good corporate governance. Managers' voluntary disclosure strategy to gain legitimacy seems to override their incentives to disclose credible information to outside investors. This inference is consistent with the evidence that management voluntary disclosures are not viewed as credible by outside investors. These findings contribute to a better understanding of the relationships between various board structures and institutional pressures on management disclosure decisions in particular agency settings.

Keywords: Voluntary disclosure; board structure; institutional pressures; legitimacy.

*Faculty of Accountancy, Universiti Teknologi MARA, Malaysia
**Faculty of Accountancy, Universiti Teknologi MARA, Malaysia
***Faculty of Accountancy, Universiti Teknologi MARA, Malaysia 40450
Ph: +60 35544 2009, Email: faiza634@salam.uitm.edu.my

1. Introduction

Corporate disclosure has been subjected to calls for transparency as part of the corporate governance movement, in particular among companies in East Asian countries. A primary reason for the widespread interest in such disclosure is that it can improve proper evaluation of managers' activities by investors and other stakeholders (Bushman & Smith, 2001; Taylor et al., 2007). However, disclosure of such information is a sensitive management decision which can also publicly expose managerial weaknesses in operation and investment decisions. But, from a corporate governance perspective, making such information transparent is very important to the interests of the investors and possibly other stakeholders.

The emphasis on corporate transparency as a matter of good corporate governance by regulatory bodies and policy makers will shifts investors and other stakeholders' expectations toward expecting more adequate disclosure of managers' activities. Managers face substantial pressures to increase such disclosure as a matter of good corporate governance practice or otherwise risk potential loss of legitimacy regarding their activities from the perspectives of

investors and other stakeholders. However, managers' incentives to be on the forefront of or join other companies practicing more disclosure of voluntary information for legitimacy purposes may outweigh their incentive to communicate useful information to investors to promote efficient governance of their company. In such situation, can managers voluntary disclosure strategy reveals credible information as monitoring mechanism to investors.

The extent of corporate disclosures made will affect investors' ability to make informed judgments about whether managers have acted in their best interests as owners (Healy & Palepu, 2001). However, the supply of information will not provide assurance to the investors that their investments are not expropriated or wasted on unattractive projects by the managers if it is not viewed as credible by the investors (Lundholm & Myers, 2002). The information can lose its credibility if investors expect managers to supply financial reports for self-interested purposes due to divergence of interests between managers and investors (Fan & Wong, 2002; Healy & Palepu, 1993, , 2001).

The agency literature suggests that alignment of managers' interests with the interests of the investors can be achieved through monitoring of managers'

activities by the board of directors (Fama, 1980; Fama & Jensen, 1983; Healy & Palepu, 2001). However, as board structure differs across companies, the quality of board monitoring on the quality of corporate information communicated to outside investors is likely to vary (Beasley, 1996; Vafeas, 2000). An improved understanding of influences on management's decisions to disclose more or less voluntary information and the credibility of the information would therefore be sought by outside investors (and possibly other stakeholders such as debt holders, employees and regulators). In particular, it is contended in this study that management voluntary disclosure decisions, in terms of both the extent and credibility of the information disclosed, is a complex balance between the competing effects of board structure and institutional pressures.

The theoretical perspective taken in this study under the agency theory is that management have incentives to disclose higher level of voluntary information because it signals that they are acting in the interests of the investors. But this benefit could be outweighed by certain elements of board structure that potentially limit more transparent disclosure of voluntary information to outside investors. A second theoretical perspective invoked in this study is that managers have incentives to disclose more voluntary information to enhance their company's and their own legitimacy. Such disclosure strategy provides managers with important means of managing impressions of their own credibility and that of the company in ways that are acceptable among companies practicing greater corporate disclosure in response to calls for greater corporate transparency.

2. Motivation For The Study

There is a paucity of empirical evidence regarding the competing impacts of board structure and institutional pressures on the extent of voluntary disclosure and credibility of the information disclosed, particularly among companies in East Asian countries. Prior empirical research on disclosure in East Asian countries has predominantly focused on the impacts of corporate governance structures on the extent of voluntary disclosure based on the agency theory explanation (K. Chen et al., 2004; Eng & Mak, 2003; Haniffa & Cooke, 2002; Ho & Wong, 2001; Hossain et al., 1994; Nazli & Weetman, 2006) Further, limited studies in this area has been concerned with the effects on credibility of voluntary information disclosed (Luo et al., 2006).

In addition to the extent of voluntary disclosure, the issue of credible voluntary information is particularly important among companies in East Asian countries. In these companies, corporate ownership structures are highly concentrated and when owners hold important positions in management and on the board, the information disclosed can be viewed by outside investors as reported for self interested purposes by the inside owners (Fan &

Wong, 2002). The presence of these owners may be a countervailing force to the growing efforts for increasing corporate transparency as an important element of corporate governance.

By considering the effects of institutional pressure, this study differs from most previous studies in the area that were confined to examination of corporate governance structures on management voluntary disclosure decisions. As such, combining institutional theory and agency theory explanations on voluntary disclosure behavior in this study will provide a better understanding of the relationships between various elements of board structures and institutional pressures on management voluntary disclosure decisions in particular agency settings.

The context chosen for the study is the corporate disclosure environment in Malaysia during 2002 when public listed companies faced new disclosure requirements regarding their corporate governance practices as required by the Malaysian Code on Corporate Governance (MCCG). The implication of this requirement is that it establishes an expectation of accountability through greater transparency. The context chosen is conducive to the study of incentives for management to be responsive to the institutional pressure by voluntarily disclosing information concerning their activities as a matter of good corporate governance practice. At the same time, the setting of an increase in regulatory and public pressures regarding companies' compliance with good corporate governance structures is conducive to the study of management incentives to manage company legitimacy through voluntary disclosures.

3. Literature Review And Generation Of Hypotheses

This study has identified variables to represent particular aspects of board structure and institutional pressures. The impacts of these variables on managers' voluntary disclosure decisions are formulated into a set of hypotheses based on prior literature. Further, proxy deemed relevant in assessing the credibility of the information disclosed has also been identified for the purpose of testing the hypothesized relationship.

3.1 Family Members on Board

Prior studies suggest that family owned companies gained control of the company by nominating family members on the board of directors (C. J. P. Chen & Jaggi, 2000; Ho & Wong, 2001; Nazli & Weetman, 2006). Further, this can also suggests the existence of dominant group of shareholders or a substantial shareholder with strong influence on the board's decision. Both suggestions point to the possibilities that the company is being managed by family owners and less diffused in terms of ownership structure. As owner managers have greater access to internal information, they have less incentive to disclose

voluntary information to outside investors (Chau & Gray, 2002; Haniffa & Cooke, 2002).

The lack of information to outside investors provides opportunities to the family owners to engage in expropriation of outside investors' wealth. For instance, expropriation activities engaged through connected party transactions by transferring profits to other companies under their control. These activities increase even further the family owners' incentive to reduce voluntary disclosure to outside investors.

Gaining control of the company also enable the owners to influence the appointments of individuals holding top management positions and board members (C. J. P. Chen & Jaggi, 2000; Ho & Wong, 2001; Wang, 2006). Appointments of independent non-executive directors that are influenced by personal ties to the controlling family owners could impair the directors' independence and consequently their influence on disclosure for more comprehensive financial information to outside investors. Lack of independence in this situation leads to higher risk of collusion between independent non-executive directors and family owners. Prior empirical evidence suggests that independent non-executive directors appointed through the influence of family owners support major decisions in favour of family owners rather than outside investors (C. J. P. Chen & Jaggi, 2000; Leung & Horwitz, 2004).

The potential entrenchment effect of family owners on voluntary disclosure can be mitigated by greater demand for detailed disclosure of voluntary information in the annual reports by outside investors (Wang, 2006). However, outside investors' role in mitigating this entrenchment effect in Malaysia may be an ineffective control mechanism as outside investors' activism is still developing. Hence, the overall arguments suggest that the existence of higher percentage of family members on the board is expected to reduce managers' incentives to disclose voluntary information to outside investors. Hence, this study formulates the following hypothesis:

H1: The percentage of family members on the board is significantly negatively related to the extent of voluntary disclosure.

3.2 Independent Non-Executive Directors

Fama & Jensen (1983) suggests that board composed of higher percentage of independent non-executive directors strengthened the extent to which the board is independent of management and thus are more effective monitors of managerial actions and decisions. Prior empirical research provide evidence that independent non-executive directors on the board impact a range of managerial actions and decisions, particularly in the interests of the investors (Bhagat & Black, 1999; Brickley et al., 1994; Cotter et al., 1997; Dahya & McConnell, 2005; Hermalin & Weisbach, 1998). These studies show that independent non-executive directors are associated with firing ineffective chief executive offices (Hermalin &

Weisbach, 1988), negotiations of tender offers (Cotter et al. 1997) and appointment of outside chief executive officers (Dahya & McConnell, 2005). While these studies provide evidence of some form of monitoring activities performed by independent non-executive directors, other empirical studies on firm value fails to provide consistent results (Agrawal & Knoeber, 1996; Bhagat & Black, 1999; Erickson et al., 2004; Hermalin & Weisbach, 1991; Klein et al., 2005; Vafeas & Theodorou, 1998).

With regard to the association between the independent non – executive directors on the board and managers' disclosure tendencies, the evidence is limited and mixed. Prior research shows that independent non-executive directors on the board are associated with more comprehensive mandatory financial disclosures (Chen & Jaggi, 2000) and more voluntary segment disclosure (Leung & Horwitz, 2004). In contrast, several studies show independent non-executive directors on the board are negatively associated with the extent of management voluntary disclosures (Gul & Leung, 2002; Eng & Mak, 2003), while other studies find no significant associations between independent non-executive directors and management voluntary disclosures (Haniffa & Cooke, 2002; Ho & Wong, 2001; Nazli & Weetman, 2006). Given the mixed findings in relation to the impact of independent non-executive directors on managers' voluntary disclosure decisions, this study will further investigate the relationship.

In addition to protecting the interests of investors, independent non-executive directors potentially protects the interests of outside investors in companies characterized by concentrated ownership (Anderson et al., 2004; Park & Shin, 2004; Shleifer & Vishny, 1997). In this setting, independent non-executive directors are normally appointed by the dominant owners, being the same individuals to be controlled by the independent non-executive directors. As such, the possible collusion between the independent non-executive directors and the dominant owners can limit the monitoring role of the independent non-executive directors.

Even if the risk of collusion is not eliminated, this study expects that the potential effect of this risk will be constrained by regulatory efforts in strengthening corporate governance in Malaysia. The existence of regulatory definition for independent non – executive directors under the stock exchange listing requirements is expected to increase their reputation concern as competent and responsible board members. When external regulatory bodies emphasize greater corporate transparency, boards align their monitoring objectives to those of the external regulatory bodies and encourage companies to disclose more voluntary information (Cheng & Courtenay, 2006). Hence, it is contended in this study that the independent non-executive directors on the board will influence managers to increase disclosure of voluntary information in the annual reports that are

relevant to outside investors. This leads to formulation of the following hypothesis:

H2: The percentage of independent non-executive directors on the board is significantly positively related to the extent of voluntary disclosure.

3.3 Board Interlock

Under uncertain conditions, institutional theory suggests that companies imitate each other's practices in an attempt to gain legitimacy (DiMaggio & Powell, 1983). Two important organization and business mechanisms that can facilitate managers to imitate other companies' voluntary disclosure practices for legitimacy purposes are through board interlock and industry concentration. The first mechanism, board interlock refers to appointment of director, either executive or independent non-executive director, on multiple boards. In this study, board interlock refers to appointment of independent non – executive directors on other boards. While both types of directors are responsible to facilitate management actions and decisions, independent non-executive directors are also expected to monitor management activities. As they are expected to act in the interests of outside investors, the imitation of other companies' disclosure strategy by management through independent non-executive directors networking is expected to result in voluntary disclosure that will secure acceptance by outside investors.

Prior studies provide evidence that board interlocks allow focal company to imitate specific and multiple policies of other companies (Brandes et al., 2006; Westphal et al., 2001). Imitation is possible through board interlock since the non – executive directors can learn decision-making processes through monitoring management decisions and also from direct participation in decision making of other boards.

Through direct participation, the independent non-executive directors can rehearse specific behaviors in the decision-making process in other similar situations and reenact the specific decisions at the focal company (Westphal et al., 2001). Brandes et al. (2005) find strong support for imitation strategy by managers through board interlocks in relation to imitation of voluntary recognition of stock option costs within the income statement. Further, they argue that managers adopt voluntary expensing of stock options to deflect criticisms against negative public impressions of companies' executive compensation and to signal that they have good corporate governance structures in place. Following this reasoning, it is contended in this study that the presence of board interlock facilitates managers to imitate other companies' specific disclosure practices for legitimacy reasons.

Besides imitation of a specific content of disclosure items of other companies' voluntary disclosure practices, board interlock also has the prospects of facilitating managers to imitate the mimetic decision process of other companies. Through board interlock, the independent non-executive directors can internalize the decision making process of other company to increase voluntary disclosures for legitimation purposes from direct participation on other boards and reenact the decisions at the focal company. This imitation strategy, also known as second-order imitation (Westphal et al., 2001), has the propensity to diffuse the practice of increasing voluntary disclosures for legitimation purposes among the tied companies.

Regulatory authorities' calls for corporate transparency as a matter of good corporate governance practice create uncertainty regarding appropriate management voluntary disclosure practices in response to these calls. Management disclosure practices that conform to other companies practicing more transparent disclosure will be perceived as legitimate by regulators and investors (Aerts et al., 2006; Brandes et al., 2005; Cormier et al., 2005; Touron, 2005). Through voluntary disclosure, managers can communicate impressions of good corporate governance practices to these social actors. Hence, it is contended in this study that the presence of board interlocks will facilitate managers' imitation strategy of other companies' disclosure practices in an attempt to gain legitimacy from regulators and investors.

Managers' imitation strategy may result in direct imitation of other companies' disclosure practices or indirectly through second-order imitation of the disclosure decision processes of other companies. Irrespective of the imitation strategy, it is expected that board interlocks will increase managers' incentives to increase voluntary disclosure in annual reports. Based on this reasoning, the following hypothesis is formulated:

H3: The percentage of board interlocks is significantly positively related to the extent of voluntary disclosure.

3.4 Industry Concentration

The second mechanism that can facilitate managers' incentives to imitate voluntary disclosure practices of other companies is through network of companies within the same industry. The existence of a reference model of voluntary disclosure strategy within the industry can help to reduce the uncertainty regarding appropriate disclosure practices to be adopted by other companies within the industry (Aerts et al., 2006). As such, in managing the impressions of good corporate governance practice of a company through greater corporate transparency, conformance to the reference model voluntary disclosure practices can help to secure company' legitimacy (Aerts et al., 2006; Brandes et al., 2006).

In choosing a model to imitate, managers are more likely to adopt the behaviour of companies with which they like to be assimilated (Aerts et al., 2006;

Touron, 2005). Companies perceived as a leader or model practicing the legitimate activities will provide a strong model for other companies to assimilate. Aerts et al. (2006) provide substantive evidence that the existence of a number of large companies in a highly concentrated industry provide a strong disclosure model of environmental reporting for other companies to imitate. In other words, the presence of a strong model in a highly concentrated industry allows social actors to accept the practice of the model as legitimate, thus exerting pressure on other companies to conform to such practice.

Imitating disclosure strategies of another company that is widely perceived as a leader or model practicing good corporate governance will allow the managers to justify their actions and deflect criticisms regarding their voluntary disclosure and corporate governance practices. Hence, it is contended in this study that the existence of a strong disclosure model in a highly concentrated industry increases managers' incentives to increase voluntary disclosure. Such reasoning leads to the formulation of the following hypothesis:

H4: The percentage of industry concentration is significantly positively related to the extent of voluntary disclosure.

3.5 Extent of Voluntary Disclosure and Return-Earning Relation

This study also investigates the credibility of the voluntary information disclosed in annual reports. As owners gain effective control of the company and also the control of the production of the company's accounting information and reporting policies, it also provides opportunities for them to make self-serving reporting purposes (Healy & Palepu, 2001). Accordingly, the information disclosed may not be truthful and credible signals that can be used by outside investors.

As inferred by findings in Lundholm & Myers (2002), only credible management voluntary disclosures provide useful information to investors. They demonstrate that voluntary disclosure activity provides useful information to investors by changing their expectation about the company's future performance. Consequently, this is reflected in the stock price. This implies that corporate voluntary disclosure activity, when viewed as credible by investors, reflects management's tendency to publicly reveal value relevant information about current and future earnings that are impounded in the stock price. In other words, corporate voluntary disclosure activity viewed as credible by investors reflects management incentives to disclose credible voluntary information. It is hypothesized that:

H5: The extent of voluntary disclosure is significantly positively related to the current stock return and earnings relation.

4. Methodology

The relationships developed in the five hypotheses are depicted in an empirical schema as given in Figure 1. The dependent variable corresponding to the first four hypotheses is the extent of voluntary disclosure (VDISC) in companies' annual reports. VDISC is based on the aggregate score of five categories of disclosures developed in a self-constructed disclosure index. The dependent variable related to H5, examination of the credibility of the voluntary information is based on the interaction of the extent of voluntary disclosure and the return-earnings relation model adapted from Lundholm & Myers (2002) and Luo et al. (2006). The model measures the relation between current annual stock returns and earnings (contemporaneous annual earnings and future earnings). As the information is expected to be credible and reveal better information about future earnings, including the extent of voluntary information is expected to strengthen the return-earnings relation.

This study also includes three firm characteristics identified in prior research as determinants of management voluntary disclosure (e.g. Botosan, 1997; Chau & Gray, 2002; Haniffa & Cooke, 2002) as control variables. These variables are firm size, gearing and profitability. All the hypotheses will be tested using a sample of 155 companies listed on the main board of Bursa Malaysia at the end of the year 2002. The research approach involves the content analysis of listed companies' published annual reports.

The definition and measurement of variables is listed in Table 1.

5. Analysis And Results

5. 1 Descriptive Statistics

Descriptive statistics for independent variables used in this study are given in Table 2. Percentage of family members on board (FAM) ranges from 0% to 100%, while the average value for independent non-executive directors on board (INED) is 37.98%. This suggests that companies in the sample on average are complying with the stock exchange requirement where at least one-third of the board members must be independent directors. On average, 42.39% of these directors are also board members of other public listed companies (INTER). Further, the maximum value of 100% for INTER revealed that all the board members in some companies are connected to other public listed companies through board interlocks. The average value for industry concentration (INDC) is 25.11%.

Determinants	Quality of Disclosure

Agency Theory

Governance Structures
- Family Ownership
- Board Composition

Institutional Theory
- Board Interlocks
- Industry Concentration

-

+

+

+

Extent of Voluntary Disclosure (VDISC)

Extent of Voluntary Disclosure

+

Return – Earnings Relation
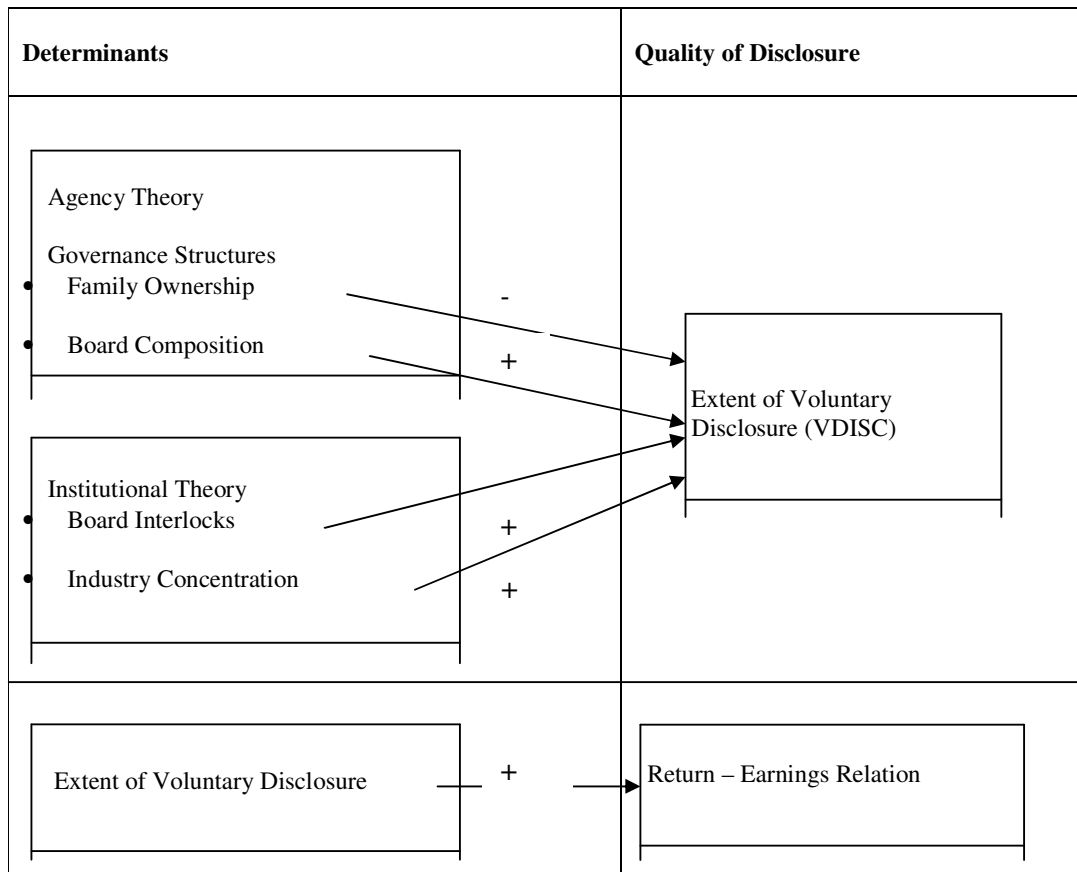
Figure 1. Empirical Schema

Table 1. Definition and Measurement of Variables

Variable Acronym	Definition	Measurement
VDISC	The extent of five categories of voluntary disclosure	Number of points awarded to each company across all the categories (score of "1" if item is disclosed and "0" if not
FAM	Family members as defined by S122A of the Malaysian Companies Act, 1965	Percentage of family members on board to total number of directors on the board
INED	Independent non-executive directors as defined by MCCG	Percentage of the independent non – executive directors to the total number of board members
INTER	Board interlocks	Percentage of total number of independent non – executive directors with appointments on other boards divided by the number of total board members
INDC	Industry concentration	Percentage of the total sales made by the largest two companies in the industry to the total sales of that industry

The current annual stock returns (CRET) are in the range of negative 11.49% to 9.65%, while current earnings (CEARN) are between negative 107.58% and 35.45%. The mean current annual stock returns are negative 0.20% and the mean current earnings are negative 1.27%. These values suggest declining performance among some of the companies in the sample during the current period of study. In contrast, the mean future earnings (FEARN) and future returns (FRET) are 8.58% and 1.17% respectively, indicating improve performance over the future years in the sample data.

Table 2. Descriptive Statistics of Independent Variables

	Label	Minimum	Maximum	Mean	Std. Deviation
Percentage of family members on board (%)	FAM	0.00	100.00	20.31	22.04
Percentage of independent non-executive directors on board (%)	INED	25.00	57.14	37.98	6.27
Percentage of total number of independent non – executive directors with appointments on other boards (%)	INTER	0.00	100.00	42.39	25.55
Percentage of total sales made by largest two companies in the industry to total sales of that industry (%)	INDC	12.47	68.30	25.11	9.95
Total assets (RM MIL)	SIZE	15	16,204	1,326	2,300
Profitability based pbit over shareholders funds (%)	PROF	-102.23	145.54	7.18	23.97
Gearing based on total debts over total assets (%)	GEAR	0.00	559.40	25.60	49.20
Current annual stock returns (%)	CRET	-11.49	9.65	-0.20	2.93
Current earnings (%)	CEARN	-107.58	35.45	-1.27	23.04
Change in earnings (%)	CHEARN	-108.22	590.44	4.33	56.08
Future earnings (%)	FEARN	-372.40	158.71	8.58	63.21
Future returns (%)	FRET	-12.07	50.63	1.17	6.54

5.2 Multivariate Analysis

Linear multiple regression is used as the basis of analysis for testing all the hypotheses developed in this study. Hypotheses H1, H2, H3 and H4 are examined based on model 1, while hypothesis H5 is examined based on model 2. The regression models are as follows**.**

Model 1: $VDISC = \beta_0 + \beta_2 FAM + \beta_3 INED + \beta_4 INTER + \beta_5 INDC + \beta_7 SIZE + \beta_8 GEAR + \beta_9 PROF + \varepsilon t$

where VDISC represents the extent of voluntary disclosure while definitions for independent variables are given in Table 2.

Model 2: $CRETt = \beta_0 + \beta_1 CEARN_t + \beta_2 CHEARN_t + \beta_3 FEARN_t + \beta_4 FRET_t + \varepsilon_t$

where variable definitions are given in Table 2.

Examination of H5 requires VDISC to be included as independent variable and interaction terms with the independent variables in model 2. The extended regression model 2 is stated as follows.

Model 2a: $CRETt = \beta_0 + \beta_1 CEARN_t + \beta_2 CHEARN_t + \beta_3 FEARN_t + \beta_4 FRET_t + \beta_5 VDISC_t + \beta_6 VDISCCEARN_t + \beta_7 VDISCCHEARN_t + \beta_8 VDISCFEARN_t + \beta_9 VDISCFRET_t + \varepsilon_t$

In all the above regression models, multicollinearity is tested using the variance inflation factor and tolerance levels, and found to be well within the satisfactory range. The results based on model 1 are presented in Table 3 while the results

based on model 2 are shown in Table 4. These results are now discussed in terms of tests of each of the hypotheses established in this study.

Table 3. Multiple Regression Results for Factors Affecting the Extent of Voluntary Disclosure

Variables	Beta	t	Sig.
Dependent Variable: VDISC (Extent of voluntary disclosure) R Square = 44.5%, Adjusted R Square = 41.9%, F = 16.485, Sig. = 0.000			
(Constant)			0.849
FAM	-0.185	-2.885	0.005* * *
INED	-0.030	-0.476	0.635
INTER	0.116	1.756	0.081*
INDC	0.004	0.057	0.954
SIZE	0.493	7.681	0.000* * *
GEAR	-0.046	-0.736	0.463
PROF	0.270	4.097	0.000* * *

Coefficient for each variable is shown with t – statistics in parentheses
* Significant at 10% level (1-tailed test); * * Significant at 5% level (1-tailed test);
* * * Significant at 1% level (1-tailed test)

Table 4. Comparison of the return-earnings regression results (model 2) and the return-earnings–disclosure results (model 2a)

	Model 2	Model 2a
Dependent Variable: CRET (Current annual stock returns)		
Adjusted R^2 F-value Significance	0.188 9.936 0.000	0.189 4.976 0.000
(Constant)	1.000 (0.000)	0.775 (0.287)
CEARN	0.938 (-0.078)	0.608 (-0.515)
CHEARN	0.135 (1.505)	0.041* * (2.062)
FEARN	0.000* * * (4.562)	0.000* * * (4.645)
FRET	0.882 (0.334)	0.129 (-1.528)
VDISC	-	0.862 (0.174)
VDISC*CEARN	-	0.672 (-0.424)
VDISC*CHEARN	-	0.074* (1.801)
VDISC*FEARN	-	0.883 (-0.147)
VDISC*FRET	-	0.194 (-1.304)

Coefficient for each variable is shown with t – statistics in parentheses
* Significant at 10% level (1-tailed test); * * Significant at 5% level (1-tailed test);
* * * Significant at 1% level (1-tailed test)

First, H1 states that FAM will be inversely related to the extent of voluntary disclosure. The results in Table 3 reveal that FAM is significantly negatively related to the extent of voluntary disclosure (at sig. < 0.01%). Therefore, H1 is accepted. This result is consistent with the argument that higher

percentage of family members on board indicates the existence of a dominant group of shareholders or a substantial shareholder that could influence the board's decision to nominate family members to the board. Accordingly, these companies are likely to be closely held or owner managed (Claessens et al., 2000) with greater access to internal information. As such, family owners do not have to rely extensively on public disclosure to monitor their investments (e.g. Chau & Gray, 2002; Haniffa & Cooke, 2002). The opportunities to expropriate outside investors wealth by family owners due to lesser public disclosure will further reduce managers/owners incentives to disclose detailed voluntary information.

Second, H2 predicts that board composition as measured by the percentage of independent non-executive directors on the board is associated with a higher level of voluntary disclosure. Table 3 reveals a non significant relationship between the two variables. As such, H2 is not accepted. The result indicates that the presence of regulatory authorities' emphasis on board independence in this study has not increased the independent non-executive directors concern for their reputation. Accordingly, they have lesser incentives to perform their monitoring activities by exerting pressure on managers to disclose voluntary information to outside investors. This result is consistent with previous findings in Malaysia (Haniffa & Cooke, 2002; Nazli & Weetman, 2006). Elsewhere, prior findings have shown mixed results on the associations between the proportion of independent non-executive directors on board and the level of voluntary disclosure.

Third, H3 predicts that the higher the percentage of board interlocks as measured by the number of non – executive directors sitting on the boards of other public listed companies, the greater will be the level of voluntary disclosure. The result for the hypothesis test in Table 3 shows that board interlock is significantly positively correlated with the level of voluntary disclosure. Therefore, H3 is accepted. The result is consistent with Brandes et al. (2006) and confirms the fact that board interlocks allow focal company to imitate voluntary disclosure practices of other companies. Board interlocks facilitate the imitation strategy through their monitoring roles of management decisions on other boards and also direct participation in decision making of other boards. In such situations, board interlocks allow the independent non-executive directors at focal companies to learn specific or multiple policy decisions in relation to voluntary disclosure strategy. Consequently, this accelerates the awareness to disclose higher voluntary information among the independent non-executive directors and influence their voluntary disclosure decisions at the focal companies.

Managers' imitation strategy facilitated by board interlocks and the strong influence of family owners in this study infer a possible collusion between independent non-executive directors and family owners. In a setting characterized by the presence of controlling owners, the risk of collusion is high because independent non-executive directors are generally appointed by these owners (Patelli & Prencipe, 2007). In such situation, the lower level of independence limits the monitoring role performed by the independent non-executive directors (C. J. P. Chen & Jaggi, 2000). Instead, they are more likely to support the controlling owners in major decisions (Leung & Horwitz, 2004). Hence, the results in this study infer that independent non-executive directors support family owners by influencing managers to increase voluntary information for legitimacy purposes. Further, it also offers a possible explanation to the insignificant relationship of independent non-executive directors on their board and the extent of voluntary disclosure (test of H2).

Fourth, H4 predicts that companies operating in highly concentrated industries are associated with higher level of voluntary disclosure. The result in Table 3 indicates that there is no significant relationship between industry concentration and the level of voluntary disclosure. The result shows a positive relationship indicating that companies in highly concentrated industries are more likely to increase public disclosure of voluntary information. This can occur where a number of large companies exists and provide a strong disclosure model for other companies within the industry to imitate. However, as the correlation coefficient is weak, H4 is rejected.

Finally, H5 predicts that the greater the extent of voluntary disclosure, the more positive is the relationship between current annual stock returns and future earnings. Table 4 presents the results for model 2 when VDISC is not included while results for model 2a include the effects of VDISC. The results in model 2 reveal that the future earnings variable is significant at 1% level (*t* value = 4.562). This finding is consistent with prior literature and it indicates the importance of future earnings in explaining the variation in the current stock returns (Collins et al., 1994; Lundholm & Myers, 2002; Luo et al., 2006). Further, the insignificant relationship between current annual reported earnings and current stock returns is also consistent with the argument in prior literature that current annual reported earnings do not reflect underlying economic events in a timely manner (Collins et al., 1994; Francis & Schipper, 1999; Lev & Zarowin, 1999)**.**

When voluntary disclosure is included in model 2a, the positive effects of future earnings reported in model 2 are expected to be supplemented by the extent of disclosure. This is because disclosure becomes an important signaling to investors of corporate quality in influencing their determination of current annual stock returns. However, the results in model 2b show no significant effect of VDISC on current annual stock returns, but future earnings continue to show positive significant relations. Further, the overall results in model 2a suggest that voluntary disclosure is not viewed as credible to

investors in Malaysia. The insignificant change in the adjusted R^2 in both models further supports this suggestion. As such, H5 is not accepted.

6. Conclusion and Limitations

This study provides evidence that under the influence of dominant owners on board, management voluntary disclosure decisions are driven by mimetic pressures when their company is structured to meet expectations of good corporate governance. Instead of exerting pressure on management to increase voluntary disclosure to outside investors, the results infer that independent non-executive directors support management increase in voluntary disclosure of their activities for legitimacy purposes. Such disclosure practice seems to override management incentives to disclose credible information to outside investors. This inference is corroborated by the evidence that management voluntary disclosures are not viewed as credible by outside investors.

These findings contribute to a better understanding of the relationships between various governance structures and institutional pressures on management disclosure decisions in particular agency settings. The findings also have practical implications to corporate governance regulators in improving corporate governance, other policy makers in strengthening capital market environment and to investment community who rely on corporate disclosures in making their decisions.

There are some limitations in this study. The proxy for voluntary disclosure can include some measurement error and the empirical model used to examine the extent of voluntary disclosure on the return-earnings relation can suffer from omitted variables. In particular, theoretical and empirical research suggests that returns and future earnings are affected by corporate governance mechanisms (Bushman et al., 2004). Future research can be extended to integrate other corporate governance mechanisms as well as other categories of corporate disclosures such as social reporting and earnings forecasts.

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DO CHANGES IN MANAGERIAL OWNERSHIP MATTER?

Carol Wang*, Wei Rowe*

Abstract

Agency theory predicts that managerial ownership reduces agency cost and increases firm value. However, empirical evidence on the ownership and firm value relation is, at best, mixed. To date, there is no evidence on how exactly managerial ownership affects firm value and through what channel ownership improves value. Our paper fills in the void in the literature by addressing these issues. As a firm's operating efficiency is an important indicator of its managerial performance, we uses changes in managerial ownership as an argument to evaluate changes in firm value and hypothesizes that changes in managerial ownership affect firm's operating efficiency, which in turn drives firm value. Using a large panel data set (4,451 observations for 1,162 firms for year 1990-2001), we find significantly positive relation between changes in managerial ownership, operating efficiency and changes in firm value. Larger increase in managerial ownership provides greater alignment of managerial interests with those of shareholders, hence greater improvement in firm value. However, this relation is not monotonic. The positive impact on firm's value increases at a decreasing rate. Our simultaneous equation tests remove the endogeneity concern between managerial ownership and firm value.

Keywords: Corporate Governance, Managerial Ownership, Firm Performance

I. Introduction

A substantial body of theoretical and empirical work has engaged in studying the ownership-performance relation. Presently, there is no theoretical or empirical consensus on how managerial ownership affects firm performance.

Since Berle and Means (1932), the research on principal-agent conflict has been growing intensively in corporate finance literature. When shareholders do not have the necessary information or skill to manager firm, they hire managers as agent to perform managing service on their behalf under certain contracts. This arrangement creates agency costs if appropriate incentives are not established for managers to act in the best interests of shareholders.

Jensen and Meckling (1976) develop a theoretical model which illustrates how the agency costs arise when the interests of firm's managers are not fully aligned with those of shareholders. This theory suggests that when managers do not have an ownership stake in the firm, they tend to deviate from shareholder wealth-maximization by consuming perquisites. One major form of agency costs lies in the managers' shirking or undertaking suboptimal investment projects that harm the principals' wealth. Jensen and Meckling's (1976) theory implies that given the separation of security ownership and control of the firm, the firm's value is an increasing function of managerial ownership.

Following Jensen and Meckling's agency theory, numerous researchers have empirically studied the relation between firm performance and managerial ownership. However, overall, studies have developed inconsistent results of the effect of ownership structure on firm performance.

Morck, Shleifer, and Vishny (1988) look at the relation between managerial ownership and performance in a cross-section firm set and find significantly non-monotonic associations between firm performance and the fraction of executives' stock holdings. McConnell and Servaes (1990), and Hermalin and Weisbach (1991) all apply piecewise linear regression and document similar findings on ownership-performance relationship.

Demsetz (1983) contends that the ownership structure of a corporation should be treated as an endogenous outcome of the shareholders' influence and from market trading forces for shares. After conducting a simultaneous equations test, Cho (1997) confirms the endogeneity of the firm ownership structure and argues that like a triangular effect, inside ownership determines investment, and investment in turn brings changes to performance, which finally has a positive influence on inside ownership. Demsetz and Villalonga (2001) conjecture that ownership is

made multi-dimensional. They treat ownership as an endogenous variable and find no statistically significant relation between ownership structure and firm performance.

As shown above, recent research has not found a significant relation between firm performance and ownership structure. However, considering the inconsistency in methodology used for these studies, more investigation in this matter is warranted. Further, there is no recognizable theoretical and empirical agreement on how firm ownership structure affects firm value. Therefore, we attempt to reexamine this issue using different approaches. The goal of our study is to extend the previous literature in the following ways.

First, most previous studies use the level of ownership and the straight value of Tobin's Q to examine the association between firm ownership structure and firm value. However, this approach may expose the results to substantial omitted variable bias, because how efficient the ownership concentration provides managers to work varies across firms due to idiosyncratic factor. For instance, the management team in one company may need 10 percent of aggregate stock holding to be motivated to work with due diligence for the shareholders, while in another company, it may only take 5 percent of managerial equity ownership to achieve the same incentive results. This incentive discrepancy is due to different dollar values represented by the same level of managerial ownership brought by different sizes of the firms; alternatively, the sensitivity to pecuniary incentive varies among individuals given their different positions along the utility curves. Failing to control controls for these factors is likely to create inconsistent results for the study of ownership-performance relation. If these factors differ from one firm to another and remain constant over time, we can in effect hold these factors constant even though we can not measure them. Specifying the regression in changes of ownership level and changes in firm value eliminates the effect of the unobserved variables.

Second, previous works have examined the effects of firm value by studying the levels of managerial ownership based on cross-sectional data. This approach tends to ignore the effect of firm specific characteristics and possible unobservable heterogeneities that correlate with managerial ownership across time. In this case, even though the incremental impact of managerial ownership on the firm value exists, it is hard to detect strong evidence for it.

In this paper, we use panel data with time and firm fixed effect models to analyze the ownership-performance relation. Changes in ownership structure may be caused by unobservable factors of corporate characteristics and complexity across time. Such as the merger and acquisition, the exercises of CEO's warrants and stock options, or the adoption of target stock ownership plan. Under these circumstances, even though a firm with higher level of managerial

ownership as a result of above events, it may still has a lower firm value on average. This firm actually outperforms its competitors within its industry and has an improved firm value than if it had a lower ownership. In this case, we can hardly capture the positive relation between firm performance and firm value. Using a time fixed effect model allows us to compare the incremental firm value as the firms increase their managerial ownership over time. Specifically, we have the opportunity to compare a firm's performance with 20 percent of managerial stock holding to this firm's performance if its managerial ownership is only 15%. Using fixed effects panel regression model helps to eliminate omitted variables biases arising from both unobserved variables that are constant over time and from unobserved variable that are constant across firms. This method captures the incremental effects of ownership on firm performance on time series basis. Further, it allows the direction of causality to be identified rather than just showing a mutual relation between firm ownership structure and firm value.

Lastly, while many papers focus on the direct relation between ownership structures and firm Tobin's Q as proxy for firm performance, we attempt to decompose this relation into two sub-relations. (I.) Managerial ownership and firm operating efficiency. (II.) Operating efficiency and firm profitability.

Firm operating efficiency represents the most immediate and direct outcome of management's improved functioning if increasing the equity ownership can reinforce the motivation of managers to act in the best interests of the shareholders. The performance of management is the systematic process of planning work and setting expectations, overseeing operations of organization, assessing product market opportunities, managing financial and physical resources etc.. Managerial performance is critical to the success of its business. The most direct and immediate consequence of any additional efforts of top management results in improved operating efficiency of firm. Using measure of operating efficiency, the assets turnover ratio as a dependent variable, we find positive link between managerial ownership and operating efficiency.

In the context of DuPont system, ROA, the firm profitability ratio can be decomposed into an assets turnover and a profit margin. Considering that the firm turnover ratio is one of the two breakdown entities of firm profitability, we predict that change in turnover ratio is positively associated with changes in ROA. As expected, we find that increased managerial stock holding improve firm operating efficiency and which in turn has positive effect on firm profitability and firm value.

Earlier studies present evidence of endogeneity in the ownership-performance relation and conclude that ownership is periodically re-optimized. Therefore, we can find no association between ownership and firm performance in a cross-sectional regression that controls for the endogenous

determinants of firms' optimal ownership levels. However, based on "more is always better" theory, it is reasonable to assume that the reinforced incentives inherent from increased stock holding will keep tapping out management potentials in maximizing shareholder wealth. We conjecture that the ownership structure and firm value interact continuously which is explained by changes in managerial ownership will generally bring changes in firm value in the same direction, with the optimal ownership structure constrained by managers' individual wealth or other factors such as managers' personal investment preference. Thus one can view the managerial ownership change as both an endogenous variable and as a determinant in the ownership-performance system.

Our test result shows a significantly positive relation between managerial ownership and firm performance, consistent with the incentive alignment argument of Jensen and Meckling (1976).

In order to ensure explore this endogeneity concern, we use three-stage least squares estimation to simultaneous test regression. These results suggest that change in managerial ownership is, in one direction, a determinant influence on change in firm value.

In summary, our study contributes to the existing literature in following dimensions: (1) It represents the first attempt to test the marginal effect of managerial ownership on the firm performance using changed values of the subject variables. This approach facilitates a more effective method for detecting the linear relation between an ownership structure and firm performance. (2) This study connects the corporate finance and efficiency literature and provides explanation in further depth for the incremental ownership-performance relation. (3) This study applies empirical methods to account for endogeneity concern of managerial ownership. (4) The empirical evidence from this project will have important policy implications in assisting policy makers, regulators, shareholders, and investors in designing effective board compensation packages.

The paper is organized as follows. Section 2 will present a brief review on the development of literatures in this area. In Section 3, we will introduce our main testable hypotheses, followed with the description on data selections and methodology, as well as the interpretation of the results in Section 4. Finally this paper concludes with summary in Section 5.

II.   Literature Review

According to Agency theory, the separation of ownership and management creates an incentive for the managers to use the firms' surplus resources for their own purpose.

The principal-agency issue has been under the spotlight ever since Berle and Means (1932) first propose an inverse relation between the diffuseness of shareholding and firm performance.

Jensen and Meckling (1976) provide a theoretical framework on the agency theory which involves the relationship between the ownership structure and corporate value. In this model, the alignment of ownership and management will minimize the agency costs in reaching, monitoring, and enforcing agreements. The minimization of agency costs is due to the absence of the difference in residual rights in a principle-agent partnership. Moreover, the conflicts of self-interest between the principal and agent are reduced because the managers/owners are the recipients of the rewards of their own actions. Therefore, increasing the managers' ownership of the firm will reduce managerial opportunism.

Agency theory also postulates that when the principal has access to information to monitoring and verifying agent behavior, it is likely that the agent will behave in the interests of the principle (Fama and Jensen, 1983; Eisenhardt, 1989). The owner's direct involvement in the management of the firm will prevent the managers from expropriating shareholder wealth through the consumption of perquisites and misallocation of resources in pursuit of their own interests (Jensen, 1998). Therefore, when the owner is involved in managing the firm, the opportunistic behavior of the agent will be reduced. The competitive nature of the capital, products, and factors of the markets provides information and serves as the external monitoring function for firm performance (Hansmann, 1996).

In empirical investigations, a considerable amount of documentations have been presented during the past decades. Stulz (1988) emphasizes that the fraction α of the voting rights controlled by management is an important element of the ownership structure for publicly traded firms. This paper shows that the firm value rises and then drops as α increases within a range and then reaches its maximum point of firm value when α is beyond 50 percent.

An important paper by Morck, Shleifer, and Vishny (1988a) is among the first to find significant but non-monotonic associations between corporate values and different levels of managerial ownership. They posit that more equity ownership by the manager may decrease financial performance because managers with large ownership stakes may be so powerful that they do not need to consider other stakeholders' interests. They may also be so wealthy that they no longer intend to maximize profit but get more utility from maximizing market share or technological leadership. This leaves for low levels of managerial ownership, the performance effect associated with the <u>incentive alignment</u> dominates the performance effect associated the <u>entrenchment</u>.

McConnell and Servaes (1990), Hermalin and Weisbach (1991) take a different approach compared to that of Morck, Shleifer, and Vishny (1988a). Using Tobin's Q and managerial ownership for a large

sample of NYSE and ASE listed firms in two separate years, they report similar non-monotonic findings, but the breaking points for the levels of ownership are replaced by 40 to 50 percent instead of only 25 percent. Their results confirm Morck, Shleifer, and Vishny (1988a) show that, at relatively low levels of ownership, increases in managerial ownership help to align the interests of mangers and shareholders. At higher level of managerial stock holding, this bonding mechanism becomes less sensitive for mangers to exert full representation for shareholders as the wealth utility curve for managers reach an optimal point.

Kole (1995), tries to reconcile the findings of Morck, Shleifer, and Vishny (1988a) with those of McConnell and Servaes (1990) and concludes that the source of ownership data is not driving the different results in Morck, Shleifer, and Vishny (1998a) and McConnell and Servaes's (1990) studies. She argues that the difference in the incentive alignment effect of ownership by a firm's key decision makers is attributable to differences in the size of sample firms.

Himmelberg, Hubbard, and Palia (1999) take a different approach to study this relationship by using panel data, which are believed to help solve the firm heterogeneity problem. The results show that changes in managerial ownership seem to affect neither firm value nor firm performance.

Demsetz and Lehn (1985) and Holderness and Sheehan (1988) construct different methodology to investigate the ownership-performance relation. Demsetz and Lehn (1985) regress a firm's accounting rate of return on several variables, including the ownership level of the largest shareholders. Holderness and Sheehan (1988) use accounting rates of return of paired majority-owned and diffusely held corporations. They find no significant relation between the concentration of ownership and corporate value and conclude that the ownership concentration has no effect on corporate value. Or alternatively, the optimal ownership level varies across firms.

In contrast, Cho (1998) brings a reverse view after testing a simultaneous equation regression instead of OLS and finds that corporate value is a determinant of ownership structure. This finding raises important questions regarding the implicit assumption that ownership structure is exogenously determined. Cho's finding is consistent with the perception that the stronger the firm performance, the more the managers will obtain shares of the firm. Demsetz and Villalonga (2001) conduct similar test as Cho by treating ownership structure as an endogenous variable, and find no systematic relations between ownership structure and firm performance, which supports that ownership structure, whether diffuse or concentrated, maximizes shareholder expected returns `that emerge from the interplay of market forces.

According to Jensen and Meckling's agency theory, the incremental agency cost is associated with decreasing proportions of the managerial ownership. One should expect that a positive ownership-performance relation results from managers who are

motivated to work harder and shirk less as their equity holding increases. The effects of managerial ownership on firm performance in empirical research remain ambiguous.

Researchers have started to examine this issue from many different angles and have provided all kinds of explanations. Loderer and Martin (1997) hypothesize that management is strictly disciplined by competition in product and labor markets. Therefore, it may not be necessary for top executives to own stock to be residual claimants. Fama (1980) provides a theoretical argument on the efficient monitoring of managerial performance by competitive labor market. Finally, Denis, Denis and Sarin (1997) state that higher ownership might multiply the opportunities to appropriate corporate wealth, since the probability of a top executive turnover is negatively related to the ownership stake of officers and directors, and is positively related to the presence of an outside block holder.

Core and Larcker (2001) examine a sample of firms that adopt "target ownership plans" and find that the required increases in the level of managerial equity ownership result in improvements in firm performance.

The methodology in this paper coincides with the one used in Core and Larcker's (2001) study. Similar to Core and Larker, we examine the effect of changes in ownership on firm performance. However, our theoretical argument on this subject differs from theirs with respect to the following five dimensions: (1) Instead of focusing on a sample of firms that adopted target ownership plans, we generate more comprehensive sample with 4,822 observations for 1,384 firms, drawn from Compact Disclosure firms from 1990 to 2001. Results obtained from this sample set provide a broader coverage on the positive hypothesis for the ownership-performance relation. (2) This study connects the corporate finance and efficiency literature and provides explanation in further depth for the incremental ownership-performance relation. (3) This paper examines the potential endogeneity problem on the changes of ownership structure by running simultaneous equation tests, of case equity ownership increases in anticipation of performance improvements. (4) This paper uses fixed effects panel data to control for firm specific characteristics and various possible unobservable heterogeneities across time. In addition to ownership structure, controlled in the major models are other independent variables changes that can potentially impact the firm performance.

III. Data

The managerial ownership is defined as the total shares owned by officers divided by the number of total share outstanding within a firm. For managerial ownership data, we start with the entire population from Compact Disclosure 2001 version. Mismeasurement of management ownership in firms

with dual classes of outstanding stock is a major source of Compact Disclosure's reporting discrepancies. However, according to Anderson and Lee (1997), after examine the fit between the ownership data provided by Compact Disclosure database and the data collected from proxy statements, they find that reporting discrepancies in the Compact Disclosure data do not significantly influence any of the regressions that are in consideration and overall the evidence favors the use of the Compact Disclosure database (and Corporate Text) for management ownership data over its Value Line and Spectrum counterparts. Further, given the large enough sample size used in this study, the concern of using Compact Disclosure for management ownership is unnecessary.

The initial data set from Compact Disclosure consists of 122,102 observations for 34,805 firms from 1990 to 2001. We then merge this data set with Compustat for the accounting variables, eliminate all financial and utility firms due to their subject to special regulation from the government. There are 72,087 observations left.

To avoid the error raised in the Compact Disclosure, all the questionable observations are deleted. They include firms with bigger than 100 percent ownership, and other firms which appear to have lower than 5 percent of block share holdings.

Followingly, we use the sample selection criteria that require that each firm has at least two consecutive years of managerial ownership data between 1990 and 2001, with more than 1 percent of its annual ownership changes from one year lag, whether positive or negative. Based on the financial data from Compustat, we create new performance variables such as Tobin's Q, return on assets, leverage ratio etc. The annual changes of these variables are calculated as the difference from the values of lag years. For our OLS analysis, the sample consists of 5,562 observations for 2,124 firms from 1990 to 2001. For the panel data analysis, we have 4,822 observations for 1,384 firms, which remain from deleting the missing variables, and deleting firms with less than one year time series data.

One advantage of our sample is that it is larger than other dataset used in existing ownership structure studies. Previous studies generally focus on the Fortune 1000 firms or even smaller sample size. To eliminate any possible big firm bias, our sample includes 1,384 firms with available accounting data from Compustat. Rather in a single cross-sectional data set, this sample is constructed in the form of panel data ranging from 1990 to 2001,. This allows to control for firm and time level fixed effects.

Table 1 contains summary statistics for the managerial ownership and firm performance measures of the pooled sample. Panel A of Table 1 describes the level of managerial ownership, Tobin's Q, and other relevant firm characteristics. Panel B presents changes of those variables for the pooled sample. Change of dollar value variable is the percentage change of the variable from one-year lag value. Dif of

ratio variable is the difference from one-year lag value. All variables are measured at the end of fiscal year unless otherwise specified.

Percent officer refers to managerial ownership. It is defined as the fraction of stock shares held by officers within a firm, reported at fiscal year end. TQ stands for Tobin's Q. Tobin's Q is the market value of assets divided by the replacement value of the assets. As such, the calculation of Q can be quite difficult with many assumptions. A recnet paper by Dadalt, Donaldson, and Garner (2003) finds that sometimes the better measure is the easier method. Simpler methods tend to be based on more readily available data and therefore are less biased. We use the market value of the equity plus book value of debt divided by the book value of the firm total physical assets to estimate Tobin's Q.

Leverage is firm total liability divided by total assets. MV stands for market value of equity; it equals the market value of common stock at the end of the fiscal year. ROA denotes return on assets; It is the ratio of net income to total assets. Sales refers to annual sales in 100 million dollar reported at the end of the fiscal year. Turnover ratio are used to measures firm operating efficiency. It is defined as the total sales divided by total assets. Profit Margin is the ratio of operating income before depreciation to the total sales. It estimates how much profit the business can makes out of the total revenue. Shtinv are Longinv represent short-term investment and long term investment respectively. Shtinv is the annul capital expenses, while R&D expenses are the proxy for long term investment. Cash includes the annual cash balance plus short-term investment. The average managerial ownership is 18 percent for the pooled sample, its average annual change -0.94 percent. The mean value of Tobin's Q is 13 with average 19 percent of an annual increase over the sample period.

To illustrate differences in the changes of subject variables, Table 2 presents average values of the subject variables by year. The number of firms decline from 410 in 1992 to 38 in 1993 and to 48 in 1994, and it rises to a range between 400 and 700 after 1995 till the last year. The managerial ownership varies from 14.76 percent to 19.70 percent. The annual changes in ownership ranges from negative 1.98 percent to a positive 0.88 percent.

Figure 1 plots the average level of managerial ownership and firm Tobin's Q over the sample period. Managerial ownership starts to drop from 1991, hitting the lowest point in 1993 and remains low until 1996. Since 1996, it has been increasing and reaches a maximum point in 1999 and starts to lower slightly till the last year. Tobin's Q shows a similar overall trend along the sample period. Generally, there is no dramatic change in officer ownership and Tobin's Q across time.

Figure 2 presents the mean annual changes in ownership and annual changes in Tobin's Q. Both variables demonstrate a continuous up and down pattern every other year. During the range from 1991

to 1996, it becomes clear that changes in ownership are followed by changes in Tobin's Q occurring in one-year pattern. It may suggest that changes in managerial ownership takes approximately one year to effect on changes in firm value, supporting the causality argument in the ownership-performance relation. However, the one-year lag between the changes of two variables disappears after 1996. Changes in ownership and Tobin's Q coincide with each other during 1996 and 2001 in the same direction, which indicate a simultaneously positive relation between changes of the two arguments

Table 3 shows the correlation matrix for managerial ownership and various firm performance measure variables. Previous research suggests that ownership concentration is related with firm characteristics (firm value, firm size, leverage, the firm's investment opportunity set). The data reported in Table 3 confirms these correlations for changes in managerial ownership within our sample, except a negatively relation with firm's changes in long term investment, R&D expenses. From the correlation matrix, there is a strong linear correlation between dif leverage and dif ROA, which is -0.64. To prevent the potential colliearity problem in OLS regression, we will treat these two variables as substitute in our major regression models.

IV.   Empirical analysis
(i) Ownership and Operating Efficiency

Managerial ownership represents a useful force that reduces agency costs. Assuming that the increased managerial holding of equity motivates managers to act in the best interests of shareholders, we expect that managers can increase shareholder value at least in three ways if they choose to. First, they can reduce excess perquisite consumption. Second, managers can take better control firm free cash flow and make rational decisions for investing in projects with high probability of positive returns. Third, mangers can invest in higher risk assets effecting wealth transfers for shareholders from creditors.

The direct measure of the first two of above realizations is to look at the firm efficiency ratios. Following Ang, Cole, and Lin (JF, 2001 or 2002) method, this paper uses efficiency ratios to measure the decrease in the agency cost resulting from enhanced incentives brought about by increased manager ownership. The firm efficiency ratios include (i) operating expenses divided by total sales multiplied by total assets, (ii) operating revenue divided by total assets, (iii) earnings before interest and taxes divided by total assets, (iv) operating profit after tax divided by total assets. Our first hypothesis is:

Hypothesis I: Changes in managerial ownership is positively related with changes in firm operating efficiency.

Firm turnover ratio measures how well a business can turn its assets into revenue. It serves a good proxy to measure management operating efficiency. To investigate whether managerial ownership influences firm operating efficiency, we calculate the ordinary least squares regressions with changes in the firm turnover ratio as the dependent variable.

Table 4 shows the results of the OLS regression of managerial ownership on firm turnover ratio. Since there is no widely accepted structure model for firm operating efficiency, we first calculate the turnover ratio regression including only managerial ownership. The regressions reported in the first column strongly suggest that there is a significantly positive relation between changes of ownership and changes of firm turnover ratio. After controlling for other firm performance measure, the coefficient on managerial ownership change drops but remains to be significant at 10 percent level.

(ii) Ownership and Firm Value

Next we estimate the corporate value regression to test whether the well-attended relation between ownership structure and corporate value hold with our data. Tobin's Q is considered to reflect a firm's real power to make profits and its use is a pervasive practice in the research of corporate governance. It is defined as the ratio of market value of firm assets to its replacement cost of physical assets after adjusting inflation, real depreciation ratios, capital expenditures and the method of inventory valuation used by each company. An increase in Tobin's Q is considered a sign of good firm performance.

The key explanatory variable is the changing level managerial. The level of managerial ownership is denoted by the total fraction of stock shares held by firm officers. The change in managerial ownership is estimated by the annual change relative to that of one year lag. In addition to changes in the level of insider ownership, our regressions include controls for other variables that are expected to influence firm value. All variable values are changed values lagged one year unless otherwise indicated. Finally, we will control for other major explanatory variables that have appeared in conventional models of previous research.

Usually, when a line of business first enters the market, the firm that dominates the market share will impose the highest profit margin. As the market saturates, the profit margin will gradually be forced to drop until it reaches a steady level. In addition, we include the profit margin as a proxy for market competitiveness in the regression model. Profit margin ratio measures market competitiveness and helps to control for the product market's influence on firm value. The resulting model is as follows:

ΔTobin's Q $_{it}$ = $\square_0$ + $\square_1$ Δ(percent_officers $_{i,t}$)+ $\Delta\square_\square$(Sales $_{i,t}$) + $\square_\square\Delta$Log (MV $_{i,t}$) + $\square_\square\Delta$ (ROA $_{i,t}$) + $\Delta\square_\square$(shtinv$_{i,t}$) /$\Delta\square_\square$(longinv$_{i,t}$) + $\Delta\square_\square$(Profit margin $_{i,t}$)

Around this model, our second hypothesis is:

Hypothesis II: The changes in managerial ownership will be positively related with changes of firms' Tobin's Q.

Table 5 shows a series of OLS model testing that show how changes in managerial ownership affect changes in firm value. We substitute capital expenses as short term investment with R & D as long term investment to control for firm growth opportunities in model 5 and 7. From model 1 through model 7, the regression reports an increasing better fit model with increasing adjust R square. Taken together, the results strongly suggest that changes in managerial stock holding positively influence changes in firm value.

(iii) Ownership Endogeneity

Thus far, doubt arises in existing literature on whether managerial ownership is exogenous in regression attempting to measure the ownership-performance relation. In this section, We use panel data techniques to investigate more directly the question of whether changes in managerial ownership can be treated as an exogenous in the performance regressions. Our empirical analysis of the effects of managerial ownership and firm value is summarized in model 1 and model 2 on Table 6. We note that the changes in managerial ownership variables are statistically significant for both models when long term investment and short term investment substitute one another.

As Cho (1998) suggests, other things being equal, managers may prefer equity compensation when they expect their firm to perform well and, consequently, the value of the firm to increase. As a result, higher levels of insider ownership are expected at firms with high corporate values. The ownership structure is actually not exogenously determined and is decided by corporate value endogenously. It is possible that insiders can foresee changes in firm performance and, therefore, change their holdings accordingly.

In model 3 and model 4 on Table 6, using changes in percent officers as dependent variable, We also find that changes in Tobin's Q are significantly associated with changes in ownership, suggesting that increased firm value may drive up managerial ownership.

To explore the potential endogeneity effect, we include a simultaneous equation system of ownership structure, and firm performance using three-stage least squares method. Specifically, we estimate the following simultaneous equations system:

ΔTobin's Q $_{it}$ = $\square_0$ + $\square_1$ Δ(percent_officers $_{i,t}$)+ $\Delta\square_\square$(Sales $_{i,t}$) + $\square_\square\Delta$Log (MV $_{i,t}$) + $\Delta\square_\square$(Leverage $_{i,t}$)+ $\Delta\square_\square$(shtinv$_{i,t}$) /$\Delta\square_\square$(longinv$_{i,t}$) + $\Delta\square_\square$(Profit margin $_{i,t}$)

Δ(percent_officers $_{i,t}$) = $\square_0$ + $\square_1$ Δ(Tobin's Q $_{it}$)+ $\Delta\square_\square$(Sales $_{i,t}$) + $\square_\square\Delta$Log (MV $_{i,t}$) + $\square_\square\Delta$ (ROA $_{i,t}$) + $\Delta\square_\square$(shtinv$_{i,t}$) /$\Delta\square_\square$(longinv$_{i,t}$)+ $\Delta\square_\square$(Profit margin $_{i,t}$)

Table 7 reports the three-stage least squares estimation result of the simultaneous regression model. The first two columns contain the regression estimates obtained by using Tobin's Q as a dependent variable with short term and long term investment in place of growth opportunities control respectively. Column 3 and column 4 contain regression estimates using managerial ownership as different dependent variables. In contrast with Cho's (1998) finding, the changes in managerial ownership reported in column 1 and column 2 are significantly related with Tobin's Q. It is consistent with the agency theory that managerial ownership is a determinant force for changes in firm value.

However, the coefficient estimates, in model 3 and model 4, where changes of managerial ownership are dependent variables do not show any evidence that corporate value affects managerial ownership. In short, possible endogeneity bias is not a concern with our data set.

(iv) Robustness Check

Given that changes in managerial ownership will improve firm performance; one may wonder the extent to which managers fully exert their capability of generating wealth driven by equity incentives. According to previous corporate finance literature, firm performance could be nonlinearly related to managerial ownership. Himmelberg, Hubbard, Palia (1999) find a quadratic form of the effect of ownership on performance. McConnell and Servaes (1990) suggest that the ownership-performance relation first increases and then decreases. We hypothesize that managers potential asymptotically approache certain maximum point as the managerial ownership increases. We present the model results with changes of ownership variable and the squares of the changes of ownership variable on Table 8. However, the coefficient for the quadratic term is insignificant at the .1 percent level. We conclude that in our sample this concave relation does not apply.

V. Conclusion

This paper examines the relation among managerial ownership, firm efficiency and corporate value. Jensen and Meckling's agency theory suggests that managerial ownership may influence firm performance. An important indicator of the firm performance is firm efficiency. Firm efficiency represents the most immediate and direct outcome of management effort if increased equity ownership serves as forces motivating managers to act in the best interests of shareholders. This paper uses changes in managerial ownership as an argument to evaluate the changes in firm efficiency, and in turn how firm efficiency affect changes in firm profitability and in firm value. Using a comprehensive sample, the OLS regression results show evidence that managerial ownership changes are significantly positively related with changes in firm efficiency, which in turn leads to changes in firm profitability and positively changes firm values. After conducting panel data analysis, which is stronger in testing ownership-performance relation with potential omitted variable bias, our test result show a significantly positive relation between

managerial ownership and firm performance, consistent with the incentive alignment argument of Jensen and Meckling (1976).

In order to ensure that an endogenous regressor does not affect the results, we use a three-stage least squares estimation for simultaneous regression testing. These results indicate that change in managerial ownership is a determinant influence on change in firm value but not vice versa.

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Figure 1 – Average level of managerial ownership and Tobin's Q by year
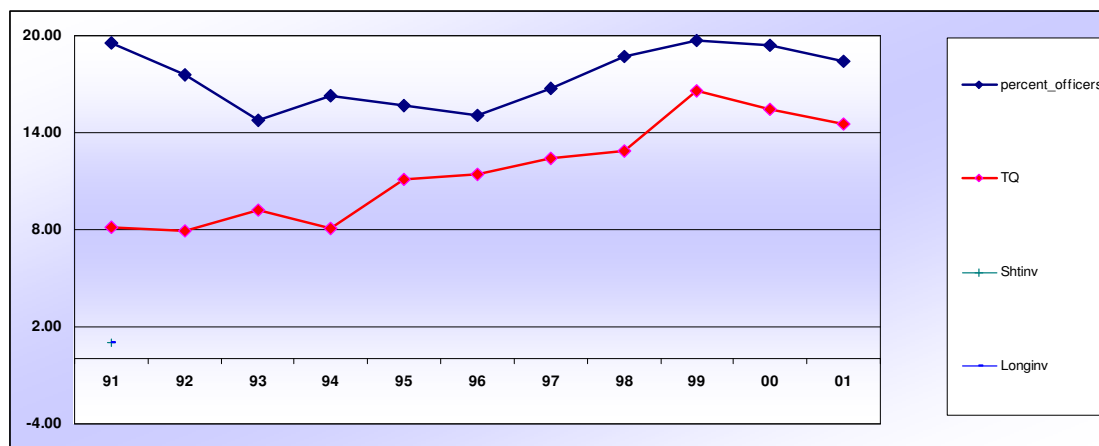
Figure 2 – Average changes of managerial ownership and changes of Tobin's Q by year
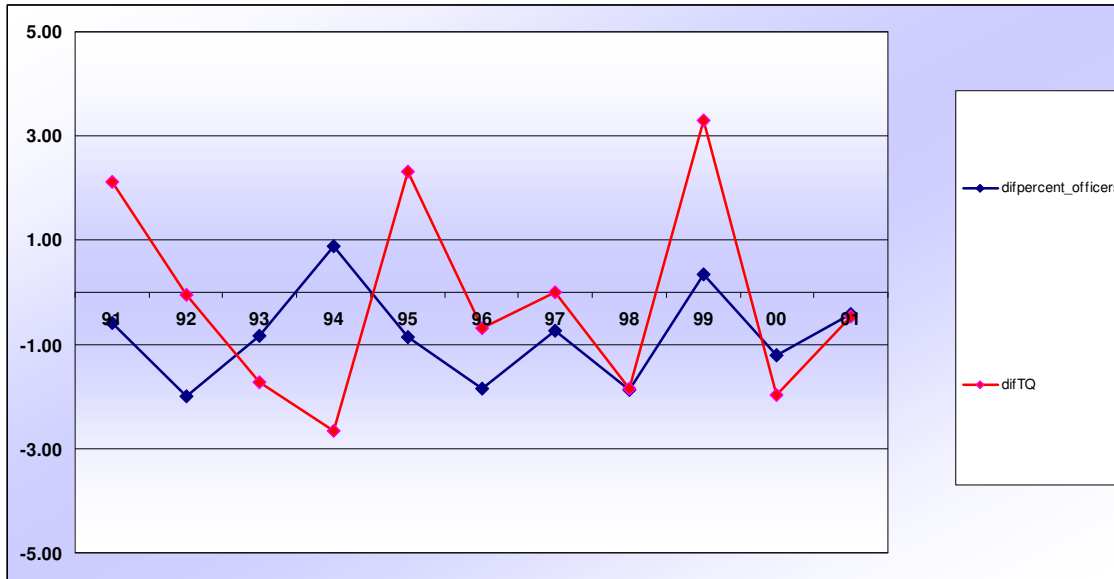
Table 1 - Summary statistics for a pooled sample of 4,822 observations for 1,384 firms during 1990 to 2001

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

Variable	N	Mean	Std Dev	Minimum	Maximum
Panel A - Level of firm performance measures					
Percent_officers %	4822	18	18	0.0	99
TQ	4822	13	15	1	99
Sales (M)	4822	2,088	9,101	0.0	180,557
Leverage	4822	0.5	0.4	0.0	11
MV (M)	4822	2,402	13,646	0.2	474,522
ROA	4822	-0.1	0.4	-10	1
Turnover	4822	1.1	0.6	0.0	5
Profitmargin	4822	-3	77	-4,791	1
Shtinv	4822	166	1,116	-0.1	31,605
Longinv	4822	93	434	0	8,900
Cash (M)	4822	174	795	0	18,555
Panel B - Annual changes in the level of firm performance measures					
Difpercent_officers	4822	-0.94	9	-81	85
DifTQ	4822	0.19	12	-91	87
Chgsales	4822	0.28	4	-1	137
ChgMV	4822	0.44	1	-1	24
Difleverage	4822	0.02	0	-7	4
DifTurnover	4822	0.01	0	-3	4
DifROA	4822	-0.03	0	-7	9
Difprofitmargin	4822	-1.01	79	-4,682	1,300
Chglonginv	4822	0.20	1	-1	40
Chgshtinv	4822	0.38	2	-20	68
Chgcash	4822	2.86	83	-1	5,400

Table 2 Summary statistics for firm performance measure by year.

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows:

Percent officer = the fraction of stock shares held by officers within a firm, reported at fiscal year end. TQ = Tobin's Q, the market value of equity plus book value of debt divided by book value of firm total physical assets. Leverage = firm total liability divided by total assets. MV = market value of equity; the market value of common stock at the end of fiscal year. ROA = return on assets; the ratio of net income to total assets. Sales = annual sales in million dollar reported at the end of fiscal year. Turnover ratio = the total sales divided by total assets. Profit Margin = the ratio of operating income before depreciation to total sales. Shtinv and Longinv represent short term investment and long term investment respectively. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. In Panel B, Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

Variable	N	Percent officers %	TQ	Sales (M)	Leverage	MV(M)	ROA	Turnover	Profit Margin	Shtinv	Longinv	Cash(M)
Panel A Average level of firm performance measure												
91	377	19.54	8.19	2,204	0.47	770	0.01	1.23	-4.49	172.98	92.79	122
92	410	17.60	7.95	1,959	0.47	811	0.00	1.23	-0.89	136.59	82.72	123
93	38	14.76	9.24	9,063	0.55	3442	-0.03	1.20	0.05	575.42	386.86	747
94	48	16.31	8.06	7,749	0.53	3089	-0.05	1.06	-0.27	564.94	308.97	711
95	494	15.70	11.14	2,309	0.45	1400	0.03	1.19	-3.74	170.05	106.45	183
96	481	15.07	11.43	2,479	0.44	1890	0.01	1.19	-0.55	201.80	110.58	215
97	440	16.70	12.43	2,580	0.47	2939	-0.04	1.10	-1.44	233.17	111.28	184
98	511	18.73	12.89	1,682	0.47	2872	-0.08	1.05	-0.47	136.18	78.78	123
99	664	19.70	16.59	1,545	0.49	3041	-0.09	1.04	-0.61	128.65	70.35	163
00	733	19.37	15.44	1,870	0.53	3633	-0.14	1.04	-1.93	159.98	80.05	170
01	620	18.37	14.55	1,582	0.54	2610	-0.19	1.04	-9.09	121.67	75.44	176
Panel B Average annual changes in the level of firm performance measure												
91	377	-0.58	2.12	0.08	0.61	-0.01	-0.02	0.00	-4.47	0.16	0.15	1.86
92	410	-1.98	-0.04	0.09	0.44	0.01	0.00	-0.02	3.16	0.16	0.37	0.97
93	38	-0.85	-1.73	0.05	0.19	0.03	0.02	-0.04	-0.04	0.20	0.21	3.00
94	48	0.88	-2.65	0.16	0.10	0.02	-0.05	-0.01	0.55	0.09	0.34	0.04
95	494	-0.86	2.31	0.26	0.80	-0.01	0.01	0.02	-3.23	0.28	0.44	4.11
96	481	-1.84	-0.70	0.44	0.49	0.00	-0.01	-0.01	1.97	0.21	0.62	2.42
97	440	-0.74	0.01	0.51	0.50	0.04	0.01	-0.04	-0.70	0.26	0.35	1.34
98	511	-1.88	-1.86	0.44	0.10	0.04	0.00	-0.03	1.05	0.18	0.45	0.93
99	664	0.36	3.31	0.22	0.66	0.03	0.02	0.00	0.75	0.15	0.22	0.90
00	733	-1.21	-1.96	0.45	0.29	0.04	0.01	-0.06	-0.43	0.27	0.59	2.10
01	620	-0.42	-0.47	0.04	0.26	0.05	0.02	-0.09	-6.88	0.14	0.17	9.96

Table 3. Pearson correlation matrix for managerial ownership and various firm performance measure variables

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

NAME	difpercent_insiders	difTQ	chgMV	chgtot_assets	dif leverage	chg cash	dif Turnover	dif ROA	dif profit margin	chg longinv	chg shtinv	chg sales
difpercent_insiders	1											
difTQ	0.03	1.00										
chgMV	0.01	0.48	1.00									
chgtot_assets	0.00	0.13	**0.30**	1.00								
dif leverage	0.02	-0.06	-0.10	-0.11	1.00							
chg cash	0.02	0.01	0.03	0.04	-0.03	1.00						
dif Turnover	0.00	-0.05	-0.06	**-0.32**	0.06	-0.02	1.00					
dif ROA	0.01	0.15	0.13	0.17	**-0.64**	0.01	-0.03	1.00				
dif profit margin	0.00	-0.04	0.00	-0.02	0.00	0.00	0.01	0.00	1.00			
chg longinv	-0.02	-0.05	0.03	**0.17**	0.05	0.00	-0.02	-0.07	0.00	1.00		
chg shtinv	0.01	-0.11	0.08	**0.24**	0.00	0.01	-0.03	0.01	0.00	0.06	1.00	
chg sales	0.00	-0.01	0.03	0.07	0.01	0.00	0.09	0.04	0.10	0.03	0.03	1.00

Table 4. Ordinary Least-square regressions analysis of managerial ownership on firm operating efficiency.
Dependent Variable - Turnover Ratio

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

Model	1		2		3		4	
Intercept	0.019	***	0.032	***	0.028	***	0.027	***
	(4.58)		(7.92)		(6.69)		(6.55)	
difpercent_officers	0.001	**	0.001		0.001	*	0.001	*
	(2.08)		(1.37)		(1.68)		(1.67)	
Dif TQ			0.000		-0.001	**	-0.001	**
			(-0.02)		(-1.93)		(-2.11)	
Dif Tot Assets			-0.183	***	-0.191	***	-0.192	***
			(-24.43)		(-24.73)		(-24.77)	
chgsales			0.005	***	0.005	***	0.005	***
			(7.48)		(7.44)		(7.45)	
chgshtinv			0.004	***	0.004	***		
			(2.47)		(2.16)			
chg longinv							0.009	***
							(2.65)	
dif leverage			0.165	***	0.169	***	0.167	***
			(11.19)		(11.47)		(11.29)	
difpro fitmargin								
chgMV					0.013	***	0.013	***
					(4.15)		(4.27)	
Adj R²	0.0006		0.1371		0.1396		0.140	
N	5626		5626		5626		5626	
F	4		150.02		131.42		131.81	

*   significant at 10%
**   significant at 5%
*** significant at 1%

Table 5. Ordinary Least-square regressions analysis of managerial ownership on firm value. Dependent Variable – Tobin's Q

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

Model	1		2		3		4		5		6		7	
Intercept	-0.03		0.27		0.27		-1.52	***	-1.64	***	-1.38	***	-1.51	***
	(-0.16)		(-1.49)		(1.49)		(-9.18)		(-9.78)		(-8.4)		(-9.06)	
difpercent_of ficers	0.05	***	0.04	**	0.04	**	0.08	***	0.08	***	0.07	***	0.08	***
	(2.52)		(-2.06)		(2.07)		(5.08)		(5.27)		(4.59)		(4.82)	
chgsales			-0.09	***	-0.08	***	-0.09	***	-0.09	***	-0.09	***	-0.09	***
			(-2.99)		(-2.75)		(-3.29)		(-3.4)		(-3.51)		(-3.59)	
chgshtinv			-0.56	***	-0.56		-0.73	***			-0.74	***		
			(-7.58)		(-7.58)		(-11.29)				(-11.44)			
chglonginv									-0.67	***			-0.63	***
									(-4.77)				(-4.52)	
dif leverage			-1.93	***	-1.93	***	0.84		1.06	*				
			(-2.86)		(-2.86)		(1.41)		(1.76)					
difpro fitmargin			-0.001		-0.001		-0.001		-0.001		-0.001		-0.001	
			(-1.04)		(-1.03)		(-0.93)		(-0.86)		(-0.78)			
chgMV							4.33	***	4.28	***	4.24	***	4.19	***
							(41.21)		(40.39)		(40.49)		(39.64)	
difROA											1.51	***	1.38	***
											(5.19)		(4.72)	
Adj R²	0.001		0.01		0.01		0.24		0.229		0.25		0.232	
N	5606		5606		5606		5606		5606		5606		5606	
F	6		20		16		301		278		306		282	

* significant at 10%
** significant at 5%
*** significant at 1%

Table 6. Panel Data for managerial ownership and firm value relation analysis. Dependent variables – Tobin's Q & Percent_officers

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

Model	1		2		3		4	
	Dependent Variable							
	Tobin's Q				**Percent_Officers**			
Intercept	-0.07		-0.14		-0.99		-1.01	
	(-0.02)		(-0.03)		(-0.26)		(-0.27)	
difpercent_officers	0.059	***	0.065	***				
	(2.89)		(3.15)					
Dif TQ					0.042	***	0.045	***
					(2.89)		(3.15)	
chgsales	0.04		0.03		-0.21		-0.21	
	(0.7)		(0.59)		(-4.36)		(-4.42)	
chgshtinv	-0.77	***			-0.09			
	(-8.65)				(-1.22)			
chglonginv			-0.58	***			0.13	
			(-3.2)				(0.86)	
difpro fitmargin	-0.003		-0.003		0.002		0.002	
	(-1.18)		(-1.18)		(0.96)		(0.97)	
chgMV	4.50	***	4.48	***	-0.70	***	-0.71	***
	(34.39)		(33.93)		(-5.49)		(-5.65)	
difROA	2.17	***	2.02	***	2.16	***	2.19	***
	(4.21)		(3.86)		(4.99)		(5.03)	
Adj R^2	0.4602		0.450		0.28		0.28	
DFE	3422		3422		3422		3422	
F for No Fix	0.87		0.90		0.87		0.87	

*   significant at 10%
**   significant at 5%
*** significant at 1%

Table 7. Simultaneous Equation Model tesing for endogeniety of ownership-performance relation. Dependent variables – Tobin's Q & Percent_officers

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

	1		2		3		4	
Model	**Dependent Variable**							
	Tobin's Q				**Percent_Officers**			
Intercept	-0.19		0.09		-0.43	***	-1.11	***
	(-0.53)		(0.17)		(-2.63)		(-3.95)	
difpercent_officers	1.73	***	1.83	***				
	(3.51)		(3.96)					
Dif TQ					**0.12**		**-0.11**	
					(1.05)		**(-0.7)**	
chgsales	0.02		0.03		-0.07	**	-0.09	***
	(0.37)		(0.53)		(-2.41)		(-3.14)	
chgshtinv	-0.29	***			0.04			
	(-5.83)				(0.91)			
chglonginv			-0.50	***			-0.17	
			(-2)				(-1.04)	
dif leverage	3.49	***	4.36	***				
	(4.11)		(3.32)					
difpro fitmargin	-0.002		-0.002		0.001		0.001	
	(-1.04)		(-1.07)		(0.85)		(0.75)	
chgMV	4.52	***	5.13	***	-1.06	***	-0.07	
	(13.22)		(17.32)		(-2.68)		(-0.1)	
difROA					0.82	***	1.56	***
					(3.6)		(4.66)	
Adj R^2	0.025		0.06		0.025		0.06	
N	22816		11454		22816		11454	
System Wghted MSE	4.48		1.51		4.48		1.51	

* significant at 10%
** significant at 5%
*** significant at 1%

Tabel 8. Panel data testing for duadratic specification. Dependent variable - Tobin's Q

The sample is drawn from Compact Disclosure 2001 for managerial ownership data and firm financial data from Comustat. It contains 4,822 observations for 1,384 firms during 1990 to 2001. Variable definitions and when their Compusat item numbers are given as follows: Percent officer = shares held by officers / total number of shares outstanding. TQ = Tobin's Q, (market value of equity + book value of debt) / by book value of total physical assets. Leverage = firm total liability / total assets. MV = market value of equity; ROA = return on assets; net income / total assets. Sales = annual sales in million dollar. Turnover ratio = the total sales / total assets. Profit Margin = the ratio of operating income before depreciation / total sales. Shtinv = annul capital expenses. Longinv = R&D expenses. Cash = the annual cash balance plus short term investments. Chg of variable is the percentage change of the variable from one year lag value. Dif of variable is the difference from one year lag value. All variables are measured at the end of fiscal year unless otherwise indicated.

Model	1		2	
Intercept	-0.07		-0.14	
	(-0.02)		(-0.03)	
difpercent_officers	0.06	***	0.06	***
	(2.89)		(3.14)	
Dif OF SQ	0.0002		0.0002	
	(0.42)		(0.39)	
chgsales	0.04		0.03	
	(0.71)		(0.59)	
chgshtinv	-0.77	***		
	(-8.65)			
chglonginv			-0.58	***
			(-3.21)	
difpro fitmargin	0.00		0.00	
	(-1.19)		(-1.19)	
chgMV	1.00	***	4.48	***
	(4.50)		(33.9)	
difROA	2.19	***	2.03	***
	(4.22)		(3.87)	
Adj R²	0.4602		0.4501	
DFE	0.87		0.9	
F for No Fix	3421		3421	

*** significant at 1%
** significant at 5%
* significant at 10%

BEHIND BROAD CORPORATE GOVERNANCE AGGREGATES: A FIRST LOOK AT SINGLE PROVISIONS OF THE GERMAN CORPORATE GOVERNANCE CODE

Alexander Bassen*, Stefan Prigge**, Christine Zöllner***

Abstract

This study contributes to the emerging research that analyzes the relation between performance and *single* components of broad corporate governance aggregates, such as governance codes and ratings. Available research is confined to the U.S., Japan, and emerging markets. We enlarge the geographical scope to the German Corporate Governance Code (GCGC). For a sample of 100 large listed German stock corporations, compliance with the GCGC at large is significantly associated only with one of our performance measures (Tobin's q); this connection is *negative*. Individual analysis of eleven GCGC recommendations reveals that for three of them, association with all performance measures is insignificant. Four (four) components are significantly positively (*negatively*) connected with at least one performance measure.

Keywords: corporate governance, German Corporate Governance Code, corporate performance

* University of Hamburg, School of Economics and Social Sciences, Von-Melle-Park 9, 20146 Hamburg, Germany. Email: alexander.bassen@wiso.uni-hamburg.de.
** Hamburg, Germany. Email: prigge@web.de. Part of the paper was written while this author was holding an interim professorship at the Private Hanseatic University Rostock.
*** University of Hamburg, School of Economics and Social Sciences, Von-Melle-Park 9, 20146 Hamburg, Germany. Email: christine.zoellner@wiso.uni-hamburg.de.

Introduction

Research about the relation between overall corporate governance aggregates, e.g., governance ratings, and performance is rapidly increasing worldwide. The results of these studies are inconsistent. Only very recently, national and regional analyses on the association of *single* components of broad corporate governance aggregates with measures of corporate performance have been published. However, so far, the scope of these studies is confined to the U.S., Japan, and emerging markets. Our study is the first empirical single-provision analysis of the association between a corporate governance aggregate and performance for an established European economy.

It is the goal of this study to connect two areas of the research that studies the association between governance aggregates and performance: Firstly, we contribute to the literature on the relation between compliance with the German Corporate Governance Code (GCGC) at large and performance. Secondly, we look behind the result for the overall score and analyze the contribution made by single provisions of the GCGC to the general result. Since compliance with the GCGC is rather strong among our sample corporations consisting of the largest quoted German stock corporations, we have to confine our analysis on those eleven of the 68 recommendations with the lowest compliance rates. In addition, we compare our

results with those in related studies for U.S. and Japanese corporations. Unfortunately, such comparison is impeded by the fact that some of the provisions in our analysis relate to the two-tier structure of German stock corporations.

Review of Related Research
The German Corporate Governance Code

One strand of the literature, our study is connected with, considers the relation between GCGC compliance and performance. The development of the GCGC started in 2001. Its first version was published in 2002 (for development, background, and basics of and compliance with the GCGC, see v. Werder et al. 2005; for recent changes in German corporate governance including the GCGC, cf. Cromme 2005). The declared aim of the GCGC is to improve the transparency of German corporate governance especially for international investors so that their trust in the quality of management and control of German corporations is enhanced. The GCGC, therefore, cites elements of different German laws. These repetitions are amended with 68 recommendations and with 16 suggestions mostly concerning internal corporate governance mechanisms. The GCGC is divided into six areas: (1) Shareholders and the General Meeting, (2) Cooperation between Management Board and Supervisory Board, (3) Management Board, (4)

Supervisory Board, (5) Transparency, and (6) Reporting and Audit of the Annual Financial Statements (for more details, see the homepage of the Government Commission on the German Corporate Governance Code, www.corporate-governance-code.de/index-e.html; visited 3.3.2008).

Although compliance with the GCGC is voluntary, it roughly follows the "comply or explain" approach. Listed German corporations are not compelled to comply, but they have to disclose annually with which of the recommendations they did not comply with. An explanation for non-compliance is not mandatory. The statement of conformity has a legal basis in Art. 161 of the German Stock Corporation Act. This legal obligation does not include the suggestions.

There are only a few empirical studies on the association between the GCGC at large and several performance measures. Nowak et al. (2005; 2006) cannot find a connection between GCGC compliance and stock returns. Bassen et al. (2006) come to the same conclusion with respect to Tobin's q, ROA and stock returns. In contrast to that, Goncharov et al. (2006) discover a significantly positive association between GCGC compliance and market valuation and stock returns, resp. In summary, the debate of the relation between GCGC compliance and performance is still open.

Single-Provision Analyses of Broad Corporate Governance Aggregates

The second strand of the literature our study is connected with, is a field in governance literature, which has been emerging in recent years and which focuses on *aggregations* of firm-specific corporate governance characteristics. Thus, research activity seems to reflect the recent occurrence of governance aggregates such as codices and ratings (for an overview on codices, see Wymeersch 2005; for an overview on ratings, cf. Rose 2007). Accordingly, this research area investigates the connection of corporate performance with governance codices, governance ratings, or self-defined governance indices. The theoretical literature on the relationship between corporate governance in general and corporate performance is surprisingly underdeveloped. Despite differences in detail, the general argument boils down to the point that better governance is expected to reduce agency problems between management and internal shareholders on the one hand and external shareholders on the other hand (see, e.g., La Porta et al. 2002; Lombardo / Pagano 2002; Shleifer / Wolfenzon 2002, pp. 8, 13 et seq.; Ashbaugh et al. 2004, pp. 1, 5 et seq.; Drobetz et al. 2004, pp. 268 et seq.; Black et al. 2005, p. 25; Durnev / Kim 2005, pp. 1463-1468; Black et al. 2006a, pp. 399 et seq.).

The analyses of the relationship between governance aggregates and corporate performance currently focus on three issues: Firstly, does causality run from governance to performance, or vice versa

(cf. Ashbaugh et al. 2004; Bhagat / Bolton 2006; Lehn et al. 2007; Chidambaran et al. 2008). Secondly, do other governance mechanisms affect the relationship between the governance aggregate and performance (see Cremers / Nair 2005; Bhagat / Bolton 2006). Thirdly, provided a significant association between a governance aggregate and performance has been detected, do all or only a few components of the aggregate contribute to the significance? This article investigates the latter question for the GCGC. We review this subarea of the literature in greater detail.

We restrict our literature review to research dealing with corporations in established market economies for the following reason: According to the World Bank (1999), national corporate governance systems cannot be evaluated without considering national characteristics, such as the development of capital markets or law systems. The specific circumstances in emerging economies raise serious doubts on their comparability to German corporations. Still, the task is quite demanding for comparisons with U.S. and Japanese evidence.

The literature review begins with studies of U.S. firms. The highly influential study by **Gompers et al. (2003)** can be considered the starting point of the research concerning the relationship between governance aggregates and performance. They find a significant association between their 24-provision-governance index and firm performance in their sample period 1990-1999.

This evidence prompts Bebchuk et al. (2004) to analyze if all of these 24 provisions have a comparably equal association with performance. Their paper is the starting point of this particular subarea in the literature. Their theory-driven analysis yields six provisions that they expect to have a significant connection with performance. These six provisions are aggregated in an "entrenchment index". Details of these provisions can be found in Table 1. The empirical analysis replicates the one of Gompers et al. (2003). Bebchuk et al. find that all of the six provisions — individually and aggregated in the entrenchment index — are significantly negatively correlated with performance as measured by Tobin's q. No significant evidence could be found for the remaining 18 provisions. In contrast, positive, albeit very small, correlations were found for these provisions. The replication of the portfolio approach of Gompers et al. (2003) confirms their result that worse governance is associated with negative abnormal stock returns, but again this result is caused by these six provisions.

According to Bebchuk et al., these six provisions are the main drivers of the significant correlation between the governance index and the performance measures shown by Gompers et al. (2003). Bebchuk et al. point out that the current methodological approach which measures corporate governance with an ever growing number of criteria might be misleading and could be improved by concentrating

on smaller sets of criteria which consist of governance factors, which have the strongest impact.

Brown / Caylor (2006a) refer to Gompers et al. (2003) and Bebchuk et al. (2004). The basis of the study is their governance index as of February 2003, which includes in total 51 governance factors provided by the Institutional Shareholders Service (ISS). Linking this index with firm valuation as measured by Tobin's q, they find a significantly positive relation. In a more detailed analysis, they do not use a theoretical approach, but rather choose an econometric approach. They consider the 51 ISS provisions on a single basis to identify the drivers of the significant correlations. They regress Tobin's q on all 51 provisions, and on a single provision and an aggregate of the remaining 50 provisions. Moreover, they let a stepwise approach of their econometric software select the relevant provisions among the 51 items. As a result they are able to specify five provisions (details in Table 1), two of them are identical with those highlighted in Bebchuk et al. (2004).

In a supplementary paper, Brown / Caylor (2006b) more or less replicate the companion study, but in this paper they concentrate on the correlation between governance and the firms' operating performance as measured by Return on Assets (ROA) and Return on Equity (ROE). They show that corporations with low scores in their corporate governance index have significantly lower ROA and ROE. Among the 51 provisions, they identify 10 factors which show significantly positive correlations with at least one of the two performance measures (details in Table 1). Five provisions can be linked with both ROA and ROE. Only one of these provisions – average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%. – is also significant with respect to Tobin's q in their companion study.

Brown and Caylor support the recommendation of Bebchuk et al. (2004) to focus on smaller indices of corporate governance, however, the significant provisions in their study are only partially identical with those found by Bebchuk et al. (2004). In addition to that, Brown and Caylor clearly demonstrate, that the significant governance provisions differ between performance measures.

As supplement, Aggarwal / Williamson (2006) can be mentioned which do not investigate single provisions, but which nevertheless provide some information relevant for our context. They aggregate 64 governance provisions of ISS to a governance index and find a significantly positive relationship with Tobin's q. In a second step, the 64 provisions are divided into eight subcategories. Six of the subcategories (board structure, audit, state of incorporation, compensation, progressive practices, and ownership) are significantly and positively related to firm value, two (company charter and by-laws, and director education) are found to have an insignificant relation with Tobin' q. The results support the view

that the significant relationship of the 64-provision index with Tobin's q is not caused by all provisions.

Table 1 about here

Bauer et al. (2005; 2008) conduct an analysis similar to that of Aggarwal / Williamson (2006) for Japanese corporations. We refer to the working-paper version of 2005 which investigates four performance measures: Tobin's q, stock price performance, ROE, and the net profit margin, whereas the published version of 2008 only contains the results for stock price performance. The corporate governance system in Japan is often considered to be similar to the German one (cf., e.g., Prowse 1995). For this reason, the results of Bauer et al. may possibly supply more useful information with regard to German corporate governance than U.S. studies. However, due to recent developments, e.g., the retreat of banks from equity holdings and supervisory board positions in Germany, German and Japanese corporate governance might have lost in the recent past some of their former similarity (for the recent developments in Germany, see, for instance, Hackethal et al. 2005 and Vitols 2005, for Japan in comparison to Germany, cf. Jackson / Moerke 2005). Moreover, there is one board in Japanese stock corporations, whereas management board and supervisory board are separated in German stock corporations. The GCGC concerns very much the two boards.

Bauer et al. use the Governance Metrics International (GMI) rating of 2004. GMI observes close to 500 different corporate governance criteria which are firstly combined into six subindices and then aggregated to an overall score. Bauer et al. show that – using the overall score – corporations with good corporate governance exhibit significantly higher stock price performances and firm values, but lower ROE and net profit margin, which are only partially significant. In their next step, Bauer et al. look at the six subindices which refer to board accountability, financial disclosure and internal controls, shareholder rights, remuneration, market for control, and corporate behavior. They identify remuneration, and financial disclosure and internal controls as being the most important sub indices for stock price performance and firm value. A small effect can be shown for shareholder rights. Whereas takeover defense measures were seen to have a significantly negative association with firm value, corporate behavior was discovered to be significantly connected with firm value in a positive manner. All subindices were found to be negatively related to ROE and profit margin. Thus, as in Brown / Caylor (2006a; 2006b), the results differ for the various performance measures.

The common thread of the presented studies – particularly of those that analyze individual provisions – is the fact that they empirically support the conjecture that for governance ratings and indices, which are based on a vast set of provisions, only a

few provisions are actually significantly associated with firm performance. The research of Black et al. (2005; 2006b) for the emerging markets of Korea and Russia, resp., yields similar results.

Moreover, we find inconsistencies among the governance measures which are supposed to possess a significant relationship with corporate performance. Differences between Bauer et al. (2005) and the U.S. studies could plausibly be ascribed to the distinctions between the corporate governance systems in the U.S. and Japan, but there are also major differences between the U.S. studies as well, even within a single study and for an identical sample between the various performance measures (Brown / Caylor 2006a; 2006b). The causes of these various findings are still unclear as this branch of the literature is still in its infancy.

Goal of this Study

Our study adds to the small stock of research on the correlation of broad corporate governance measures and firm performance. We transfer the approach of international research inquiries, particularly that of Brown / Caylor (2006a; 2006b) on German corporations, thus providing the first study of this type for an established European economy. Our first research question covers the general association between the declared compliance with the GCGC and firm performance, which we assume to be positive. Our main interest, however, is to discover the most relevant recommendations of the GCGC, i.e., those recommendations which are significantly related with performance. Do the relevant recommendations differ for various performance measures? How do the relevant recommendations of the GCGC relate to the relevant provisions identified in studies for other countries?

Research Design
Sample

The starting point of our sample composition is the HDax stock index as of 31st of July 2005. The HDax consists of the 110 largest companies listed on the German stock exchange. Measures of size are free float market capitalization and exchange turnover. The HDax joins the Dax index of the 30 largest companies, the MDax index of the 50 largest companies from classic sectors ranking immediately below the Dax, and the TecDax of the 30 largest companies from the technology sector following immediately behind the Dax. We remove all foreign companies and also German companies with less than 1% free float. Our final sample comprises 100 large German stock corporations.

Data

The focal point of our research is compliance with the GCGC. Taking the position of an informed external investor we investigate all publicly available information the company provides: annual report, declaration of conformity with the GCGC, agenda of the general meeting, charter of the corporation, and company website. Our GCGC data represent the status as of 31st of July 2005.

The descriptive statistics in Table 1.

Table 2 reveal the extraordinarily high conformity with the recommendations of the GCGC: On average, each corporation complies with 95.59% of the recommendations, with the company at the bottom of this ranking having a compliance rate of still 77.94%. Compliance with the recommendations stands in marked contrast to conformity with the suggestions, which is much lower. Compliance with GCGC recommendations displays little variation, reducing the probability of finding significant relations with performance measures.

Performance measures constitute a second set of variables. We use three kinds of measures: valuation measures (Tobin's q, market-to-book ratio of equity; both as of 30.6.2005), book performance measures (ROA, ROE; both for the time period from 1.7.2004 to 30.6.2005), and stock returns (for the time period from 1.7.2004 to 30.6.2005). All performance measures enter the analysis in an industry-adjusted form.

Finally, we collected data for a variety of additional variables which are commonly used as control variables in corporate governance studies: They relate to company size (balance sheet total, number of employees, market capitalization), growth (sales from January to June 2005 as percentage of sales from January to June 2004), risk (volatility, beta), and ownership structure (voting rights block of the largest ultimate owner according to the German Federal Financial Supervisory Authority). Book data were collected on the occasion of our company inquiry, stock market data were provided by the Deutsche Börse AG. Table 3 summarizes the variables definitions.

Table 2 and Table 3 about here

Selection of Control Variables

We collected data from seven potential control variables. To discover the significant (10% level) control variables for each of our five performance measures, we analyze regressions of the following type:
(1) performance measure = lnSIZE + GROWTH + BLOCK + VOL + BETA + MDAX + TECDAX
We use four optimization tools of SPSS: (1) The regression includes all regressors at once and the researcher selects the significant ones ("inclusion"). (2) SPSS analyzes the regressors stepwise and adds a variable to the set of independent variables provided it enhances the explanatory power of that set of independent variables by a pre-determined amount. Moreover, SPSS checks in each round whether the

incumbent regressors should remain in the set of independent variables ("stepwise"). (3) SPSS starts with all regressors and excludes one after another all independent variables that do not contribute to the explanatory power in a pre-determined amount ("backward"). (4) The same as procedure (2) with the exception that SPSS does not test whether incumbent regressors should remain in the set of independent variables ("forward").

Calculations not shown here yield the following

sets of control variables (see

Table 4). If one of the stock index indicator variables qualified for the control variable set, it was interpreted as evidence that stock index membership matters for this performance measure. In this case, as a rule, the other index indicator variable was included as well.

Table 4 about here

ANALYSIS OF GCGC AGGREGATES

This article focuses on single GCGC items. Nevertheless, it seems interesting to start the examination with a short look at aggregates of the GCGC. Three aggregates will be considered: the complete Code (GCGC), all recommendations (GCGC_REC), and all suggestions (GCGC_SUG). The regression equations are built according to this pattern:
(2) performance measure = GCGC aggregate + performance-measure-specific control variables
The results of the ROA regressions should be interpreted with some caution because the distributions of the residuals oscillate around the minimum requirements of normality.

Table 5 about here

ANALYSIS OF SINGLE GCGC RECOMMENDATIONS
GCGC Recommendations with the Lowest Compliance Rate

A significant relationship with performance measures is most probable for those GCGC recommendations with the lowest compliance rates. In these cases, performance measures which possess some variation are regressed on GCGC variables which also show some variance. For eleven of the 68 recommendations the compliance rate does not exceed 90%, which is why we confine our analysis to these recommendations. For example, Caylor / Brown (2006a), as shown in the working paper version 2005, benefit from the fact that in their sample only nine out of 51 provisions exhibit a compliance rate above 90%. Thus, they are able to investigate all provisions individually.

Table 6 about here

Procedure of Analysis

We apply two different approaches to determine the significant GCGC recommendations for each of our five performance measures. The first approach examines regression equations of the following types:
(3) performance measure = a single GCGC recommendation + performance-measure-specific control variables
(4) performance measure = a single GCGC recommendation + all GCGC recommendations except that single recommendation (GCGC_REC w/o1) + performance-measure-specific control variables
Due to space limitation, only significant results of the regressions of equations (3) and (4) can be shown in Table 7.

Table 7 about here

The second approach analyzes equations of the following pattern:
(5) performance measure = all 11 GCGC recommendations + all control variables
This kind of equation is analyzed with the four optimization tools of SPPS (inclusion, stepwise, backward, forward), which have been already described. The regression analyses of the GCGC aggregates and the single GCGC recommendations revealed for each performance measure a standard set of observations that has to be excluded because they either interfere with the symmetry of the distribution of the standardized residuals or because they are too influential according to Cook's Distance. These cases have been eliminated from the optimization analysis as well. Table 8 depicts the results.

Table 8 and Table 9 about here

Optimized Aggregates of GCGC Recommendations

For eight out of eleven recommendations, we detect a significant relation with at least one performance measure. At this stage, the status of our analysis offers the opportunity to construct a new class of aggregate governance measures with better precision. The increase in precision comes from three sources: (1) Inclusion only of those recommendations that have proved their significance. (2) Consideration of the significant relation's direction, i.e., recommendations with a negative relation with performance should enter the aggregate with a minus sign. (3) Customizing a specific aggregate for each performance measure.

These considerations lead to the following five performance-measure-specific aggregates of recommendations:

REC_OPT(lnQ_ia): REC3.14 – REC3.16 – REC4.35 + REC4.42

REC_OPT(lnMBT_ia): – REC2.7 + REC3.14 – REC3.16 + REC4.42

REC_OPT(ROA_ia): REC4.27 – REC4.39

REC_OPT(ROE_ia): – REC2.7 – REC4.39 + REC4.42

REC_OPT(SR_ia): REC3.14 + REC3.21

Moreover, in order to analyze the effect of significant recommendations with a negative algebraic sign, we also calculate "absolute" versions of the performance-measure-specific aggregates of recommendations (REC_OPTABS(X)). Here, we simply sum the relevant recommendations complied with, without considering whether the recommendation is positively or negatively associated with performance. I.e., we apply the usual method of aggregating broad governance measures, Since the two recommendations in REC_OPT(SR_ia) are both positively related with stock returns, REC_OPTABS(SR_ia) is identical with REC_OPT(SR_ia) and needs, therefore, not be calculated.

These optimized sets of recommendations are tested in six different specifications for every performance measure with the exception of stock returns for which four specifications suffice. The aim is to compare the relation between the performance measures on the one hand and the optimized set, the recommendations not being part of the optimized set, and the complete set of recommendations, resp., on the other hand. The six specifications have the following structure. Of course, specification (6) has already been calculated above:

(6) performance measure = GCGC_REC + performance-measure-specific control variables

(7) performance measure = REC_OPT(performance measure) + performance-measure-specific control variables

(8) performance measure = GCGC_REC w/o REC_OPT(performance measure) + performance-measure-specific control variables

(9) performance measure = REC_OPT(performance measure) + GCGC_REC w/o REC_OPT(performance measure) + performance-measure-specific control variables

(10) performance measure = REC_OPTABS(performance measure) + performance-measure-specific control variables

(11) performance measure = REC_OPTABS(performance measure) + GCGC_REC w/o REC_OPT(performance measure) + performance-measure-specific control variables

Table 10 about here

DISCUSSION
The Relation between the German Corporate Governance Code at Large and Performance

For four of our five performance measures, the relation is insignificant (Table 5). This finding stands in line with the previous results of Nowak et al. (2005; 2006) and Bassen et al. (2006) but is in conflict with Goncharov et al. (2006). For Tobin's q, we discover a significantly negative association with compliance with GCGC recommendations. This result stands out, not only in the GCGC context but also in view of the other studies on governance aggregates presented above. Among them, only Bauer et al. (2005) report significantly negative associations for two of their four performance measures, ROE and net profit margin. In search for explanations, they refer to arguments collected by Core et al. (2006), p. 658. According to them, weaker governance might give managers enough job security that they are willing to follow a potentially superior long-term strategy at the expense of short-term performance; that they are prepared to bear the risk of lower-tail outcomes of good projects: and that they are willing to restrain themselves from overinvesting in projects for which they dispose of specific expertise, only to impede their replacement. Irrespective whether the significantly negative association is caused by one of the reasons mentioned above, further studies of other samples and sample periods should be conducted to find out whether there really is a negative relation between GCGC compliance and Tobin's q.

Single Provision Analysis as a Field of Governance Research

Concerning the results for the aggregate measure of GCGC recommendations, our results completely conflict with the literature on components of governance aggregates. As reported above, all of these studies measure a significant relation between the governance aggregate and performance, and all of these studies, except for Bauer et al. (2005) for ROE and net profit margin, find an association between better governance and better performance. Thus, our results for the governance aggregate come closest to those of Bauer et al. (2005) for Japan, but there are still pronounced differences. The investigations share the characteristic, that they both find a significantly negative association between the governance aggregate and some of their performance measures (ROE and net profit margin in Bauer et al. (2005), Tobin's q in our case). However, the details are entirely in conflict with each other: Bauer et al. (2005) report a significantly positive association for Tobin's q and stock returns (negatively significant and insignificant, resp., in our case) and a significantly negative association for ROE (insignificant in our case).

Turning to the results for single provisions (Table 7,Table 8, and Table 9), we find that three of the eleven recommendations have no significant relationship with any performance measure at all: REC4.40, REC4.41, and REC6.59. For eight recommendations we detect a significant relation with

at least one performance measure. Only four of them are positively connected with performance, the remaining four provisions dispose of a negative association with performance.

Our results share the pattern found in the literature that the association with performance found for the governance aggregate does not hold for all components of the aggregate in single analysis. Moreover, our findings approve the results of Bauer et al. (2005) and Brown / Caylor (2006a; 2006b) that significant aggregate subareas and provisions, resp., may differ between various performance measures. But despite the variety in this regard, our results dispose of uniformity with respect to another aspect: The algebraic sign of significant regression coefficients for a recommendation is consistent across performance measures: The significant relations of a certain recommendation with performance are either all positive or all negative.

The replication of the approach applied in Brown / Caylor (2006a; 2006b) in Table 10 mainly supports the findings of Brown and Caylor. Except for Tobin's q all performance measures share the same pattern: The optimized set of recommendations is positively significant in every specification it is a part of, whereas the remaining aggregates clearly miss the level of significance. Only with the exception of ROA, the optimized sets of recommendations are quite strong in their significance. Concerning Tobin's q, the results in this part stand in line with those in Table 5: GCGC and GCGC_REC proved significant strength in their relationship with Tobin's q. Hence, the strength of the remaining aggregates, besides the optimized set, comes as no big surprise. It is, however, puzzling that our analysis of single recommendations did not filter out more significant recommendations. It seems that there is at least one recommendation with a strong negative relation with Tobin's q. We have only examined those eleven recommendations with the lowest compliance rate. Possibly, even recommendations with compliance rates above 90% might be significantly related with Tobin's q despite the little variation they necessarily possess.

However, despite this overall similarity with previous results, there are some differences when we look at the details: For instance, we could regard the number of eight significant provisions as similar small as in the related studies. But, taking a different view, one could say that eight out of eleven, i.e., about three quarters, of the analyzed provisions dispose of a significant association with performance. Seen this way, the result differs very much from the related studies.

As a major contribution to the literature we regard the detection of the large weight of provisions which have a significantly negative association with performance: four out of eight. In analyses of U.S. samples, significantly negative relationships between single governance provisions and performance do not seem to be noticeable. Only Bebchuk et al. (2004), p.

2, report, though insignificant, evidence of this type for some of the 18 provisions not being part of their entrenchment index. For Japanese corporations, Bauer at al. (2005) find significantly negative associations of some of their governance subindices with ROE and net profit margin. Such negative associations are not only interesting per se, they may also hide significant associations between measures of performance and those governance aggregates which are simple additions of their components. This effect is nicely demonstrated in that part of Table 10 that goes beyond Brown / Caylor (2006a; 2006b). Comparing the corresponding results for REC_OPT(X) and REC_OPTABS(X) supports the view that it is highly important how those recommendations which are negatively related with performance are incorporated in the aggregate measures. For the market-to-book ratio and ROE, the coefficient turns from significantly positive (OPT) to clearly insignificant (OPTABS). For Tobin's q and ROA the swing is even stronger from significantly positive to marginally (Tobin's q) or almost marginally significantly *negative* (ROA). Possibly, this is one explanation why the majority of empirical studies mainly failed to find a significant connection between GCGC and performance.

Unfortunately, the lack of overlapping provisions severely impedes detailed comparisons of our results for single provisions with those of international studies. This is partially caused by the fact that some of the provisions in our analysis relate to the two-tier structure of the German stock corporation. The only overlap can be found in the two studies of Brown / Caylor (2006a; 2006b). They include a criterion which refers to the existence of a mandatory retirement age for directors. This criterion does not provide significant results. Contrary to that, we find a significantly negative relation between Tobin's q and recommendation 4.35. This recommendation advises the consideration of international activities, possible conflicts of interests, and age limits when selecting suitable supervisory board members. As these three characteristics are combined in one recommendation, it is almost impossible to distinguish between them. We additionally analyze the explanations given in the statements of conformity. All corporations that explain their non-compliance refer to the age limit. This leaves room for interpretation: Either full compliance is expressed for the other two characteristics, or the age limit is used to cover lacking compliance. Nevertheless, the capital market seems to appreciate age of members of supervisory board. If age can be seen as a proxy for experience and knowledge, these personal qualifications seem to be highly relevant — possibly even more than independence. In opposition to that, the existence of an age limit for members of the management (recommendation 4.27) is significantly positively associated with ROA. In the case of management board members, the gain in experience and

knowledge might be outweighed by a loss in dynamics at older ages.

Results of Single Provisions

The picture for the management board is quite consistent. All recommendations related to the management board dispose of a significant association with at least one performance measure. For three of the recommendations, association is positive: Compensation should be transparent (recommendation 3.21) and provide incentives to act in the shareholders' interest (recommendation 3.14). The age limit (recommendation 4.27) has already been discussed above. Two recommendations are significantly negatively associated with performance. The intention to act against excessive managerial risk aversion might be the common thread for both. One of which is the existence of a cap which limits compensation in case of unforeseen or extraordinary developments (recommendation 3.16). As this recommendation has a significantly negative association, it might indicate that a lack of limitation in compensation also reduces the degree of risk aversion of management. The background of this reasoning is twofold: It is the interpretation of equity as an option, which implies a value increasing effect if c.p. volatility of the company's assets rises, in combination with the fear that increasing performance dependence of their total wealth makes top managers more risk averse and thus more prone to forgo risky investments which would favor the shareholders. Encouragement of a riskier behavior might also be an explanation for the significance of recommendation 2.7: If there is a directors and officers (D&O) policy for the board members, the GCGC recommends a suitable deductible. A deductible might increase the degree of risk aversion of the management as well. Taken together, non-compliance with these two recommendations changes the outcome distribution for management board members in a way that decreases the lower end and increases the upper end. According to all four incentive related recommendations, there seems no worry about the absolute amounts of managerial compensation, instead it should be transparent — possibly discouraging excessive compensation — and structured in a manner to align management's and shareholders' interests, including risk attitude.

In contrast to the management board, the picture for the supervisory board is rather inconclusive. Three recommendations are significantly negatively, one is significantly positively and two are insignificantly related with a performance measure. In one case (recommendation 4.42), transparency of compensation is significantly positively connected with as much as three performance measures, but a second transparency recommendation (recommendation 4.41) is totally insignificant. Similar inconclusiveness can be found for the structure of compensation: The recommendation of performance-related compensation is insignificant (recommendation 4.40). The corresponding recommendation (3.14) for the management board is positive. No explanation suggests itself for this difference. Possibly it is influenced by the fact that stock-options-related incentive programs for members of the supervisory board are against German law. As a consequence, the legal basis for performance-oriented compensation schemes of the supervisory board remains unclear. The picture for supervisory board compensation becomes even more puzzling when the significantly negative relation for recommendation 4.39 is taken into account. This provision recommends to consider the work load of supervisory board members (exercising chair, committee membership, etc.) for compensation. Put together, performance-related compensation is insignificant and workload- and responsibility-related compensation significantly negative. The two remaining supervisory board recommendations (2.7: D&O recommendation relates to both management and supervisory board; 4.35: age and other characteristics) have already been discussed above. The final criterion in our list refers to publication terms of financial statements (recommendation 6.59). It does not possess a significant relation with performance. As the German HDax includes the biggest corporations this result is not surprising. It seems reasonable to expect that other channels of communication between management and shareholders are more relevant.

Consequences and Implications for the German Corporate Governance Code

The GCGC recommendations are intended to represent good governance practice. From this perspective, insignificant relations with performance are disappointing, but at least they are not significantly negative, as it is for Tobin's q. This result is truly unexpected and alarming. It is unclear why just Tobin's q disposes of the negative connection whereas, in the aggregate analysis, the closely related market-to-book ratio of equity does not. This is even more puzzling in view of the strength of the negative association: It is significant for all 68 recommendations and for the 64-recommendations set (GCGC_REC w/o REC_OPT), which excludes those recommendations with a significant result in the single-provision analysis. And among the recommendations of the optimized set, the negative association of some recommendations is only for Tobin's q so strong that the optimized set without consideration of the algebraic sign (GCGC_OPTABS) is significantly *negatively* associated with performance. In summary, the negative relation is very robust for recommendations 2.7 (deductible for D&O) and 3.16 (cap), but not confined to these recommendations. This result should be challenged in further research.

But insignificant — and even significantly positive — associations between the GCGC at large

and performance measures might as well cover a variety of associations for the single components of the GCGC with performance. The significantly negative connection with Tobin's q for the GCGC in general and for some single recommendations with other performance measures should motivate the Code Commission and all other parties concerned with the GCGC to elevate the single recommendations — and thereby the GCGC at large — to a more solid, preferably empirically based foundation. So far, the main rationale of the recommendations and suggestions are plausibility considerations. An encompassing single-provision analysis would yield a much better founded code. Encompassing means that ideally all recommendations and suggestions should be analyzed this way, which would require a much larger sample. The empirical assessment of new GCGC components before their introduction is desirable, though difficult to realize. But established components can be empirically analyzed and, if need be, changed afterwards. Although the GCGC is soft law, it is nevertheless a kind of regulation, which comes at a cost. In view of this regulatory burden, accurate quality inspections of the GCGC should be a matter of course. Regular quality inspections are a natural activity of commercial providers of governance scores such as ISS or GMI. To be sure, the ultimate goal of commercial providers and the Code Commission are not identical. But this difference should be considered in the way the inspection is conducted and interpreted, but it should not lead to a different answer to the question whether such tests are performed at all. The insignificant results of Nowak et al. (2005; 2006), Bassen et al. (2006) and in our study and particularly the significantly negative associations presented in this study should be reason enough to submit the GCGC a serious quality inspection.

ROBUSTNESS TEST FOR REVERSE CAUSALITY

This study is part of the research area which investigates the relation between broad measures of corporate governance and corporate performance. More precisely, it belongs to the subarea which analyzes whether all components of such broad measures are significantly related with performance. Above, reverse causality has been mentioned as a further subarea. That subarea explores whether corporate governance affects performance or vice versa. We have ignored this issue so far. Instead, we have reported about *associations* between broad governance measures and performance without speaking out on the direction of causality.

But since this issue is of interest in our context as well, some hints concerning the direction of causality will be collected in this robustness test. The OLS regression assumes exogenous regressors. If corporate performance affects the governance measure, this governance measure would be endogenous in the regression. Unfortunately, empirical corporate governance research is divided how potential endogeneity should be dealt with within the framework of a cross section analysis. By the application of more complex regression approaches researchers intend to give consideration to the potential endogeneity of governance variables. The approaches applied comprise two- or three-stage least squares regressions (for applications, cf., e.g., Demsetz / Lehn 1985; Agrawal / Knoeber 1996; Barnhart / Rosenstein 1998; Demsetz / Villalonga 2001; Beiner et al. 2006), other instrument variable approaches (for applications, see, for instance, Barnhart / Rosenstein 1998; Himmelberg et al. 1999; Bøhren / Ødegaard 2006), and the generalized method of moments (it is applied by Köke 2002). But it is highly controversial whether the more complex approaches are indeed superior to the OLS regression. As antipodes Agrawal / Knoeber (1996) and Demsetz / Villalonga (2001) could be mentioned on the affirmative side and Barnhart / Rosenstein (1998), Bhagat / Jefferis (2002) pp. 36-39, Larcker / Rusticus (2005), and Bøhren / Ødegaard (2006) on the skeptical side. Barnhart / Rosenstein (1998) p. 2 conclude their comparison of OLS regression, three-stage least squares regression, and various instrumental variable regressions with the following statement: "In situations as this, where the structure of empirical models is uncertain, systems estimation results should be interpreted cautiously, sensitivity analysis should be conducted, and OLS should not be casually dismissed."

Given such an inconclusive econometric situation we follow the approach of Brown / Caylor (2006a) pp. 424-426, who refer to Klein (1998) pp. 292 et seq.: The procedure bases on the observation that many measures of corporate performance are positively autocorrelated. Provided a preceding realization of the performance variable is added to the regression as a further regressor, all factors that contribute to the autocorrelation enter the regression. As a consequence, the hurdle becomes higher for a governance variable to have a significant regression coefficient, particularly if it has been a significant influence of performance in the preceding period in question. If the regression coefficient of the governance variable is significant in such a regression, causation seems to run at least partially from governance to performance.

Brown / Caylor (2006a) do not reveal how many periods their value of Tobin's q is lagged, Klein (1998) includes a 1-year-lagged performance variable in the regression. We replicate the computations shown in Table 10, which explore the performance from 1.7.2004 to 30.6.2005, with an additional lagged value of the performance measure under investigation. We analyze several lags with yearly performance values from 2000 to 2003. Table 11 displays the results for the lagged performance value from 2003. The results for the other lags do not differ much; they are not shown to preserve space.

Table 11 about here

By and large, as to the significance of the regression coefficients of the governance variables, the results in Table 11 and the results for the other lags resemble very much the results in Table 10 although most of the performance measures are characterized by strong autocorrelation. The permanence of those significances supports the view that significant relations between the governance measures and performance are at least partially due to an effect exerted by governance on performance.

Concluding remarks

This article contributes empirical evidence to the recently emerging literature that analyzes the association of single components of broad corporate governance aggregates with measures of corporate performance. We investigate the German Corporate Governance Code (GCGC) and five performance measures. For the GCGC at large, all performance measures but Tobin's q are insignificantly associated with code compliance. Even more interesting, the significant connection Tobin's q is *negative* and rather strong. We then look at those eleven recommendations with a compliance rate of 90% or less individually. For three of them, association with all performance measures is insignificant, four are significantly positively and four are significantly *negatively* connected with at least one performance measure. This is not only interesting per se, it may also hide significant associations between measures of corporate performance and those governance aggregates which are simple additions of their components. Possibly, this is one explanation why empirical studies mainly failed to find a significant connection between the GCGC at large and performance (see Nowak et al. 2005; 2006, and Bassen et al. 2006 with mainly insignificant results, but cf. also Goncharov et al. 2006 with significant findings). In the literature, only Bauer et al. (2005) also report some significantly negative associations for their overall governance measure and subindices thereof for a sample of Japanese corporations.

We confirm previous findings of Bauer et al. (2005) and Brown / Caylor (2006a; 2006b) that significant provisions might differ between performance measures. The related studies of U.S. corporations state that the number and percentage share of significant provisions in comparison with the overall aggregate is quite small. At least for the percentage share, our result is different since eight of the eleven analyzed provisions are significant. Unfortunately, detailed comparisons of our results with those of international studies are impeded by the fact that some of the provisions in our analysis relate to the two-tier structure of the German stock corporation.

According to our robustness check, it seems that causality runs at least partially from governance to performance. In view of the several significantly negative, but also in view of the many insignificant, associations we found for GCGC aggregates and single components with performance, the result on direction of causality reinforces our plea for an encompassing empirically based quality inspection of the GCGC. Encompassing means a much larger sample and a longer sample period. The former allows the analysis of many more than eleven recommendations. We had to confine our analysis on eleven recommendations due to the very high rate of compliance among HDAX corporations.

Our final remark considers this newly emerging strand of research in general. The stock of studies so far is very small. Besides the general findings, that only some of the components of a governance aggregate are significantly related with performance, the studies do exhibit substantial differences yet ask important questions. To enumerate just some of the questions: Do the relevant governance provisions differ between performance measures? Can the results from one country be transferred to other countries with a markedly different corporate governance environment? Is there, at least within one country, a set of relevant governance provisions which is stable across performance measures and through time? Answers to these questions are highly welcomed because they would help to improve corporate governance regulation and to avoid unnecessary regulatory burden. Empirical quality inspections of the GCGC might both advance, and profit from, this research area.

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Table 1. Survey of Significant Single Governance Provisions in Analyses of U.S. Corporations

Single Governance Provisions with Significant Connection to Corporate Performance in U.S. Corporations

Governance Provision	Bebchuk et al. (2004)		Brown / Caylor (2006a)	Brown / Caylor (2006b)	
	Tobin's q	Stock Return	Tobin's q	ROE	ROA
Preferred blank check, poison pill	X	X	X	X	X
Staggered boards	X	X	X		
Average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%			X	X	X
Limits to shareholder amendments of the bylaws	X	X			
Supermajority requirements for mergers	X	X			
Supermajority requirements for charter amendments	X	X			
Golden parachute arrangements	X	X			
Nominating committee which consists only of independent outside directors				X	X
Non-employees do not participate in company pension plans				X	X
At least one member of the board participated in an ISS accredited director education program				X	X
Board guidelines published in the proxy statements			X		
No option re-pricing within the last three years			X		
Compensation committee which consists only of independent outside directors			X		
Auditors ratified at the most recent annual meeting			X		
Directors required to submit their resignation upon a change in job status					X
Company expenses stock options					X
No former CEO serves on board					x

Notes: The provisions are ordered according to the frequency of their occurrence. A provision is displayed in this table if it disposes of a significant relationship with the respective performance measure.

Table 2. Descriptive Statistics

Variable	n	Mean	S.D.	Minimum	Median	Maximum
Compliance GCGC	100	86.62%	6.52%	67.86%	85.71%	98.81%
Compliance GCGC recommendations	100	95.25%	4.28%	77.94%	95.59%	100.00%
Compliance GCGC suggestions	100	49.94%	23.24%	12.50%	43.75%	93.75%
Tobin's q	100	1.63	0.95	0.92	1.27	6.13
Market-to-book ratio of equity	100	2.38	1.89	0.55	1.82	12.53
ROA	100	1.89%	4.28%	-21.10%	1.73%	14.42%
ROE	100	4.70%	11.10%	-82.17%	5.08%	23.83%
Stock return	99	22.26%	48.67%	-64.35%	16.92%	390.35%
Balance sheet total in m. €	100	48,940	154,629	63	3,270	1,006,024
Number of employees	100	41,812	79,013	4	10,956	440,000
Market capitalization in m. €	100	7,248	12,584	118	1,899	64,226
Change in sales	100	7.45%	15.82%	-44.03%	5.73%	71.89%
Volatility	99	27.72%	11.74%	14.59%	23.88%	69.33%
Beta	99	0.80	0.38	0.02	0.80	1.78
Largest voting rights block	100	29.67%	25.70%	0.00%	18.40%	100.00%

Notes: The variables are defined in Table 3.

Table 3. Variables

Short Cut	Definition
German Corporate Governance Code	
GCGC	compliance with GCGC in %
GCGC_REC	compliance with GCGC recommendations in %
GCGC_SUG	compliance with GCGC suggestions in %
GCGC_REC w/o1	compliance with all GCGC recommendations except for the specific single recommendation that is analyzed in that context in %
REC_OPT(X)	compliance with a set of GCGC recommendations that is optimized for a specific performance measure X with consideration of the algebraic sign of the recommendations' regression coefficients
REC_OPTABS(X)	compliance with a set of GCGC recommendations that is optimized for a specific performance measure X without consideration of the algebraic sign of the recommendations' regression coefficients, i.e., simple addition of recommendations complied with
GCGC_REC w/o REC_OPT(X)	compliance with all GCGC recommendations except for the recommendations that are part of the optimized set of recommendations of performance measure X in %

Short Cut	Variable	Definition
Performance Measures		
ROA	return on assets	profit / balance sheet total
ROE	return on equity	profit / book value equity
Q	Tobin's q	(balance sheet total + market value equity - book value equity) / balance sheet total
MTB	market-to-book ratio of equity	market value equity / book value equity
SR	stock return	(share price 30.6.2005 + dividend 1.7.2004-30.6.2005) / share price 30.6.2004
Control Variables		
SIZE	company size	number of employees
—	company size	balance sheet total in m. €
—	company size	market capitalization in m. €
VOL	volatility	12-months-volatility (1.7.2004-30.6.2005)
BETA	beta	12-months-beta to HDax (1.7.2004-30.6.2005)
GROWTH	growth in sales	sales from January to June 2005 as percentage of sales from January to June 2004
BLOCK	largest voting rights block	voting rights block of the largest ultimate owner according to the German Federal Financial Supervisory Authority
MDAX	corporation in MDax	binary indicator variable; 1: corporation in MDax, otherwise 0
TECDAX	corporation in TecDax	binary indicator variable; 1: corporation in TecDax, otherwise 0
Additions to Variable Names		
addition ia	industry adjustment of performance measures	realization of that performance measure by a specific company - industry median of that performance measure [To ensure a population of each industry that is adequate and satisfactory to the use of its median value in the calculation of the industry-adjusted performance measures, we merged the 18 industries of Deutsche Börse's classification into 4 industries: Financial (banks, financial services, insurance), Traditional (automobile, basic resources, chemicals, construction, consumer, food + beverages, industrial, utilities, part of pharma + healthcare), New Technologies (part of pharma + healthcare, software, telecommunication), Services (media, retail, transportation + logistics).]
addition ln	natural logarithm	

Table 4. Performance-Measure-Specific Control Variables

Performance Measure	Control Variables
lnQ_ia	lnSIZE, BLOCK, MDAX, TECDAX
lnMTB_ia	lnSIZE, BLOCK, MDAX, TECDAX
ROA_ia	GROWTH, BLOCK, MDAX, TECDAX
ROE_ia	GROWTH, VOL
SR_ia	GROWTH, BETA, MDAX, TECDAX

Notes: The variables are defined in Table 3.

Table 5. Regression Results of GCGC Aggregates

Variable	Performance Measure														
	lnQ_ia			lnMTB_ia			ROA_ia			ROE_ia			SR_ia		
Constant	2.86* (0.00)	3.34* (0.00)	1.40* (0.00)	2.51* (0.03)	1.86 (0.20)	1.91* (0.00)	0.02 (0.71)	0.06 (0.21)	-0.01 (0.19)	-0.05 (0.46)	-0.04 (0.70)	0.00 (0.97)	-0.40 (0.35)	-0.61 (0.31)	-0.04 (0.74)
GCGC	-0.02* (0.02)			-0.01 (0.39)			0.00 (0.32)			0.00 (0.38)			0.01 (0.34)		
GCGC_REC		-0.03* (0.01)			0.00 (0.86)			0.00 (0.20)			0.00 (0.62)			0.01 (0.31)	
GCGC_SUG			-0.01 (0.25)			-0.02 (0.28)			0.00 (0.17)			0.00 (0.57)			0.00 (0.64)
lnSIZE	-0.15* (0.00)	-0.15* (0.00)	-0.12* (0.00)	-0.16* (0.00)	-0.16* (0.00)	-0.16* (0.00)									
GROWTH							0.05* (0.00)	0.03* (0.02)	0.05* (0.00)	0.14* (0.00)	0.12* (0.00)	0.14* (0.00)	0.51* (0.00)	0.51* (0.00)	0.49* (0.00)
BLOCK	0.19 (0.11)	0.20† (0.09)	0.28* (0.03)	0.44† (0.05)	0.47* (0.04)	0.44* (0.05)	0.01 (0.49)	0.01 (0.46)	0.01 (0.44)						
VOL										-0.03 (0.53)	-0.03 (0.47)	-0.03 (0.48)			
BETA													-0.08 (0.35)	-0.09 (0.34)	-0.08 (0.39)
MDAX	-0.32* (0.00)	-0.27* (0.00)	-0.20† (0.06)	-0.32† (0.08)	-0.26 (0.13)	-0.35† (0.06)	0.00 (0.72)	0.00 (0.55)	0.01 (0.38)				0.12 (0.10)	0.11 (0.12)	0.11 (0.15)
TECDAX	-0.69* (0.00)	-0.63* (0.00)	-0.50* (0.00)	-0.70* (0.01)	-0.61* (0.01)	-0.73* (0.00)	0.00 (0.82)	0.00 (0.92)	0.01 (0.20)				0.04 (0.66)	0.02 (0.80)	0.02 (0.84)
Adj. R^2	0.32	0.33	0.24	0.14	0.13	0.14	0.06	0.05	0.05	0.17	0.10	0.17	0.11	0.11	0.11
p-value of F	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.07†	0.09†	0.08†	0.00*	0.01*	0.00*	0.01*	0.01*	0.01*
n	94	94	96	98	98	98	91	92	92	92	91	92	94	94	94
Exclusions	6	6	4	2	2	2	9	8	8	8	9	8	5	5	5

Notes: This table displays the results of a regression analysis of the following type of equation:

performance measure = GCGC aggregate + performance-measure-specific control variables.

The table reports the regression coefficient in the first row and in parentheses the p-value in the second row. Coefficients with a p-value better than 10% are marked with the cross symbol (†), coefficients with a p-value better than 5% with the asterisk symbol (*). The variables are defined in Table 3.

The results of the ROA_ia regressions should be interpreted with some caution because the distributions of the residuals oscillate around the minimum requirements of normality.

Observations with absolute values of the standardized residual above 3 or Cook's Distance values above .2 are usually excluded from that particular analysis, provided the high value is not due to a data error, which can be corrected.

Table 6. GCGC Recommendations with the Lowest Compliance Rate

Short Cut	Recomendation Number	Recommendation	Compliance Rate
REC3.21	4.2.4.2	With respect to the reporting of the compensation of the members of the Management Board in the Notes of the Consolidated Financial Statements: The figures shall be individualized.	50%
REC2.7	3.8.0.3	If the company takes out a D&O (directors and officers' liability insurance) policy for the Management Board and Supervisory Board, a suitable deductible shall be agreed.	62%
REC4.42	5.4.5 (3) S.1	The compensation of the members of the Supervisory Board shall be reported in the Notes of the Consolidated Financial Statements, subdivided according to components.	69%
REC6.59	7.1.2 S.2	The Consolidated Financial Statements shall be publicly accessible within 90 days of the end of the financial year; interim reports shall be publicly accessible within 45 days of the end of the reporting period.	77%
REC4.40	5.4.5.2.1	Members of the Supervisory Board shall receive fixed as well as performance-related compensation.	78%
REC4.41	5.4.5 (3) S.2	Also payments made by the enterprise to the members of the Supervisory Board or advantages extended for services provided individually, in particular, advisory or agency services shall be listed separately in the Notes of the Consolidated Financial Statements.	82%
REC4.35	5.4.1.1.2	For nominations for the election of members of the Supervisory Board, the international activities of the enterprise, potential conflicts of interest and an age limit to be specified for the members of the Supervisory Board shall be taken into account.	86%
REC3.16	4.2.3.2.4	Compensation of the members of the Management Board: For extraordinary, unforeseen developments a possibility of limitation (Cap) shall be agreed for by the Supervisory Board.	87%
REC4.39	5.4.5.1.3	Compensation of the members of the Supervisory Board: Also to be considered here shall be the exercising of the Chair and Deputy Chair positions in the Supervisory Board as well as the chair and membership in committees.	87%
REC3.14	4.2.3.2.2	Compensation of the members of the Management Board: Stock options and comparable instruments shall be related to demanding, relevant comparison parameters.	88%
REC4.27	5.1.2.2.3	An age limit for members of the Management Board shall be specified.	90%

Notes: The short cut contains the following information, e.g., REC3.21: It is a recommendation ("REC") from the third area of the GCGC ("3": management board), and it is the 21st recommendation in our counting of a total of 68 recommendations. The recommendation number indicates where to find the recommendation in the GCGC.

Table 7. Regression Results for Single GCGC Recommendations (1)

Variable	Performance Measure																			
	lnQ_ia				lnMTB_ia				ROA_ia				ROE_ia				SR_ia			
Constant	1.67* (0.00)	2.67* (0.00)	1.63* (0.00)	3.06* (0.00)	1.86* (0.00)	1.30 (0.37)	1.39* (0.01)	2.65† (0.08)	-0.02† (0.08)	0.04 (0.37)	0.01† (0.10)	0.05 (0.28)	0.02 (0.11)	-0.08 (0.43)	0.00 (0.84)	0.04 (0.73)	-0.17 (0.16)	-0.31 (0.61)	-0.17 (0.10)	0.30 (0.67)
REC2.7					-0.21† (0.07)	-0.22† (0.07)							-0.01 (0.11)	-0.02† (0.09)						
REC3.14																	0.18* (0.03)	0.17* (0.04)		
REC3.16	-0.32* (0.00)	-0.30* (0.00)																		
REC3.21																			0.13* (0.02)	0.14* (0.01)
REC4.27									0.01 (0.10)	0.01† (0.09)										
REC4.35			-0.17† (0.05)	-0.08 (0.39)																
REC4.39											-0.01* (0.04)	-0.01* (0.05)								
REC4.40																				
REC4.41																				
REC4.42							0.19 (0.11)	0.22† (0.08)							0.02† (0.06)	0.02† (0.06)				
REC6.59																				
GCGC_REC w/o1		-0.01 (0.16)		-0.02 (0.11)		0.01 (0.68)		-0.02 (0.37)		0.00 (0.21)		0.00 (0.39)		0.00 (0.31)		0.00 (0.71)		0.00 (0.82)		-0.01 (0.50)
lnSIZE	-0.13* (0.00)	-0.13* (0.00)	-0.14* (0.00)	-0.14* (0.00)	-0.17* (0.00)	-0.17* (0.00)	-0.15* (0.00)	-0.15* (0.00)												
GROWTH									0.05* (0.00)	0.05* (0.00)	0.03* (0.03)	0.03* (0.04)	0.11* (0.00)	0.12* (0.00)	0.12* (0.00)	0.11* (0.00)	0.51* (0.00)	0.51* (0.00)	0.65* (0.00)	0.63* (0.00)
BLOCK	0.21† (0.07)	0.19† (0.10)	0.21† (0.09)	0.19 (0.11)	0.55* (0.01)	0.57* (0.01)	0.48* (0.03)	0.45* (0.04)	0.01 (0.29)	0.01 (0.36)	0.01 (0.23)	0.01 (0.29)								
VOL													-0.05 (0.26)	-0.04 (0.31)	-0.03 (0.45)	-0.03 (0.43)				
BETA																	-0.09 (0.32)	-0.09 (0.32)	0.01 (0.95)	0.01 (0.93)
MDAX	-0.19* (0.02)	-0.23* (0.01)	-0.21* (0.01)	-0.26* (0.00)	-0.30† (0.06)	-0.29† (0.08)	-0.18 (0.27)	-0.21 (0.22)	0.00 (0.89)	0.00 (0.79)	0.00 (0.54)	0.00 (0.41)					0.11† (0.09)	0.12† (0.09)	0.16* (0.03)	0.14† (0.05)
TECDAX	-0.64* (0.00)	-0.68* (0.00)	-0.55* (0.00)	-0.62* (0.00)	-0.72* (0.00)	-0.71* (0.00)	-0.56* (0.01)	-0.60* (0.01)	0.01 (0.21)	0.01 (0.38)	0.00 (0.65)	0.00 (0.86)					0.03 (0.64)	0.04 (0.61)	-0.01 (0.85)	-0.03 (0.71)
Adj. R²	0.40	0.40	0.31	0.32	0.16	0.16	0.16	0.16	0.09	0.10	0.08	0.08	0.12	0.12	0.13	0.12	0.15	0.14	0.18	0.17
p-value of F	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.02*	0.02*	0.03*	0.04*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
n	93	93	94	94	98	98	98	98	90	90	92	92	91	91	91	91	94	94	96	96
Exclusions	7	7	6	6	2	2	2	2	10	10	8	8	8	8	8	8	5	5	3	3

Notes: This table displays the results of a regression analysis of the following types of equation:

performance measure = a single GCGC recommendation + performance-measure-specific control variables

performance measure = a single GCGC recommendation + all GCGC recommendations except that single recommendation (GCGC_REC w/o1) + performance-measure-specific control variables.

The table reports the regression coefficient in the first row and in parentheses the p-value in the second row. Coefficients with a p-value better than 10% are marked with the cross symbol (†), coefficients with a p-value better than 5% with the asterisk symbol (*).The table only reports regressions in which the single GCGC recommendation possesses in at least one of the two specifications an at least marginally marginal significant (10% level) regression coefficient.

Observations with absolute values of the standardized residual above 3 or Cook's Distance values above .2 are usually excluded from that particular analysis, provided the high value is not due to a data error, which can be corrected. The variables are defined in Table 3 and Table 6.

Table 8. Regression Results for Single GCGC Recommendations (2)

Variable	Performance Measure																			
	lnQ_ia				lnMTB_ia				ROA_ia				ROE_ia				SR_ia			
	Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For
Constant	1.74* (0.00)	1.45* (0.00)	1.45* (0.00)	1.45* (0.00)	2.24* (0.00)	1.47* (0.00)	1.03* (0.01)	1.47* (0.00)	0.05* (0.05)	0.01† (0.06)	0.00 (0.48)	0.01† (0.06)	0.00 (0.96)	-0.01 (0.18)	-0.01 (0.18)	-0.01 (0.18)	0.00 (0.99)	-0.28* (0.00)	-0.28* (0.00)	-0.28* (0.00)
REC2.7	-0.08 (0.23)				-0.23† (0.08)				-0.01 (0.23)				-0.01 (0.34)				-0.01 (0.85)			
REC3.14	0.24* (0.03)	0.24* (0.02)	0.24* (0.02)	0.24* (0.02)	0.30 (0.13)		0.31† (0.10)		0.00 (0.61)				0.01 (0.70)				0.19* (0.04)	0.15* (0.05)	0.15* (0.05)	0.15* (0.05)
REC3.16	-0.31* (0.00)	-0.35* (0.00)	-0.35* (0.00)	-0.35* (0.00)	-0.26 (0.16)	-0.32† (0.07)	-0.34† (0.05)	-0.32† (0.07)	-0.01 (0.35)				-0.03 (0.12)				-0.10 (0.28)			
REC3.21	-0.08 (0.25)				-0.09 (0.47)				0.00 (0.43)				0.01 (0.61)				0.11† (0.06)	0.09† (0.08)	0.09† (0.08)	0.09† (0.08)
REC4.27	0.04 (0.75)				-0.17 (0.42)				0.00 (0.80)				0.02 (0.26)				0.04 (0.73)			
REC4.35	-0.14 (0.18)	-0.19* (0.03)	-0.19* (0.03)	-0.19* (0.03)	0.05 (0.80)				0.00 (0.76)				0.00 (0.79)				-0.06 (0.52)			
REC4.39	0.05 (0.60)				-0.11 (0.55)				-0.01† (0.09)	-0.01† (0.07)		-0.01† (0.07)	-0.03† (0.09)				-0.06 (0.49)			
REC4.40	-0.02 (0.81)				0.13 (0.41)				0.00 (0.51)				0.01 (0.44)				-0.05 (0.47)			
REC4.41	0.00 (0.98)				-0.06 (0.76)				-0.01 (0.30)				-0.01 (0.41)				0.05 (0.56)			
REC4.42	0.13 (0.16)	0.12† (0.06)	0.12† (0.06)	0.12† (0.06)	0.31† (0.06)	0.24* (0.04)	0.23* (0.05)	0.24* (0.04)	0.00 (0.57)				0.03† (0.08)	0.02† (0.05)	0.02† (0.05)	0.02† (0.05)	-0.04 (0.58)			
REC6.59	-0.08 (0.31)				-0.21 (0.15)				0.00 (0.62)				-0.01 (0.62)				-0.04 (0.58)			
lnSIZE	-0.10* (0.00)	-0.07* (0.00)	-0.07* (0.00)	-0.07* (0.00)	-0.16* (0.00)	-0.13* (0.00)	-0.12* (0.00)	-0.13* (0.00)	0.00 (0.43)				0.00 (0.55)				0.00 (0.91)			
GROWTH	0.04 (0.84)				0.22 (0.53)				0.02 (0.23)	0.03* (0.02)	0.04* (0.01)	0.03* (0.02)	0.09* (0.02)	0.12* (0.00)	0.12* (0.00)	0.12* (0.00)	0.41* (0.03)	0.51* (0.00)	0.51* (0.00)	0.51* (0.00)
BLOCK	0.17 (0.22)				0.46† (0.07)		0.43* (0.05)		0.01 (0.37)				0.02 (0.28)				-0.03 (0.83)			
VOL	-0.59† (0.09)	-0.83* (0.01)	-0.83* (0.01)	-0.83* (0.01)	-0.56 (0.39)				-0.04 (0.16)				-0.04 (0.44)				-0.01 (0.99)			
BETA	-0.34* (0.00)	-0.37* (0.00)	-0.37* (0.00)	-0.37* (0.00)	-0.22 (0.25)				-0.01 (0.37)				0.00 (0.82)				-0.10 (0.35)			
MDAX	-0.18† (0.08)				-0.26 (0.17)				-0.01 (0.33)				0.00 (0.84)				0.11 (0.24)	0.16* (0.00)	0.16* (0.00)	0.16* (0.00)
TECDAX	-0.28† (0.05)				-0.56* (0.03)	-0.50* (0.00)	-0.43* (0.01)	-0.50* (0.00)	0.00 (0.89)				0.01 (0.74)				0.02 (0.86)			
Adj. R²	0.37	0.39	0.39	0.39	0.18	0.16	0.20	0.16	0.03	0.09	0.06	0.09	0.09	0.13	0.13	0.13	0.10	0.18	0.18	0.18
p-value of F	0.00*	0.00*	0.00*	0.00*	0.01*	0.00*	0.00*	0.00*	0.34	0.01*	0.01*	0.01*	0.11	0.00*	0.00*	0.00*	0.10†	0.00*	0.00*	0.00*
n	95	95	95	95	97	97	97	97	91	91	91	91	91	91	91	91	94	94	94	94
Exclusions	4	4	4	4	2	2	2	2	8	8	8	8	8	8	8	8	5	5	5	5

Notes: This table displays the results of a regression analysis of the following type of equation:

performance measure = all 11 GCGC recommendations + all control variables

The table reports the regression coefficient in the first row and in parentheses the p-value in the second row. Coefficients with a p-value better than 10% are marked with the cross symbol (†), coefficients with a p-value better than 5% with the asterisk symbol (*).The table only reports regressions in which the single GCGC recommendation possesses in at least one of the specifications a marginal significant (10% level) regression coefficient.

For each performance measure, four optimization tools of SPSS are employed: (1) The regression includes all regressors at once and the researcher selects the significant ones ("**Inclu**"). (2) SPSS analyzes the regressors stepwise and adds a variable to the set of independent variables provided it enhances the explanatory power of that set of independent variables by a pre-determined amount. Moreover, SPSS checks in each round whether the incumbent regressors should remain in the set of independent variables ("**Step**"). (3) SPSS begins with all regressors and excludes one after another all of the independent variables that do not contribute to the explanatory power in a pre-determined amount ("**Back**"). (4) The same as procedure (2) with the exception that SPSS does not test whether incumbent regressors should remain in the set of independent variables ("**For**").

Observations with absolute values of the standardized residual above 3 or Cook's Distance values above .2 are usually excluded from that particular analysis, provided the high value is not due to a data error, which can be corrected. The variables are defined in Table 3 and Table 6.

Table 9. Survey of Regression Results for Single GCGC Recommendations

Short Cut	Recomendation Number	Recommendation	Compliance Rate	lnQ_ia	lnMTB_ia	ROA_ia	ROE_ia	SR_ia
					Significance with Performance Measure			
REC2.7	3.8.0.3	If the company takes out a D&O (directors and officers' liability insurance) policy for the Management Board and Supervisory Board, a suitable deductible shall be agreed.	62%		-		-	
REC3.14	4.2.3.2.2	Compensation of the members of the Management Board: Stock options and comparable instruments shall be related to demanding, relevant comparison parameters.	88%	+	+			+
REC3.16	4.2.3.2.4	Compensation of the members of the Management Board: For extraordinary, unforeseen developments a possibility of limitation (Cap) shall be agreed for by the Supervisory Board.	87%	-	-			
REC3.21	4.2.4.2	With respect to the reporting of the compensation of the members of the Management Board in the Notes of the Consolidated Financial Statements: The figures shall be individualized.	50%					+
REC4.27	5.1.2.2.3	An age limit for members of the Management Board shall be specified.	90%			+		
REC4.35	5.4.1.1.2	For nominations for the election of members of the Supervisory Board, the international activities of the enterprise, potential conflicts of interest and an age limit to be specified for the members of the Supervisory Board shall be taken into account.	86%	-				
REC4.39	5.4.5.1.3	Compensation of the members of the Supervisory Board: Also to be considered here shall be the exercising of the Chair and Deputy Chair positions in the Supervisory Board as well as the chair and membership in committees.	87%			-	-	
REC4.40	5.4.5.2.1	Members of the Supervisory Board shall receive fixed as well as performance-related compensation.	78%					
REC4.41	5.4.5 (3) S.2	Also payments made by the enterprise to the members of the Supervisory Board or advantages extended for services provided individually, in particular, advisory or agency services shall be listed separately in the Notes of the Consolidated Financial Statements.	82%					
REC4.42	5.4.5 (3) S.1	The compensation of the members of the Supervisory Board shall be reported in the Notes of the Consolidated Financial Statements, subdivided according to components.	69%	+	+		+	
REC6.59	7.1.2 S.2	The Consolidated Financial Statements shall be publicly accessible within 90 days of the end of the financial year; interim reports shall be publicly accessible within 45 days of the end of the reporting period.	77%					

Notes: See notes for Table 6; the performance measures are defined in Table 3. The performance measure columns display the results of the regressions described in Table 7 and Table 8. + (-) indicates an at least marginally significantly (10% level) positive (negative) regression coefficient, a vacancy an insignificant regression coefficient.

Table 10. Regression Results for the Optimized Recommendation Sets

Variable	lnQ_ia						lnMTB_ia						ROA_ia						ROE_ia						SR_ia			
Constant	3.20* (0.00)	1.28* (0.00)	3.36* (0.00)	2.92* (0.00)	1.74* (0.00)	3.04* (0.00)	1.86 (0.20)	1.51* (0.00)	1.86 (0.25)	2.06 (0.19)	1.66* (0.00)	1.81 (0.29)	0.05 (0.25)	0.09 (0.67)	0.04 (0.35)	0.04 (0.37)	0.01 (0.20)	0.05 (0.32)	-0.04 (0.70)	0.02† (0.07)	-0.06 (0.59)	-0.03 (0.80)	0.01 (0.45)	-0.07 (0.54)	-0.68 (0.25)	-0.14 (0.19)	-0.35 (0.58)	0.26 (0.68)
GCGC_REC	-0.03* (0.02)						0.00 (0.86)						0.00 (0.24)						0.00 (0.62)						0.01 (0.23)			
GCGC_OPT		0.14* (0.00)		0.13* (0.00)				0.21* (0.00)		0.21* (0.00)				0.01† (0.07)		0.01† (0.07)				0.01* (0.01)		0.01* (0.01)				0.12* (0.00)		0.13* (0.00)
GCGC_REC w/o REC_OPT			-0.03* (0.02)	-0.03* (0.04)		-0.02 (0.15)			0.00 (0.87)	-0.01 (0.71)		0.00 (0.93)			0.00 (0.34)	0.00 (0.35)		0.00 (0.44)			0.00 (0.53)	0.00 (0.64)		0.00 (0.46)			0.01 (0.55)	-0.01 (0.52)
GCGC_OPTABS					-0.07† (0.05)	-0.04 (0.37)					-0.01 (0.87)	-0.01 (0.92)					-0.01 (0.12)	-0.01 (0.16)					0.00 (0.80)	0.00 (0.64)				
lnSIZE	-0.14* (0.00)	-0.12* (0.00)	-0.14* (0.00)	-0.12* (0.00)	-0.14* (0.00)	-0.14* (0.00)	-0.16* (0.00)	-0.15* (0.00)	-0.16* (0.00)	-0.15* (0.00)	-0.16* (0.00)	-0.16* (0.00)																
GROWTH													0.04* (0.01)	0.04* (0.01)	0.04* (0.01)	0.04* (0.01)	0.03* (0.01)	0.03* (0.02)	0.12* (0.00)	0.11* (0.00)	0.12* (0.00)	0.11* (0.00)	0.11* (0.00)	0.12* (0.00)	0.39* (0.03)	0.36* (0.04)	0.38* (0.04)	0.34* (0.05)
BLOCK	0.23* (0.05)	0.27* (0.02)	0.25* (0.03)	0.24* (0.03)	0.21† (0.07)	0.22† (0.06)	0.47* (0.04)	0.58* (0.01)	0.47* (0.04)	0.56* (0.01)	0.48* (0.03)	0.47* (0.04)	0.01 (0.28)	0.01 (0.11)	0.01 (0.27)	0.01 (0.16)	0.01 (0.19)	0.01 (0.24)										
VOL																			-0.03 (0.47)	-0.03 (0.37)	-0.03 (0.48)	-0.03 (0.42)	-0.03 (0.41)	-0.03 (0.48)				
BETA																									-0.11 (0.22)	-0.13 (0.14)	-0.10 (0.26)	-0.12 (0.15)
MDAX	-0.27* (0.00)	-0.13 (0.12)	-0.26* (0.00)	-0.19* (0.04)	-0.24* (0.01)	-0.26* (0.00)	-0.26 (0.13)	-0.21 (0.18)	-0.25 (0.13)	-0.22 (0.17)	-0.26 (0.13)	-0.26 (0.13)	0.00 (0.51)	0.00 (0.52)	0.00 (0.56)	0.00 (0.37)	0.00 (0.64)	0.00 (0.50)							0.10 (0.14)	0.12† (0.08)	0.09 (0.18)	0.11† (0.09)
TECDAX	-0.65* (0.00)	-0.52* (0.00)	-0.64* (0.00)	-0.58* (0.00)	-0.64* (0.00)	-0.66* (0.00)	-0.61* (0.01)	-0.66* (0.00)	-0.61* (0.01)	-0.67* (0.00)	-0.62* (0.01)	-0.62* (0.01)	0.00 (0.24)	0.00 (0.98)	0.00 (0.55)	0.00 (0.79)	0.00 (0.65)	0.00 (0.52)							0.05 (0.49)	0.06 (0.36)	0.04 (0.62)	0.05 (0.47)
Adj. R²	0.34	0.38	0.34	0.40	0.33	0.34	0.13	0.22	0.13	0.21	0.13	0.12	0.07	0.09	0.06	0.09	0.08	0.07	0.10	0.16	0.10	0.15	0.09	0.09	0.08	0.16	0.07	0.16
p-value of F	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.01*	0.05†	0.02*	0.06†	0.03*	0.04*	0.05†	0.01*	0.00*	0.01*	0.00*	0.01*	0.02*	0.03*	0.00*	0.05†	0.00*
n	93	93	93	93	93	93	98	98	98	98	98	98	91	91	91	91	91	91	91	91	91	91	91	91	93	93	93	93
Exclusions	7	7	7	7	7	7	2	2	2	2	2	2	9	9	9	9	9	9	8	8	8	8	8	8	6	6	6	6

Notes: This table displays the results of six regressions for each performance measure (the latter two not for SR_ia): performance measure = GCGC_REC + performance-measure-specific control variables

performance measure = REC_OPT(performance measure) + performance-measure-specific control variables

performance measure = GCGC_REC w/o REC_OPT(performance measure) + performance-measure-specific control variables

performance measure = REC_OPT(performance measure) + GCGC_REC w/o REC_OPT(performance measure) + performance-measure-specific control variables

performance measure = REC_OPTABS(performance measure) + performance-measure-specific control variables

performance measure = REC_OPTABS(performance measure) + GCGC_REC w/o REC_OPT(performance measure) + performance-measure-specific control variables

The table reports the regression coefficient in the first row and in parentheses the p-value in the second row. Coefficients with a p-value better than 10% are marked with the cross symbol (†), coefficients with a p-value better than 5% with the asterisk symbol (*).

Observations with absolute values of the standardized residual above 3 or Cook's Distance values above .2 are usually excluded from that particular analysis, provided the high value is not due to a data error, which can be corrected. The variables are defined in Table 3 and Table 6. The composition of the performance-measure-specific optimized sets of recommendations is as follows: **REC_OPT(lnQ_ia)**: REC3.14 – REC3.16 – REC4.35 + REC4.42; **REC_OPTABS(lnQ_ia)**: REC3.14 + REC3.16 + REC4.35 + REC4.42; **REC_OPT(lnMTB_ia)**: – REC2.7 + REC3.14 – REC3.16 + REC4.42; **REC_OPTABS(lnMTB_ia)**: REC2.7 + REC3.14 + REC3.16 + REC4.42; **REC_OPT(ROA_ia)**: REC4.27 – REC4.39; **REC_OPTABS(ROA_ia)**: REC4.27 + REC4.39; **REC_OPT(ROE_ia)**: – REC2.7 – REC4.39 + REC4.42; **REC_OPTABS(ROE_ia)**: REC2.7 + REC4.39 + REC4.42; **REC_OPT(SR_ia)**: REC3.14 + REC3.21; **REC_OPTABS(SR_ia)**: is not calculated because the recommendation sets with the appendix ABS are characterized by the fact that all relevant recommendations enter with a plus sign. Since the two relevant recommendations for REC_OPT(SR_ia) already enter the variable with a plus sign, REC_OPT(SR_ia) and REC_OPTABS(SR_ia) would be identical.

Table 11. Regression Results for the Optimized Recommendation Sets with Lagged Performance (Performance of 2003)

Variable	lnQ_ia						lnMTB_ia						ROA_ia						ROE_ia						SR_ia			
Constant	1.11†	0.21	1.17†	1.05	0.44	1.06	0.06	0.21	0.00	0.10	0.20*	-0.03	0.03	0.00	0.02	0.02	0.00	0.03	-0.06	0.03*	-0.09	-0.06	0.02	-0.10	-0.44	-0.09	-0.18	0.27
	(0.08)	(0.37)	(0.09)	(0.12)	(0.13)	(0.15)	(0.96)	(0.65)	(1.00)	(0.94)	(0.72)	(0.98)	(0.59)	(0.72)	(0.62)	(0.69)	(0.78)	(0.60)	(0.53)	(0.03)	(0.41)	(0.59)	(0.42)	(0.35)	(0.45)	(0.44)	(0.78)	(0.67)
GCGC_REC	-0.01						0.00						0.00						0.00						0.01			
	(0.13)						(0.91)						(0.59)						(0.46)						(0.40)			
GCGC_OPT		0.08*		0.08*				0.09		0.09				0.01*		0.01*				0.02*		0.02*				0.10*		0.10*
		(0.02)		(0.02)				(0.11)		(0.11)				(0.00)		(0.00)				(0.00)		(0.00)				(0.02)		(0.01)
GCGC_REC w/o REC_OPT			-0.01	-0.01		-0.01			0.00	0.00		0.00			0.00	0.00		0.00			0.00	0.00		0.00			0.00	-0.01
			(0.15)	(0.18)		(0.36)			(0.88)	(0.92)		(0.85)			(0.61)	(0.67)		(0.63)			(0.35)	(0.39)		(0.28)			(0.73)	(0.57)
GCGC_OPTABS					-0.04	-0.02					0.00	-0.01					0.00	-0.01					0.00	0.00				
					(0.23)	(0.66)					(0.97)	(0.90)					(0.76)	(0.79)					(0.74)	(0.50)				
Performance 2003	0.70*	0.67*	0.70*	0.66*	0.71*	0.70*	0.74*	0.70*	0.74*	0.70*	0.74*	0.74*	0.16*	0.17*	0.16*	0.17*	0.16*	0.16*	0.09*	0.09*	0.09*	0.09*	0.09*	0.09*	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.93)	(0.88)	(0.95)	(0.89)
lnSIZE	-0.03	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03																
	(0.12)	(0.27)	(0.13)	(0.15)	(0.15)	(0.13)	(0.53)	(0.45)	(0.52)	(0.46)	(0.52)	(0.52)																
GROWTH													0.05*	0.05*	0.05*	0.05*	0.05*	0.05*	0.11*	0.09*	0.11*	0.09*	0.11*	0.11*	0.44*	0.43*	0.42†	0.41†
													(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.04)	(0.04)	(0.05)	(0.05)
BLOCK	0.07	0.09	0.08	0.06	0.05	0.06	0.15	0.19	0.15	0.19	0.14	0.15	0.00	0.00	0.00	0.00	0.00	0.00										
	(0.45)	(0.29)	(0.38)	(0.46)	(0.56)	(0.50)	(0.40)	(0.27)	(0.40)	(0.27)	(0.41)	(0.40)	(0.72)	(0.81)	(0.71)	(0.87)	(0.80)	(0.74)										
VOL																			-0.02	-0.04	-0.02	-0.04	-0.02	-0.02				
																			(0.69)	(0.32)	(0.70)	(0.38)	(0.59)	(0.67)				
BETA																									-0.13	-0.14	-0.13	-0.14
																									(0.16)	(0.12)	(0.19)	(0.14)
MDAX	-0.02	0.05	-0.02	0.02	-0.01	-0.02	0.11	0.12	0.11	0.12	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00							0.09	0.10	0.08	0.10
	(0.77)	(0.47)	(0.80)	(0.81)	(0.91)	(0.76)	(0.40)	(0.36)	(0.39)	(0.36)	(0.43)	(0.42)	(0.85)	(0.90)	(0.84)	(0.80)	(0.73)	(0.85)							(0.17)	(0.12)	(0.21)	(0.15)
TECDAX	-0.23*	-0.17†	-0.22*	-0.21*	-0.22*	-0.23*	-0.20	-0.24	-0.20	-0.23	-0.21	-0.21	0.00	0.00	0.00	0.00	0.00	0.00							-0.02	0.00	-0.03	-0.01
	(0.03)	(0.09)	(0.04)	(0.04)	(0.04)	(0.03)	(0.32)	(0.21)	(0.31)	(0.23)	(0.32)	(0.32)	(0.56)	(0.82)	(0.57)	(0.92)	(0.63)	(0.56)							(0.83)	(0.99)	(0.68)	(0.85)
Adj. R²	0.64	0.65	0.63	0.63	0.63	0.63	0.57	0.58	0.57	0.57	0.57	0.56	0.25	0.33	0.25	0.32	0.25	0.24	0.23	0.31	0.24	0.31	0.23	0.23	0.18	0.12	0.17	0.17
p-value of F	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.02*	0.00*	0.02*	0.00*
n	81	81	81	81	81	81	84	84	84	84	84	84	78	78	78	78	78	78	80	80	80	80	80	80	80	80	80	80

Notes: This table displays the results of six regressions for each performance measure (the latter two not for SR_ia):performance measure = GCGC_REC + performance measure 2003 + performance-measure-specific control variables

performance measure = REC_OPT(performance measure) + performance measure 2003 + performance-measure-specific control variables

performance measure = GCGC_REC w/o REC_OPT(performance measure) + performance measure 2003 + performance-measure-specific control variables

performance measure = REC_OPT(performance measure) + GCGC_REC w/o REC_OPT(performance measure) + performance measure 2003 + performance-measure-specific control variables

performance measure = REC_OPTABS(performance measure) + performance measure 2003 + performance-measure-specific control variables

performance measure = REC_OPTABS(performance measure) + GCGC_REC w/o REC_OPT(performance measure) + performance measure 2003 + performance-measure-specific control variables

The table reports the regression coefficient in the first row and in parentheses the p-value in the second row. Coefficients with a p-value better than 10% are marked with the cross symbol (†), coefficients with a p-value better than 5% with the asterisk symbol (*).

The variables are defined in Table 3 and Table 6. The composition of the performance-measure-specific optimized sets of recommendations is as follows: **REC_OPT(lnQ_ia)**: REC3.14 – REC3.16 – REC4.35 + REC4.42; **REC_OPTABS(lnQ_ia)**: REC3.14 + REC3.16 + REC4.35 + REC4.42; **REC_OPT(lnMTB_ia)**: – REC2.7 + REC3.14 – REC3.16 + REC4.42; **REC_OPTABS(lnMTB_ia)**: REC2.7 + REC3.14 + REC3.16 + REC4.42; **REC_OPT(ROA_ia)**: REC4.27 – REC4.39; **REC_OPTABS(ROA_ia)**: REC4.27 + REC4.39; **REC_OPT(ROE_ia)**: – REC2.7 – REC4.39 + REC4.42; **REC_OPTABS(ROE_ia)**: REC2.7 + REC4.39 + REC4.42; **REC_OPT(SR_ia)**: REC3.14 + REC3.21; **REC_OPTABS(SR_ia)**: is not calculated because the recommendation sets with the appendix ABS are characterized by the fact that all relevant recommendations enter with a plus sign. Since the two relevant recommendations for REC_OPT(SR_ia) already enter the variable with a plus sign, REC_OPT(SR_ia) and REC_OPTABS(SR_ia) would be identical.

Data sources for the performance data 2003: Capital market data come from Deutsche Börse AG, accounting data were collected from the corporations.

Sample: For each performance measure those cases are analyzed which enter the regression in Table 10. Missing data decrease the number of cases. To analyze a sample as close as possible to the sample examined without a lagged performance measure in Table 10, the thresholds for Cook's distance (.2) and the absolute value of the standardized residual (3.0) are relaxed to some extent while the requirements of regression analysis are still being met.

WATER RESOURCES GOVERNANCE: A STUDY OF THE STAKEHOLDER PERCEPTIONS IN THE STATE OF MINAS GERAIS

Daniel Jardim Pardini*, Carlos Alberto Gonçalves**, Luiza de Marillac Moreira Camargos***, Marcio Augusto Gonçalves****

Abstract

The world is preoccupied with the water quality, distribution and scarcity. The aim of this paper is to present the *stakeholders* perceptions and regulation involved in Water Management on the public governance mechanisms. The theoretical development of this work contemplated the public governance theory, specifically where it refers to the *stakeholders* participation in the Water Management. The research was performed as case studies on the state organization IGAM (Water Management Institute of Minas Gerais - Brazil) taking in consideration the public governance mechanisms defined by the Organization for Cooperation and Economical Development - OCDE (2005). By means of the use of a specialist panel and a focal group undertaken with representatives of *stakeholders* involved in the Water Management it was possible to evidence the necessities for adjustment of the legislation concerning the supplying of semi-arid areas and the integration of the hydrographical basins' public policies. The conflicts appear more clearly in the interaction between some *stakeholders*. Those are discourses that question the utilitarian acting of the water, the technical ignorance of the members of Hydrographical Basin Committees and the defense of the democratic format of these decision organs.

Keywords: Water Governance; Water Regulation; Governance as Strategy

*Doctor; Professor FUMEC University. Av. Afonso Pena 3880, Cruzeiro, Belo Horizonte, MG, Brazil. E-mail: pardinidaniel@hotmail.com

**Doctor; Professor FACE – FUMEC - UFMG University. Av. Afonso Pena 3880, Cruzeiro, Belo Horizonte, MG, Brazil. E-mail: carlos@face.ufmg.br

***IGAM – Board Director, Brazil. Adress: Av. Afonso Pena 3880, Cruzeiro, Belo Horizonte, MG, Brazil. E-mail: luiza.marillac@igam.mg.gov.br

****Doctor; Professor FACE – UFMG; Av. Antonio Carlos 6627, Pampulha, Belo Horizonte, MG, Brazil. E-mail: marcio@cepead.face.ufmg.br

1. Introduction

As stated by Beltra (2006), according to the World Water Council, the current overview of the availability of water resources is catastrophic: only 40% of the world population has access to water. This scenario implies serious consequences for public health with indicators demonstrating 3,900 daily child deaths. The same paper reveals UN – United Nations – information for 2025 showing that a third of the countries will have their developments impaired by lack of water, when 2.8 million people will possibly be living in chronic drought regions.

Facing this scenario, one area that is arousing great concern from the academics is water resources management. In existing literature, while some researches emphasize the public policies related to Water Management (HAASE & CAMARGOS, 2001; FRANK, 2002 and PEREIRA & JOHNSON, 2003), others address the matter of social support (ABERS & KECK, 2002; GARJULLI, 2001; LEMOS & OLIVEIRA, 2003; VIEGA, 2007; GUTIÉRREZ, 2006; NOGUEIRA, 2002; DINO, 2003) and the challenges for strengthening the hydrographical basins committees (ROCHA, 2003; JACOBI & BARBI, 2007; CUNHA, 2004). There are yet too few studies that emphasize the governance structure necessary to water resources management. So, with this work, our objective is to study the governance mechanisms used in water management, identifying the perceptions of the ones most interested (*stakeholders*) over these firm's actions.

The proposed methodological and theoretical model intents on identifying orientations and governance mechanisms that better tend to the involved parties in the use and management of water resources. Minas Gerais' territory represents a propitious medium for studying this theme. It is in Minas Gerais that are the headwaters of the rivers São Francisco, Doce, Paranaíba, Grande and other, which contribute to the development of many of the Union states. Further from this introduction, this paper contains topics on the study backgrounds and the research problem, the theoretical basis, the adopted methodological path, result analysis and the work conclusions.

2. Background and research problem

There are several motivations for studying the governance of water resources and its relation with the address to involved *stakeholders*. Hitt, Ireland,

Hoskisson (2003) conceive the stakeholders as all people influenced by the firm (directly or indirectly) or with concerns and resultants activities. They divide the *stakeholders* in the classical two greater groups of internal and external to the firm. That are subdivided in five sub groups: (i) the government agencies; (ii) The Capital Market *Stakeholders* that encompasses: *Shareholders*; Major suppliers of capital (Banks; Private lenders; Venture capitalists); (iii) Product Market *Stakeholders*: Primary Customers; Suppliers; Host communities; Unions; (iv) Organizational *Stakeholders*: Employees; Managers; Non-managers; (v) the general communities. They present the premise that "The firm must maintain performance at an adequate level in order to retain the participation of key *stakeholders*". Therefore we are considering *stakeholders* all the people who, directly or indirectly, are influenced by firm on the moment that it initialized or finished the operations. Evidently that the benefits or problems remain after the extinctions of the firms in case the nature of the externalities (short or long range) produced, else, positive or negative. In the existing literature on this matter it is perceived that the better part of the research focus on the settlement experience of public policies directed to water management (FRANK, 2002 and PEREIRA & JOHNSON, 2003), in the working dynamic of the basin Committees (ABERS, 2007) and in social support (KECK & ABERS, 2007). On the other hand, few studies explore the relation culture/governance mechanisms and *stakeholder* perceptions, impacted by water resources management.

One of the intentions for this work is to understand the implications of the governance mechanisms for the *stakeholders*. It may be said that the presence of various actors in the water resources management arena also justifies the need for more studies in this subject. In this environment, it is possible to identify different *stakeholder* groups (public managers, consumers, owner's waters basins and fluvial nets, ONGs, et cetera) with different interests related to water use. The Basin Committees, for example, aim, through institutional and population support, exercise their political role, turning this organism into a democratic and decentralized space for debate and negotiation around water use. The consumers aim to guarantee the water use as an input and raw material of production processes. The ONGs interest, on their part, is turned to mobilizing the society around the adequate use water resources.

Among the studies that deal with the social support in water resources management it we must highlight those that emphasize the use of public policies that favor greater involvement of the society (KECK & ABERS, 2006), and others that aim to understand the ways to mobilize the population for water management (GARJULLI, 2001). The attempts to address social support through a managerial focus are yet scarce. Thus, the *stakeholder* construct may contribute in identifying those most interested in water management.

In this present study, we intend on exploring in what manner these character – users, managers, organized social society and the State – perceive the public governance components used in the administration of this natural resource. In this direction, we seek to answer to the following research question: *In what way the mechanisms of water resources governance are perceived by the parties involved with this collective consumer good?*

It is appropriate to highlight also that today water resources management is a theme of interest for international organizations, as well as the Brazilian States. This research's reflections will also be able to contribute to indicate possible paths to be taken by the water resources managers, specially in the relations with involved parties.

3. Water resources management and social support

Cardoso (2003) affirms that the access to quality water will be the crucial issue to be solved in the next decades, as to assure human survival. This basically hegemonic discourse has dominated the mass communication means, the academies and international politics. In consonance with this purpose, a water resources policy is being consolidated in Brazil in the last years, having as its mark the promulgation of the Federal Legislation number 9.433/97. This legislation has as a presupposition the decentralization of water management by means of the generation of the Basin Committees. These Committees are formed by representatives of the public authority, of civil society (legally constituted entities whose attention is related to the water resources – environmentalist entities, associations, teaching institutions, rural worker syndicates, among others) and water users (organizations that make use of superficial or water subterranean – sanitation companies, energy generation companies, mining, industry, irrigations, among others).

With the objective to propitiate a better understanding of the basic concepts in the water resources management, it is appropriate to recall some concepts. Rebouças *et al.* (2002) conceptualize water as the natural element unrelated to any use or utilization. The water resources would be associated to the goals of its use, so as to be an usable economic good for a determinate end. Bringing contribution in this direction, Brochi (2005) affirms that the water resources management means administration mediated by a group of activities and strategies that aims to rational employment of the public good. Water resources management also involves negotiations between institutions, establishing public policies and management and control devices.

The water policies in the union and state sphere establish some orientations that should be observed by the public manager, such as:

1) water must be recognized as a public, vulnerable and finite good, endowed with economical value;
2) water must be assured for its multiple uses;
3) water is a human consumption and animal thirst quenching priority;
4) the hydrographical basin will be adopted as a planning and management territorial unit;
5) the management must be performed in a decentralized and supportive manner.

Commenting the relevance of the various aspects of Brazilian legislation on water resources, Thame (2003) states that in the water management policy the Basin Committees must be reputed. The argument here is that water protection walk should walk side by side with economical growth, avoiding damages to the population and future generations. In the same line of argument, Pereira (2003) adds that the Committees' attributions should not be confused with the constitutionally defined responsibilities of the public sector. One of the great challenges for the Committees is conflict administration and reduction of divergences between the parties interested in water use.

Garjulli (2001) affirms that the procedures and practices in the water resources management system have yet a long way to travel. It is important to observe that the channels made available by the supportive system, despite being most significant in the process of a major popular insertion, must be conducted in a manner to express the anxieties of the communities interested in water management. Social support in water resources management involves the democratic principal just as the needed sensibility building for the construction of a new way of managing the public good, by nature, expensive and scarce (MACHADO, 2004). Thus, it is a presupposition that the decision taking by public administration reflects the aspirations of local communities.

4. Public governance – concepts

Löffer (2003) understands public governance as a new generation of State administrative reforms, which have as objective the joint action, taken into effect in an effective, transparent and shared way by the Government, companies and civil society. Araújo (2002) also associates governance with the State's capabilities in formulating and implementing their policies. In order to achieve the proposed collective goals, public administration makes use of their financial, managerial and technical competencies. The governance is understood also as a strengthening mechanism for the relations between government and local communities motivated by cooperation processes, which involve the group of public, communitarian and private actors. In the process of making this management format viable the structuring of modern forms of services transference to private and communitarian groups is essential (JANN, 2006).

To Slomsk (2008), public governance is not only a matter of increasing effectiveness and efficiency. It involves also issues associated to legality and legitimacy. It is up to the government to support and propose public actions observing the principles of social justice, equality and legitimacy. This same author clarifies that public governance incorporates meaningful activities involving direction of complex networks in public sectors of society. In the understanding of Streit & Klering (2005), public governance is the government aiming collective objectives of a society, with focus on autonomous, interdependent and responsible coordination of separate institutions, networks and social actors, using structures, mechanisms and regulations that are just, coherent, consistent and accepted by society.

Jacobi & Barbi (2007), addressing the challenges and perspectives of water resources governance in Brazil, affirm that it is not enough to only assure the population the right to take part in water resources management; there must be governance mechanisms destined to make citizen support viable. Despite the advances in the decentralization of natural resources administration, still prevails a mismatch in the implementation of governance models turned to water resources management. Good governance must count on a normative system that guarantees sustainability and management decentralization, integration with those responsible for environmental management, efficiency in the execution of administrative measures and implantation of management devices in the matter of, specially, charging for water use (SOARES, 2005).

5. Governance mechanisms in the sphere of public management

In a manner to develop a group of orientations on the best governance practices in public companies, the Organization for Cooperation and Economical Development – OCDE produced a document establishing six conducts for effective governance (OCDE, 2005): 1) actions that assure an effective juridical and regulatory structure for the state companies, 2) actions that back up the State role as proprietary, 3) egalitarian addressing to *stockholders*, 4) *stakeholder* relationship policies, 5) transparency and information divulging, 6) definition of the Councils responsibilities.

In the matter of Brazilian legal structure of water resources, Filho e Bondarovsky (2000) consider that the existing legislation are more than enough for the development of water management in Brazil but, due to their complexity, it will certainly take some time until it is in fact implemented. Oliveira (2004) affirms that State interference is fundamental in the direction of containing indiscriminate use of water, incentivizing mechanisms to make the population sensible to hydro-environmental revitalization, recovering and conservation.

The second conduct proposed by OCDE refers to the actions of the State as proprietary. This orientation refers to the government role as to define a consistent property policy, which assures that the governance is conducted in a transparent and responsible manner, with the needed level of professionalism and efficiency. This includes also the guarantee of autonomy for the public company, in terms of non-involvement in their daily activities and respect to the council's independency.

The third OCDE mechanism refers to the egalitarian addressing to all those involved in the government activities, recognizing equal rights to information access. It should be emphasized the importance of developing a communication policy, exercising a high degree of transparence, envisioning a relationship of proximity to construct credibility and confidence. Another important aspect is propitiating participation of those involved, so that they take part in the construction of decisions over the activities of the public company.

The fourth orientation emphasizes the public companies' responsibility in the relationship with the *stakeholders*. Ashley (2002) points that those organizations that seek sustainability on a long term basis needs to be competent manager of the relationship networks among the *stakeholders*. The presentation of reports on the *stakeholder* relations is strategic in order to demonstrate the will to act in a transparent manner. This way, it is shown the compromise and cooperation with those interested and, in turn, promotes confidence and improves the reputation of the public company.

The fifth mechanism refers to transparency and divulging of the public companies activities, considering the use of financial and non-financial reports and the elaboration of informative material on issues of significant interest for the State as proprietary and for the general public. Oliveira (2003) clarifies that the organizations are focused on management policies that recognize in knowledge, people and communication fundamental elements for consolidating an organizational dynamic. The internal auditing system contributes for control and governance processes of the public company, being recommendable the elaboration of an internal control yearly report addressing the financial demonstrations.

The sixth conduct proposed by OCDE is about the responsibilities of the public companies' councils, in what refers to authority, competence and objectivity of their organisms. They have a role of strategic orientation and final responsibility for the organization performance. The strengthening and improvement of the quality of the roles performed by the councils constitute fundamental characteristics for governance improvement in public companies. It is important that the public companies have efficient councils that are able to act on their interest and monitor the management in an efficient manner, without presence of political interference. In the case of water resources management, it is understood that

the Basin Committees, in their respective acting areas, are organisms analogous to the Councils in public companies.

6. Methodology

To analyze the *stakeholders*' manifestations on the water management in the State of Minas Gerais, we adopted a qualitative methodology, of descriptive nature. We took as parameters the public governance orientations of the Organization for Cooperation and Economical Development (OCDE), based by other researched authors (SLOMSKY, 2008; BARRET, 2005). Four orientations and respective public governance mechanisms were utilized in the direction of investigating the structure of the water resources management organ of Minas Gerais: 1) Juridical and regulatory structuring of the water resources management, 2) Actions of the State role as proprietary of the collective good, 3) Relationship with the *stakeholders*, transparency and information diffusion, 4) The Councils role.

Two research methods helped to uncover in what manner the water resources management mechanisms are perceived by the actors involved in its management. On a first step, we used the specialist panel to identify with eight hydro resources experts different opinions on the relevance and use of determinate actions on water management. On a second moment, we structured a focus group constituted o ten *stakeholders* – representatives of the organized civil society, water users, public authority and Basin Committees – with the purpose to evidence the perceptions on the structure of governance of the management organ. The association of the two methods had as objective to produce differentiated information to enrich scientific knowledge on this theme.

To analyze and treat the data we sought, specially through the interviews of the Focus group, to put together a group of perceptions from each representative of the *stakeholders*, with the objective to build a scenario the reveals the strong and weak points of the public governance orientations on water resources management. As the questionnaires were answered to, the results were input on a table, grouping the answers and comments related to each assertive. Next, these results were used for a comparison with the manifested *stakeholders'* perceptions on the focus group.

7. Public governance in IGAM: perceptions from specialists and *stakeholders* involved in water management

In this topic we will analyze the perceptions from specialists and *stakeholders* of the water resources management of Minas Gerais, taking as reference the orientations and public governance mechanisms

addressed in the literature (OCDE, 2005; BARRET, 2005; SLOMSK, 2008).

7.1 Juridical and regulatory structure on the water resources management

One of the issues mentioned by the specialists and *stakeholders* in the focus group refers to the problem of how to deal with water scarcity in determined regions and situations. There are not specific devices established for the semi-arid regions, for example, where superficial and subterranean springs do not exist. In the cases of lack of water, the legislation also is unclear on defining priorities on who or what will be addressed.

Another factor which contributes to the lack of effective government action is the insufficiency of technical and academical studies destined to solve issues related to the use of water resources. One of the representatives in the Basin Committees, participant of the focus group, reveals the importance of interaction among the State and academic institutions from developed countries in the search for alternatives for semi-arid regions:

> [...] *"I thought it to be interesting when I was in Spain some time ago. Spain is a very dry climate country, with a third of the rainfall in Minas' semi-arid. In Minas it is around 600mm and there it is 150mm, in southern Spain. How they live with this? There is a teacher in University of Madrid that told me this: each square meter of the Spanish territory was a target for, at least, two Masters or Doctorate thesis. So this shows the inductor aspect of governmental agencies and universities themselves in the direction of knowing this potency"* (Basin Committee Representative 1[*])

The detailed knowledge of the potentialities and deficiencies of water availability may come to make viable solutions that address the human supply needs. In this issue, the partnerships between academy and public administration make possible the implementation of researches and studies of water use that indicate possible actions that diminish the effects of water shortage. These are measures that justify the inclusion of specific legal devices for these geographic locations.

Despite the fact that Brazilian legislation doesn't contemplate specific matter for regions with scarcity of water resources, some strong points were evidenced by the participants of the focus group. Among the positive aspects of the legislation was highlighted the decision decentralization, that makes viable the effective representation and participation of the various sectors of society, and the systemic planning of the water resources management, having

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[*]   All transcripts from interviews are free translations.

as reference the hydrographical basins. As to the aspect of considering the hydrographical basin as unit of planning and management, and what this means in practice, the opinions of some interviews in the focal group were registered:

> *"City integration on the basin is the great play, but we have to see how to do this. This is the solution, because nowadays the focus falls too much over the city. For example, the city does something of water resources, makes a city water resources city plan ,a sanitation city plan , but makes it focused, he doesn't have integration with the basin. Many times we even see a clash of director water management plans between the hydrographical basin and the city"* (City public authority representative).

> *"The strong points would be the novelty of the management being done by planning unit which is the basin. So the basin must be had in sight to do the management, which is a big difference from environmental legislation, because the permits are done in a punctual manner, without having in sight the basin to do the management. I think this is the great differential. As a weak point, I see that it lacked the clarity of not introducing a bigger city support in the management. The city does not feel integrated to the management."* (State public authority representative 1).

By the statements above it is perceived the first clash between the managers of the city and state spheres in what concerns governance of the hydrographical basin area. Despite the consensus around the conceptual vision that the basin planning model provides, the integration and participation of the cities are contested by the public managers. For the city manager, as much as the city exercises its role structuring the Director Plan (citywide), the integration problem comes from conciliation with the water resources Director Plan for the hydrographical basin. As for the state management representative, the critical point of the absence of integration resides in the legislation, itself that, refrained from stating over the means of city participation in the water resources management. Cardoso (2003) confirms that the adoption of the hydrographical basin concept imported from the French model of water management presents itself, beforehand, as a potential conflict generator, particularly at a country like Brazil, where the cities are strong units in administrative and political terms, and where the hydrographical basin is a territory over which does not exist any kind of social identity.

Other questions associated to the management difficulties imposed by the legislation were manifested in the specialist panel and focus group. In the public policy directives level, for example, it does not prevail integration among the three planning spheres (hydrographical basin, State and Union). This

may be ensued by the absence of clarity as to the harmonization of the competences previewed in the state and federal legislation, existing a need for better understanding on management integration over rivers of Union domain and rivers of State domain. It is worthy to detail that the Federal Constitution, from 1988, established only two domains for the water bodies in Brazil – the Union domain and the State domain, for superficial or subterranean waters (MMA, 2001). Therefore, the legislation does not contemplate the role to be exercised by cities on water management.

It is evidenced in the focus group that there is a lack of directives for application of the water resources management. The following manifestations from the participants of the focus group evidence the difficulties for the application of water resources management. The statements address issues of legal, administrative and participative nature. For the industry representative the legislation problems come from the lack of investments on the public governance structure:

> [...] "*the point that remained weak was this: the legislation does not prescribe or demonstrate the resource sources or how we will make it move, out of inertia. I assemble the committee; once it has been assembled, I have three basic obligations and the first is the basin plan, than the registration, but it does not say how to get these resources out of this thing. That's why the committee does not get off, gets stuck in this process.*" *(Industry Representative).*

The legal and administrative aspects evidenced by the enterprise representative give place to the representation problems cited by the ONGs representatives:

> "*In this aspect, another fact that I find a little harmful is that we lack representation in the civil society area, organized or not, and that the representation that exists does not have a structure that allows efficiency of this representation before the structures both governmental as production sector. So that brings a imbalance in the policy effectivity.*" *(ONG Representative 1).*

> [...] "*a first aspect is the application of the legislation, that clashes with this support aspect. The second is the operational aspect. There is this support side, but we need devices, the director plan, the basin agency. Without all these devices, the a councilman with no management devices is in the same situation as a mechanic with no toolbox. So, along with this lack of a supportive culture, the region sometimes does not have enough of a bulk of critical people to operate these committees.* [...] *The public organs themselves have a lack*

of agents, of representatives, to fill all these chairs. Lacks quantity and quality, a critical bulk. It's this mismatch between the beauty of the legislation and social, economical, reality, that do not match up. The legislation were inspired, mainly, in European countries, mainly in France. Europe has a culture of support and 85% of the population has the habit of joining organizations, associate, develop the citizenship, civility, through participation in organizations. In Brazil, this rating is 15%. (ONG representative 2).

If on one hand the environmentalists' view privileges aspects associated to social representation in the competent organs of water management, for the industry representative the pointed legal deficiency lays on the lack of prescription on the origin of resources to be destined to operationalize the Hydrographical Basin Committees. On the contrary of the industry *stakeholder* that does not present a difficulty on assigning a representative for this segment, the choice of agents to represent the organized civil society lacks criteria and qualified personnel to form the Management Councils. Though the discourses of both *stakeholders* present distortions, they may be considered relevant points to be addressed by public management. Both the investments on structuring the Basin Committees, and the mobilization processes that stimulate effective representation of the society in water management, translate into relevant demonstrations on the qualification of the public governance, or even in the construction of social capital (FUKUYAMA, 1999) that promotes cooperation among these *stakeholders*.

In what relates to the second governance mechanism – penalties prescribed by legislation – there is almost unanimity of the specialists as to the deficiencies related to its execution. One of the main pleas addresses the differences between the penalties imposed by the environmental management and water resources management. While the first emphasizes the command and control connotation, the second focus on the negotiation connotation. The penal rigidity prescribed in the environmental legislation, be it on the non-compliment of the conditionings of environmental licensing, be it on the imposed penalties and infractions committed against Brazilian fauna themselves, opposes itself to the lack of more severe penalties on the cases of misuse of water. Beyond that, as related by one of the specialists, it still rules a lack of harmony in the legal procedures a criteria on the federal and state spheres. The penalty, by itself, doesn't motivate a conscious use of waters, thus existing a demand for educational policies or orientation and explanation of the effects of committed infractions.

It is highlighted by the statements that the specific issue of water resources management is still a low attention object if compared to the relevance given to environmental issues. One of the points defended by the private initiative representatives is on

the strategic connotation that must be taken on account by water resources management. They are points that reinforce the differences on the treatment of issues associated to the water to other general environmental issues. Public goods of collective interest as water may not have only a utilitarian view. Tridimensional aspects, of social, environmental and economical nature, must be concomitantly taken on account by the integrated management that aims to its multiple uses (CARDOSO, 2003).

The fact that IGAM does not count yet with due recognition of its attributions contributes to difficult the *stakeholders* comprehension on its responsibilities. The guarantee of information to the *stakeholders*, one of the mechanisms highlighted on the juridical and regulatory structure, shows itself to be quite incipient. One of the possible reasons for the lack of transparency on information divulging refers to "the confusion and shadowing of the obligations and responsibilities of the management organs". These ambiguities, according to the specialists, come from both the complexity of the water resources management structure, that contemplates various instances as grantor organs, state and federal coordinator organs, deliberative organs, and the changes introduced on the water resources legislation. Beyond the impediments of bureaucratic nature, the maintenance and operationalization of the attributions of the management organ depend much on financial resources of the state and Union.

7.2 Actions of the State as proprietary of the collective good water

According to OCDE (2005), this dimension of analysis refers to the professional role of the government in defining a consistent property policy in order to assure that the governance is conducted in a transparent and responsible manner with the necessary level of professionalism and efficiency. In relation to the state policy of waters, first mechanism of conduct of the State proprietary, the opinion of most of the specialists and *stakeholders* is that the government establishes a clear and coherent frame of its water-related policy.

For some specialists, however, there is a need for advance in rules and regulation procedures in water resources management, be it through the "approval of the State Plan for Water Resources", or through mechanisms that seek to assure the financial resources necessary to the autonomy of the management organ. According to one of the specialists, the State establishes the autonomy of the management organ, but gives priority to infrastructure works in disadvantage to investments which could be done in qualifying the public water management.

On the focus group, the *stakeholder* representatives commented on the interaction with the Legislative Power on the discussion on water resources management with Minas Gerais society:

"From the point of view of Minas Gerais' Legislative Power, I think that the Legislative has done already two seminars on this issue of water resources, "Águas de Minas 1 and 2"; and has done also two seminars on sanitation. And in the Legislative Assembly they have a very interesting methodology to stimulate participation. The problem later is how these collected suggestions are applied in order to become public policies and also legal devices. This process does not always has due continuity" (Basin Committee Representative 1).

"It is interesting that the companions here know how it works in the Assembly. After the seminar ends, there is a Following Commission. The implementation of these seminar decisions needs action from this Following Commission, what does not always happen. So it is in fact a situation of constructing a democratic process, really. There is good will, but still lacks some action" (Basin Committee Representative 1).

The Legislative Power, as much as it translates itself into a debate and social support locus, does not necessarily make viable the implementation of the discussed public policies. The discussions of the states bathed by São Francisco river on the river transposition demonstrate that, even if the mobilization of organized groups contrary to the transposition are made easier, prevailed the actions of the Executive Power. On the other hand, the debates favor the structuring of public policies to be later appreciated and promulgated by the State.

7.3 Relationship with the *stakeholders*, transparency and information divulging

For OCDE (2005), Slomsk (2008) and Barret (2005) it is a fundamental presupposition the egalitarian treatment to all involved in the activities of the government, recognizing their rights, so that they have the same access to information. Some specialists said that the management organ assures equal rights to its *stakeholders* but, however, prevails the force correlation due to political pressures, and some interested parties end up being privileged. Nevertheless, the difficulties of access to information and participation in the meetings do not provide the socialization of these rights.

On the focus group it was verified that, in general, the interaction of the management organ with its *stakeholders* needs to progress, being also perceived that IGAM should model itself increasingly by sensibility and negotiation with their *stakeholders*. Equity on the treatment of *stakeholders* is questioned by some of the representatives:

"There is a very prejudicial look from the management organ with relation to the

production sector or the water user. Not just from the management organ, but from civil society too. Normally, the user statement is interpreted as being an escape from legal obligation. Every time he opens his mouth everyone says he is escaping the legal obligation. I think this: this relation fighting with its strategic public, the stakeholders, is too much tenuous, as the management organ goes to talk with the user and he understands that is a user obligation.. so here the command and control is much stronger than orientation, the search for cooperation" (Industry Representative).

"In the part of the State with its interested parties, I think that there are some things that don't work. When it is given priority to something in the State, like Linha Verde, this has a dynamic, a speed that makes it happen; and there are others that seem to be taken in "Slow cooking" . I can't say it here with much propriety, but sometimes it is really a question of priority, and it ends reflecting on the others, on the interested, on the stakeholders" (City Public Authority Representative).

"There are too many governance levels to work, conciliate everyone's interest... Then I think that it's too hard to work as a team in the direction of addressing to the interests of everyone, because there is really a selfish view, a selfish interest. And I see that when the company acts in the licensing process, what we hear the most is this company's social responsibility. "We will generate employment, generate income, et cetera, the company's social responsibility". But this is not social responsibility, in my way of seeing it, it's company investment. A company has to see itself this way. I think that the leveling of this governance is that I think is hard to happen. We are moving, but I think it is hard to happen." (ONG Representative 1).

The issues pointed by the industry representative puts into play the relations between the management organ and the organizations of the production sector, much due to their legal obligations and the different treatment alleged by the one interviewed, what denotes a position more of control then of orientation by part of IGAM. For the city representative the address to the *stakeholder* interests passes through the work of the State in giving priority to water resources management for the interested parties. The ONG representative, on the other hand, recognizes the difficulty of the management organ to exercise the impartial administration of their *stakeholders* and questions the "selfish" action of the organizations by occasion of the licensing pleas for the use of water.

The relationship with the *stakeholders* may be aggravated by their own clashes among their own representatives. Already mentioned the prejudice over the actions of the production sector perceived by the industry representative results eminent conflicts provided by the critical posture of the ONG representatives about water user industries and the questions of the organizations over the paths traveled in the Basin Committees for grant. These constitute examples of the unsettled interaction of the interested components:

"In this issue of these involvement conflicts of stakeholders, there is form the point of view of a great part of the environmentalists the idea that the private initiative is a "thing of the devil", in other words, the gang that really wants to break the Law. On the other hand, many companies to not care to change this image. So it prevails this conflict that is always unresolved" (Basin Committee Representative 1).

"How will I place a device that depends on an extremely sophisticated analysis on the hands of people that are not from the technical-scientific medium? There were cases of a grant being in the hands of someone who asked "what is this?" "What is this enterprise?" "It is a barren pile? I want to know what is a barren pile" It was the person that was there to give technical report on the grant for the barren pile. A committee has to deliberate, yes, over the hydrographical basin, what we want for this basin, what we wish, fight for the plan, fight for the zoning, fight for an integration of plans. The management devices that demand a specialization for their development, their understanding, cannot be discussed as democratic issues. It is not that, they are technical issues, deeply specialized." (Company representative).

The matter of grant concession for major enterprises with polluting potential was an issue also highlighted on the interviews, for the tarry of the management organ on analyzing and providing the concession and for being a device that, as prescribed by the legislation, must be forwarded to the Committee, for approval. It was observed that there are questions over this procedure in what relates to the Committee's qualification to rule over technical issues. However, generally, the understanding is that the Committee is the organ most indicated to the representational expose of the stakeholders' interests. The contests of the application of the Committee are around the administrative difficulties to coordinate the various interests and of the composition and necessary abilities of their participants itself:

"Participative water management is this; it is for the civil society representative to enter, the

geologist, the hydro geologist and the paper collector. It's this that I think it is a participative management of participation inside these spheres, because these people have life technical knowledge that needs to be shared, in the same way that the technician by work will share his technical knowledge. Theoretically what we are not prepared, in the beginning, is to be democratic" (ONG Representative 1).

"I think that there is a lack of preparation by all to make the machine work, including the public organ. So we have a training process for the civil society, the company many times needs to enter. It has more operation capability, maybe, of having technicians, but I think this does not exclude the process. So why Laws, why a committee, why opening spots for the civil society? To watch? So we need to see the process of moving and I concur that many people that are part of the committees are not technical, but something the others learn from them in this parliament. Surely!" (City Public Authority Representative).

For the ONG representative, regardless of the technical information, the Committee has to represent all the interested parties on water management. In the opinion of the city representative it is general the unpreparedness of the Committee components. The learning of the dynamic of functioning of these councils will consolidate itself with practice and the execution of the generated proposals.

In regard to the transparency mechanism in the provided information to the *stakeholders,* it was commented by some specialists that the management organ does not have a command, neither an adequate policy to attain a higher level of transparency. Questioned on the mechanism of periodically informing, through reports, the relations of the management organ with the *stakeholders,* the specialists indicated the inexistency of these actions.

7.4 Role of the Councils (IGAM Administration Council, State Council of Water Resources and Hydrographical Basin Committees)

OCDE (2005) gives orientation on the importance of responsible Councils on the depth of public companies, highlighting the authority, competence and objectivity of these organisms. They have a role of strategic orientation and final responsibility over the organization performance. About the mechanism assuring independence to the Council in the exercise of their activities, in the opinion of the specialist, the IGAM Administration Council, the State Council of Water Resources and the Hydrographical Basin Committees do not act independently on all their attributions. Due to this, they suffer influence by both the management organ and the State Secretary for the

Environment and Sustainable Development. Some specialists highlighted also that there is on the sphere of these Councils the exercise of political action so that matters are put on schedule and forwarded by diverse interests.

On the focus group it was consensual among those interviewed the accordance over the form of composition of the state council and the committees. It was stressed that the legislation prescribes that the number of state public authority organs must be equal to the city public authority and the sum of the user segments and civil society must be equal to the sum of the public authorities, on the composition of the Committees. However, with the objective to equalize and harmonize the participation of the segments, there is a tendency on most of these organisms of adopting the following composition: a quarter to the state public authority, a quarter to the city public authority. A quarter to the production sector (users) and a quarter to civil society. As for representation, those interviewed were unanimous manifesting that it is not exercised, which is well put on the statement of the ONG representative:

"The councilman, when is given tenure on the council becomes a representative of himself. This is very common. There is not inside the entity which he represents a dynamic of interacting internally in the entity to give feedback, pass on the things that are being discussed, taking the interest of that segment which he represents. When it is about the environment and water, represents, also, animals and plants, and he has great responsibility, but in the moment he sat there, he is himself. That is one of the bottlenecks" ONG Representative 2).

Silva *et al* (2005) point that one of the encountered difficulties on the Water Resources Management Systems is the exercise of representation and recommend specially the strengthening of the cooperation capability among the social structures, thus promoting social capital and the preparation of the Committees' members for a qualified participation.

In the opinion of the state public authority representative there is a lack of commitment with representation on the water resources management, because the representative members of the city and state public authorities are assigned only to fulfill a formality ritual.

"The matter is who represents these segments on this collegiate. Sometimes it is not the people who will have the better representation on that segment. We have problems with the segment city public authority, for example. Around the time of the election, specially in the State Council of Water Resources, all the cities dispute and want to have a seat, but then, when it's time to participate in the meetings, they

don't show up and it is the same thing with the state public authority. Representation is lacking, there people assigned that do not have decision power and representation to take various decision. In the committees this is also happening, it's the same thing" (State Public Authority Representative 1).

In the opinion of the Industry representative the renovation of representation is very low in the Councils, which generates a continuous participation of the same people.

"The problem that I see of the collegiate, representation, is at first with very good intention, but then comes that joke about hell being full of good intentions. But it loses itself there. I said it already on my first intervention, I think: we have few people, few renovation, I won't say even of leadership, but of representation; we have few renovation of representation. Usually it's the same ones" (Industry Representative).

Contributing on the discussion on the participation of the same people on this process, Cardoso (2003) emphasizes that the same individuals end up participation on many collective instances, due to the difficulty on forming new leaderships to follow the new political moment of participative management.

In what relates to the existence of an environment of directives relationship among the National Council for Water Resources - CNRH and the State Councils for Water Resources, specialists stated that the mechanisms to apply this interaction are precarious. In practice the directives of CNRH are unknown both in the State Council For Water Resources of Minas Gerais and in the Hydrographical Basin Committees.

8. Conclusions

This study had the objective to identify and analyze the perceptions of the *stakeholders* as to the governance mechanisms of water resources management of the State of Minas Gerais, considering the orientations from OCDE (2005). The combined use of the specialist panel and the focus group methods allowed a sequence of methodological actions divided, in a first moment, by an assessment of the specialists' opinion on the structure of water resources governance proposed by OCDE (2005) and, on a second moment, by the perceptions of a group of *stakeholders* involved in the water management. By the analysis of the results it was possible to deduce some conclusions on the four proposed dimensions.

In the legislation on water resources point of view, despite the clarity manifested by the specialists and *stakeholders* of the normative content and benefits provided by greater participation on water management, the Law still stays silent over the situation of supplying the semi-arid regions. The amplification of technical an academic studies that

subside the decisions on better use of water is recommended to bypass the impacts of the lack of water supply.

One of the questions surveyed with the deponents refers to the lack of integration between the city Director Plans and the Director Plan for Water Resources approved by the Committee with IGAM supervision, which ends up compromising the planning and the actions on the hydrographical basins. As much as the representatives from the State and city public authorities recognize the need for integration of the Director Plans the reasons fall onto the action of the other authority. The same might be said of the disharmony existing between the public policies of the hydrographical basin, of the State and Union and of the absence of integration among the legislations that address the environment and water resources.

This disarticulation between the environmental and water Laws ends up reflecting on the unbalance of penalties imposed by the environmental management (more rigid) and the water resources management (more lenient). If on one side still predominates the view that water management is part of environmental management, what is perceived from the statements is the need to amplify the focus over the water resources administration by the strategic aspect of water itself.

In relation to the role of the State while proprietary of the collective good water, the State Policy of Water Resources, even being clearly, coherently and transparently perceived, demands still more rules and regulatory procedures that makes possible to turn its operationalization viable. The exercise of interaction with the Legislative Power illustrates the absence of actions destined to implement the legal devices discusses with the organized civil society. As much as the promoted debates on the depth of the Legislative point to participative alternatives on water management, the means for its implantation are still not explored enough.

In the interaction of the management organ with its *stakeholders* it is perceived a series of manifestations that difficult the impartial treatment of the representatives of interested parties. For the industry representative the relations with the proprietary State become full of conflict due to the prejudiced vision of the management organ which imposes the observance to the legal obligations exercising a behavior that privileges command and control over orientation and cooperation. The environmentalists also question the actions of the organizations from the production sector when the issue is the grant over water use. In these situations the discourse of social responsibility ends up superimposing itself over the real intentions of productive utilization of water resources. The interest of the city representative resides in actions of the State government that in fact give priority to the development of water management.

For the fact that the Hydrographical Basin Committee translates onto a debate, discussion and decision organism for the *stakeholders,* distinct statements are evidenced on aspects of operational and representational character. The absence of an effective administrative structure ends up compromising the divulging of information, auditing procedures and a policy of communication with the other *stakeholders.* In the case of the participative management process, one of the clashes on the choice of the representatives of the community on the Committees, and even on the Councils, refers to matters of cultural nature (due to the yet small practice of participative management in Brazil) and political nature (most times the choices fall on the same persons). As to the matters of political nature it is fit to highlight that the selection for the representatives of the State Council of Water Resources and the Basin Committees are still greatly influenced by elective criteria, which politicizes the action of these deliberative organs and compromises their effective action.

This study contributes to amplify the knowledge over the public governance of water resources in Brazil by uncovering important aspects of the juridical and regulatory structure in the federal and State spheres, as also as the dynamics of the mechanisms used by the management organ on its interaction with the *stakeholders* and the deliberative councils of decision of the water resources management. It is hoped that the results discussed here serve as motivation for amplifying and enhancing the debates over water management models, specially in what relates to governance structures and social support on the management of the collective natural and strategic good for human survival.

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