Incentives Matter: A Single-Provision Analysis of the German Corporate Governance Code

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Abstract

Research about the relation between broad corporate governance aggregates such as governance ratings and performance is rapidly increasing worldwide. The results of these studies are inconsistent. Only very recently, studies have been published which make regional analyses on the association of *single* components of broad corporate governance aggregates with measures of corporate performance. This paper is the first empirical single-provision analysis of the association between a corporate governance aggregate and performance for an established European economy. Our results support the findings for the U.S., Japan, and emerging markets: Only a comparatively small number of the components constituting the aggregate measure, in our case the German Corporate Governance Code (GCGC), exhibit a significant connection with corporate performance. These measures are predominantly compensation measures, which influence the risk aversion of the management. Moreover, the majority of significant provisions is *negatively* associated with performance. This could be a reason for the mainly insignificant results of studies relating the GCGC with performance.

1 Introduction

Research about the relation between corporate governance ratings and other governance aggregates 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. Our study is the first empirical single-provision analysis of the association between a corporate governance aggregate and performance for an established European economy.

Our analysis is based on the German Corporate Governance Code (GCGC), which is a hybrid approach between laws and market forces. The code was established in 2002 to enhance the transparency of the German corporate governance system, especially for international investors. In our study we make use of the same approach applied by the international scientific community to research German corporations. Our main interest is to discover which of the 68 single recommendations of the GCGC have a significant relationship with performance. 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 the eleven recommendations with the lowest compliance rates. We test the relationship of these eleven recommendations with various performance measures. In addition, we compare our results with those single provisions identified as relevant in related studies for other countries.

2 The German Corporate Governance Code

Internationally, the enforcement of best practice rules concerning corporate governance is achieved by using different approaches with corporate and capital market laws at one end of the spectrum and reliance on market forces at the other. Published Corporate Governance Codes, as examples for hybrid approaches, are an additional means to improve national corporate governance systems which has become more common. In Germany, 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 4.1.2007).

As Wymeersch (2005) points out, implementation and enforcement of codes varies internationally. In Germany the code had its roots in private initiatives, was then developed by a government commission, and supported and established by public authorities. 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. Despite this explicit connection to corporate law there is no official sanction concerning declared non-compliance. This task is assigned to the capital market. Investors are expected to discipline the corporations with lower stock price valuations.

3 Related Literature

National corporate governance systems include all contractual mechanisms that aim at solving agency conflicts between management and multiple principals. The

mechanisms can be classified on a range between external mechanisms referring to efficient markets and internal mechanisms (for overviews, see, e.g., Shleifer / Vishny 1997, Becht et al. 2003). 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. We, therefore, restrict our literature review to research dealing with corporations in established market economies, as the specific circumstances in emerging economies raise serious doubts on their comparability to German corporations.

The major part of the existing research on the link between corporate governance and performance concentrates on specific governance mechanisms (for overviews concerning, for instance, block holders, see Dalton et al. 2003; for boards, see Hermalin / Weisbach 2003; and for the link between remuneration and performance, cf. Jensen et al. 2004).

Another strand of this literature, which has been emerging in recent years, focuses on aggregations of firm-specific corporate governance characteristics. Thus research activity seems to reflect the recent occurrence of corporate governance aggregates such as codices and ratings (for an overview on codices, see Wymeersch 2005; for an overview on ratings, cf. Larcker et al. 2005; Rose 2006). Accordingly, this research area investigates the connection of corporate performance with corporate governance codices, corporate governance ratings, or self-defined corporate 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 corporate 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. 2005a, p. 25; Durnev / Kim 2005, pp. 1463-1468; Black et al. 2006, pp. 399 et seq.).

The analyses of the relationship between corporate governance aggregates and corporate performance currently focuses on three issues: Firstly, does causality run from corporate governance to corporate performance, or vice versa (cf. Ashbaugh et al. 2004; Bhagat / Bolton 2006; Chidambaran et al. 2006; Lehn et al. 2006)? Secondly, do other corporate governance mechanisms affect the relationship between the corporate governance aggregate and corporate performance (see Cremers / Nair 2005; Bhagat / Bolton 2006)? Thirdly, provided a significant association between a corporate governance aggregate and corporate 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.

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 corporate governance aggregates and corporate performance. This is true even despite the fact that their aggregate measure comprises 24 provisions which are mainly concerned with defensive measures to takeovers and is thus rather narrow compared to the typical aggregate in this research area. These 24 provisions are provided by the Institutional Investor Research Center (IRRC). Gompers et al. (2003) find a significant association between their 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 or if some of the provisions are more closely connected with performance than others. 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”. Four provisions address possible restrictions on shareholders voting power. They include staggered boards, limits to possible shareholder amendments of bylaws, supermajority requirements for mergers, and supermajority requirements for charter amendments. The remaining two provisions deal with anti-takeover measures: poison pills and golden parachutes arrangements. Their empirical analysis replicates the one

of Gompers et al. 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 evidence could be found to support the remaining 18 provisions of the index assembled by Gompers et al., which showed a significantly negative correlation. In contrast, positive, albeit very small, correlations were found for these provisions. The replication of the portfolio-approach of Gompers et al. yields the same result: An investment strategy which includes corporations with low entrenchment index scores and shorts corporations with high scores would gain substantial abnormal positive returns in the two investigated time frames of 1990-99 and 1990-2003.

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. 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 and limited sets of criteria which consist of corporate governance factors, which have the strongest impact.

Principally, **Cremers / Nair (2005)** analyze the interaction between internal and external governance mechanisms. But since they apply the index developed by Gompers et al. (2003) as a proxy for internal governance, their results are also of relevance in this article's context. As a robustness check of their results, they replicate their analysis with an index consisting of three anti-takeover measures as a proxy for internal governance instead of the 24-provision index by Gompers et al. (2003). The alternative index consists of the "presence of staggered boards, of a preferred blank check ('poison pill'), and of restrictions on shareholder voting to call special meetings or act through written consent" (Cremers / Nair 2005, p. 2861) .Since their results do not change substantially, it can be concluded that – in their context – a three-provision aggregate can substitute the Gompers et al. (2003) index.

Brown / Caylor (2006a) refer to Gompers et al. (2003) and Bebchuk et al. (2004). The basis of their study is their corporate governance index as of February

2003, which includes in total 51 corporate 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 to identify the drivers of these 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: two of them are identical with Bebchuk et al.(2004) and refer to poison pills and staggered boards. The other three provisions include board guidelines are published in each proxy statements; no option re-pricing within the last three years; average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%.

In a supplementary paper, **Brown / Caylor (2006b)** concentrate on the correlation between corporate governance and the firms' operating performance as measured by Return on Assets (ROA) and Return on Equity (ROE). Again, they exploit the ISS corporate governance provisions of 2003. They show that corporations with low scores in their corporate governance index have significantly lower ROA and ROE. Using ordinary least squares (OLS) regressions of industry-adjusted operating performance on all 51 provisions, they identify 10 factors which show significantly positive correlations with at least one of the two performance measures. Five provisions can be linked with both ROA and ROE: Nominating committee is solely comprised of independent outside directors; company is not authorized to issue blank check preferred stocks; non-employees do not participate in company pension plans; at least one member of the board participated in an ISS accredited director education program; average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%. Only one of these provisions – the final one – 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 demonstrate, that the significant governance provisions differ between performance measures.

Aggarwal / Williamson (2006) focus on recent regulatory changes in the U.S., caused by the Sarbanes-Oxley Act and provisions required by stock exchanges, but their results are also of interest from our perspective. They aggregate 64 governance provisions of ISS to a governance index and find a significantly positive relationship with Tobin's q. The degree of significance, however, cannot be found for all elements of the governance index. In a second step, the 64 provisions are divided into eight subcategories. Six of the subcategories (board, audit, state, compensation, progressive, and ownership) are significantly and positively related to firm value, two (state provisions and director education) are found to have an insignificant relationship with performance. Aggarwal and Williamson do not investigate individual provisions.

Bauer et al. (2005) conduct a similar analysis of Japanese corporations. 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. (2005) 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 some of their former similarity in the recent past (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 to evaluate the corporate governance of Japanese corporations and to analyze its relationship with performance. GMI observes close to 500 different corporate governance criteria which are firstly combined into six sub indices and then aggregated to an overall score. Bauer et al. look at Tobin's q, the stock price

performance, ROE, and the net profit margin. They show that – using the overall score – corporations with good corporate governance exhibit significantly higher stock price performances and firm values, but lower operating performance, which is only partially significant. Referring to Bebchuk et al. (2004), Bauer et al. aim at showing the relevant provisions. They do not look at single criteria, but at the six sub indices 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 provisions 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 sub indices were found to be negatively related to operating performance.

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 corporate governance ratings and indices, which are based on a vast set of provisions, only a selected few provisions are actually significantly associated with firm performance. The research of Black et al. (2005a; 2005b) for the emerging markets of Korea and Russia, resp., yields similar results.

In looking at studies, which have limited their investigation to single provisions, we find inconsistencies among the corporate 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.

Table 1 about here

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 on German corporations, thus providing the first study of this type for an established European economy. Our first, but minor 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. So our second research question asks which of the six areas and which of the 68 single recommendations of the GCGC have a significant relation 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 other studies for other countries? However, 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 the eleven recommendations with the lowest compliance rates.

4 Research Design

4.1 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.

4.2 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 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 77.94%. Compliance with the recommendations stands in marked contrast to conformity with the suggestions, which is much lower. Mean values for the six areas of the GCGC are high as well, but the minimum numbers disclose a larger variation. Still, with the exception of the suggestions all GCGC aggregates display little variation. This characteristic reduces the probability of finding significant relationships 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 a stock market performance measure (stock return including dividends for a holding period from 1.7.2004 to 30.6.2005). All five performance measures enter the analysis in an industry-adjusted form; moreover, the raw value of the stock return is included. Thus, there are a total of six performance measures under investigation.

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.

Table 2 about here

Table 3 about here

4.3 Selection of Control Variables

We collected data from seven potential control variables. To discover the significant (10% level) control variables for each of our six 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 showed 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 and, as a rule, the other index indicator variable was included as well.

Table 4 about here

4.4 Regression Analysis Procedure

The assumptions of the linear regression are examined in the following manner (for assumptions and their tests, cf. Hair et al. 1998, pp. 70-76, 172-176). The assumptions of linearity and homoscedasticity are checked visually by inspection of the scatterplot of standardized and standardized predicted residuals. Normality of the error term is investigated by visual inspection of the histogram and the P-P-diagram of the standardized residuals, and with the Kolmogorov-Smirnov-test. The test of collinearity follows the procedure suggested by Hair et al. (1998), pp. 220-222: On the one hand, we inspect whether the tolerance values exceed .1, while on the other hand, and for the most part, Hair et al. propose a combined procedure. Collinearity is supposed to be critical if the condition index of a model is above 30, and if in this model the variance proportions of two or more variables exceed 90%. Generally, the requirements of a linear regression are met. In some cases the residuals may not be normally distributed, but by using the natural logarithm of some variables and excluding cases with extreme residuals it is at least assured that the distribution of the residuals is symmetric. In addition, the analysis of influential observations with Cook's Distance (see Cook / Weisberg 1999, pp. 354-369) also improves the distribution of the residuals. Observations with 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.

5 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. Nine aggregates will be considered: the complete Code (GCGC), all recommendations (GCGC_REC), all suggestions (GCGC_SUG), and the six areas of the GCGC (GCGC_GM through GCGC_AFS). The regression equations are built according to this pattern:

(2) performance measure = GCGC aggregate + performance-measure-specific control variables.

Each of the six performance measures is regressed on each of the nine GCGC aggregates, that is a total of 54 regressions. To preserve space, Table 5 will only show the significant combinations of GCGC aggregates and performance measures. Only 12 out of the 54 regressions yield a result which is significant at the 10% level. Particularly weak are suggestions (GCGC_SUG) and supervisory board recommendations (GCGC_SB); for both of these there are no significant findings. Most of the significant results are found for Tobin's q. There, all of the significant regression coefficients are negative. But for other performance measures there are significantly positive regression coefficients as well. The results for ROA should be neglected because the distribution of the residuals almost fails to meet even minimum requirements of normality. All things considered, these results support the findings of Bassen et al. (2006) who was not able to detect a significant connection between GCGC aggregates and performance in 2003 except for the management board aggregate.

Table 5 about here

6 Analyses of Single GCGC Recommendations

6.1 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 variation. For eleven of the 68 recommendations the compliance rate does not exceed 90%, which is why we confine our analysis to these critical 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

6.2 Procedure of Analysis

We apply two different approaches to determine the significant GCGC recommendations for each of our six 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 recommendation + 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 about here

Four of the eleven recommendations have no significant relationship with any performance measure at all: REC4.27, REC4.40, REC4.41, and REC6.59. With the

exception of REC4.27 these recommendations belong to the recommendations with the lowest compliance rates at all. This characteristic implies are larger variation in the variables what should improve the probability of finding significances. Nevertheless, significant regression coefficients are completely absent.

For seven recommendations we detect a significant relationship with at least one performance measure. Only three of them are positively connected with performance. The algebraic sign of significant regression coefficients for a recommendation is consistent across performance measures: The significant relationships of a certain recommendation with performance are either all positive or all negative. As in other studies, the significant GCGC provisions differ between the performance measures.

Table 9 about here

7 Optimized Aggregates of GCGC Recommendations

The status of our analyses offers the opportunity to construct a new class of aggregated measures with better precision. The increase in precision comes from three sources: (1) Inclusion only of those recommendations that have proved their significance. Most of the GCGC recommendations are adhered to by the overwhelming majority of the largest stock corporations. The inclusion of such consensus recommendations in an aggregated measure should not enhance its explanatory power in a regression very much. (2) Consideration of the significant relationship's direction, i.e., recommendations with a negative relationship 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 six 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): - REC4.39

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

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

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

These optimized sets of recommendations are tested in four different specifications for every performance measure in order to contrast their relationship with performance, and that of the complete set of recommendations as well as that of the recommendations not being part of the optimized set. The four specifications have the following structure:

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

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

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

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

Table 10 about here

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. 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 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 relationship 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.

8 Interpretations

Although we do not find remarkable evidence for the GCGC at large, our more detailed analysis shows that some of its components are significantly associated with performance. The correlation of single recommendations and specific areas of the GCGC with performance differs in the algebraic sign as well as in strength. The mixture of significantly positive and negative relations could explain why this study and some of its predecessors could not find a significant connection between ordinary GCGC aggregates and performance (Nowak et al. 2005; 2006, and Bassen et al. 2006); if positive and negative effects are simply added up they can compensate each other. However, Zimmermann et al. (2004) find significantly positive effects of compliance with the aggregated GCGC recommendations on firm performance.

In general, we provide evidence that the average declared compliance with the GCGC is remarkably high. This supports the view that a code could be a successful instrument of implementing standards assumed to be best practice, at least with regard to the largest corporations. Nevertheless, the question of efficiency of the single elements of the code remains open. In our more specific analysis we concentrate on the critical recommendations, i.e., those recommendations whose compliance rates do not exceed 90%. They refer to several governance mechanisms: various elements of incentive systems and selection criteria for management and supervisory board, and transparency.

We look at eleven provisions one by one. On that occasion, we relate to corresponding results of U.S. studies if available. We begin our review with the four recommendations which are not significantly related to any performance measure. For example, there seems to be no significant association with performance whether a company specifies an age limit for the members of the management board or not (recommendation 4.27). Only the two studies of Brown / Caylor (2006a; 2006b) include a criterion which is related to this GCGC recommendation as it refers to the

existence of a mandatory retirement age for directors. This criterion does not provide significant results as well.

Concerning supervisory board members, we cannot find any significance for performance-related compensation, and for transparency of additional payments or advantages for individually provided services (recommendations 4.40 and 4.41). This supports the arguments of Frey / Osterloh (2005). They challenge the agency-theoretical arguments supporting extrinsic motivation with monetary incentives as these might crowd out intrinsic factors out of the job itself. On the one hand, our results might reflect the engagement and accountability of German members of supervisory boards – following a steward-ship approach. On the other hand, they might illustrate that the consulting role of the supervisory board is more important than its control function (for different roles of the board, see Johnson et al. 1996). The existence or absence of transparency concerning additional connections between supervisory board members and the corporation, e.g., as an advisor, and concerning subsequent payments to members of the supervisory board is not significantly related to performance. The absence of such transparency provisions improves the environment for conflicts of interest which in turn would weaken the control function. That it does not result in a significantly negative association with performance is compatible with the view that more importance is attached to the consulting function of the supervisory board than to its control function. There is no comparable provision in the international studies as they refer to one-tier systems and do not differentiate between the remuneration of inside and outside directors.

The final criterion which does not possess a significant relation with performance refers to publication terms of financial statements (recommendation 6.59). As the German HDax includes the biggest corporations these results are not surprising. It seems reasonable to expect that other channels of communication between management and shareholders are more relevant. Again, there seems no corresponding provision in the U.S. Studies available.

The major interest of our analysis is to identify the significant provisions. Only three of the critical recommendations show a significantly positive association with

performance. All of them refer to management compensation and its transparency (recommendations 3.14, 3.21, and 4.42). We can therefore emphasize the importance of well-designed compensation contracts that link variable elements of remuneration with long-term performance and demanding relevant comparison parameters. These arrangements should be published individually for each member of the management board, including all components. Looking back at the results for the supervisory board, these results are puzzling, as we could not detect any significance for performance-related compensation of and for transparency of additional payments to supervisory board members. Thus, it seems important to utilize the design of remuneration schemes to align the interests of management and shareholders, whereas the same concept for supervisory board members is insignificant. 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 related empirical literature does not test similar provisions.

For four of the critical recommendations our results suggest that compliance would not only be irrelevant, but even unfavorable. Three of them refer to incentive systems.

There is a significantly negative correlation with performance of corporate provisions which rule that exercising of the chair and deputy chair positions, and membership in committees in the supervisory board is to be considered in the compensation of supervisory board members (recommendation 4.39). This might indicate that input-oriented remuneration elements, i.e., those related to work load or degree of responsibility, are regarded unfavorable. However, as mentioned above, our results show an insignificant relation for a performance-related compensation of supervisory board members (recommendation 4.40). Thus, output-, i.e. performance-, linked remuneration is also not positively connected with performance. Due to the different board systems there is no equivalent criterion in the international studies.

The possibly weaker relevance of the control function compared to the consulting function of the supervisory board, which was mentioned above, is further supported by another recommendation with a significantly negative association with performance. Recommendation 4.35 refers directly to this argument because it 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 (recommendation 4.35), for members of the management there is no significant impact (recommendation 4.27). 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. As aforementioned, Brown / Caylor (2006a; 2006b) cannot find a significant influence of a mandatory retirement age for directors on performance.

The remaining two critical recommendations which are negatively associated with performance deal with incentives for the management board. One of which is the existence of a cap which limits compensation in case of unforeseen or extraordinary developments (recommendation 3.16). If this recommendation would be insignificant, this could be seen as a signal that the capital market is not worried about the absolute amounts of managerial compensation. As it 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. Following this line of reasoning our results would show that capital markets approve

if the management is encouraged to decide on more risky investment projects and leaves risk adjustments to the investors.

Encouragement of a riskier behavior might also be an explanation for the last significant recommendation (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. Conformity with this recommendation has a significantly negative association with performance. In their explanations of non-compliance, most corporations state that they do not believe that a deductible would improve the accountability of the members of both boards and reassure their trust in the integrity of their board members. It seems possible that – perhaps due to the tradition of the stakeholder view – corporations are afraid that the agreement of deductibles could possibly be seen as a demonstration of distrust. This appreciation of the board members' integrity seems to be shared by the capital markets.

Neither caps nor deductibles in D&O insurances are provisions analyzed by Brown / Caylor (2006a; 2006b) or in the other studies described above.

9 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. In our investigation of the German Corporate Governance Code the significant provisions are mainly concerned with compensation and incentives of the top-management. Hence, this first analysis for an established European economy supports the results found for the U.S., Japan, and emerging markets: Only a comparatively small number of the components constituting the aggregate measure exhibit a significant connection with corporate performance.

This prevailing trend in the literature has some important implications for the two main occurrences of broad corporate governance aggregates. First, for corporate

governance codes, which often have a quasi legal status, the common results in the literature reveal a clear warning sign: Regulators should seriously take the net benefit of corporate governance regulation into consideration, which frequently causes substantial costs. However, it should be remembered, that the enhancement of corporate performance need not be the primary goal of the legislator or similar regulatory bodies. Second, for commercial corporate governance ratings suppliers, their potential customers usually expect an assured connection between corporate governance quality and corporate performance. Otherwise, this product is much less appealing to them.

Our second major contribution to the literature is the detection of the large weight of provisions which have a significantly negative association with performance: four out of eleven. This is not only interesting per se, it may also hide significant associations between measures of corporate performance and those corporate 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 GCGC and performance (see Nowak et al. 2005; 2006, and Bassen et al. 2006 with mainly insignificant results, but cf. also Zimmermann et al. 2004 with significant findings). In analyses of foreign samples, significantly negative relationships between recommended governance provisions and performance do not seem to be noticeable.

Moreover, our findings approve the results of Brown / Caylor (2006a; 2006b) that significant provisions may differ between various performance measures. But despite the variety in this regard, there is at least uniformity among performance measures with respect to the algebraic sign in significant associations with a particular governance provision. Unfortunately, detailed comparisons of our results with those of international studies are impeded by the fact that some of the critical provisions in our sample relate to the supervisory board.

However, we also have to mention some caveats which deal with the generalization of our results to the entirety of listed German stock corporations. We analyze a sample of the largest corporations listed on the German stock exchange. It is

well known that small and medium sized companies comply less with the GCGC. Including them into the study would increase the variance of the compliance with the GCGC. As a consequence, more GCGC recommendations would become eligible for a single provision analysis. This could lead to different results concerning the association with performance and would surely enhance the representativeness of the outcome. For instance, so far we followed the view of the related international studies and regarded the number of seven significant provisions as small. However, taking a different view, one could say that seven out of eleven, i.e., about two thirds, of the analyzed provisions dispose of a significant association with performance. Seen this way, the result differs very much from the related studies.

Moreover, our study covers only a single year which raises some doubts whether the results can be simply transferred to other years. In addition, corporate governance is expected to have a long-term influence on performance. As soon as the history of the GCGC allows for longer term analysis, additional studies with longer timeframes are possible. Finally, it has to be considered that the GCGC does not reflect the entire corporate governance of a company; it is confined to six areas and ignores, e.g., the ownership structure. In addition, even for these six areas only conformity as declared by the corporations can be analyzed. Due to leeway in the interpretation of the GCGC text or other reasons, declared and realized conformity might differ.

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 a small number of components of a corporate 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 corporate 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 and for a single performance measure, a stable set of relevant corporate governance provisions?

Answers to these questions are highly welcomed because they would help to improve corporate governance regulation and to avoid unnecessary regulatory burden.

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

Single Governance Provisions with Significant Connection to Corporate Performance						
IRRC-Index by Gompers et al. (2003)				ISS-Provisions		
Bebchuk et al. (2004)		Cremers / Nair (2005)		Brown / Caylor (2006a)	Brown / Caylor (2006b)	
Tobin's q	Stock Return	Tobin's q	Stock Return	Tobin's q	ROE	ROA
Poison pills	Poison pills	Preferred blank check (poison pill)	Preferred blank check (poison pill)	Poison pills	Company is not authorized to issue blank check preferred stocks	Company is not authorized to issue blank check preferred stocks
Staggered boards	Staggered boards	Staggered boards	Staggered boards	Staggered boards		
				Average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%	Average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%	Average options granted in the past three years as a percentage of basic shares outstanding did not exceed 3%
Limits to shareholder amendments of the bylaws	Limits to shareholder amendments of the bylaws					
Supermajority requirements for mergers	Supermajority requirements for mergers					
Supermajority requirements for charter amendments	Supermajority requirements for charter amendments					
Golden parachute arrangements	Golden parachute arrangements					
		Restrictions on shareholder voting to call special meetings or act through written consent	Restrictions on shareholder voting to call special meetings or act through written consent			
					Nominating committee which consists only of independent outside directors	Nominating committee which consists only of independent outside directors
					Non-employees do not participate in company pension plans	Non-employees do not participate in company pension plans
					At least one member of the board participated in an ISS accredited director education program	At least one member of the board participated in an ISS accredited director education program
				Board guidelines published in the proxy statements		
				No option re-pricing within the last three years		
					Compensation committee which consists only of independent outside directors	
					Auditors ratified at the most recent annual meeting	
						Directors required to submit their resignation upon a change in job status
						Company expenses stock options
						No former CEO serves on board

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%
Compliance recomm. shareholders and general meeting	100	98.60%	7.11%	40.00%	100.00%	100.00%
Compl. recomm. coop. betw. managem. and supervis. board	100	90.25%	12.26%	75.00%	100.00%	100.00%
Compliance recomm. management board	100	93.00%	7.89%	60.00%	93.33%	100.00%
Compliance recomm. supervisory board	100	94.83%	5.85%	73.91%	95.65%	100.00%
Compliance recomm. transparancy	100	98.11%	5.48%	77.78%	100.00%	100.00%
Compliance recomm. reporting and audit	100	97.00%	6.10%	58.33%	100.00%	100.00%
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	Variable	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_GM	compliance with GCGC recommendations of the area shareholders and the general meeting in %	
GCGC_COOP	compliance with GCGC recommendations of the area cooperation between management board and supervisory board in %	
GCGC_MB	compliance with GCGC recommendations of the area management board in %	
GCGC_SB	compliance with GCGC recommendations of the area supervisory board in %	
GCGC_TRANS	compliance with GCGC recommendations of the area transparency in %	
GCGC_AFS	compliance with GCGC recommendations of the area reporting and audit of the annual financial statements 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 in %	
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 %	
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	GROWTH, BETA
SR_ia	GROWTH, BETA, MDAX, TECDAX

Notes: The variables are defined in Table 3.

Table 5: Regression Results of GCGC Aggregates

Variables/Statistics		Results for combinations of performance measure and GCGC aggregate											
		lnQ_ia				lnMTB_ia	ROA_ia**		ROE_ia		SR		SR_ia
		GCGC	GCGC_REC	GCGC_TRANS	GCGC_AFS	GCGC_COOP	GCGC_GM	GCGC_AFS	GCGC_GM	GCGC_COOP	GCGC	GCGC_MB	GCGC_MB
Constant	Reg.coefficient	2.86	3.34	2.19	2.33	2.49	-0.15	0.06	-0.20	0.07	-0.12	-0.29	-0.64
	stand. Reg.coeff.												
	p-value (two-sided)	(0.0)	(0.0)	(0.1)	(0.0)	(0.0)	(1.3)	(9.6)	(11.8)	(6.3)	(70.8)	(30.3)	(4.5)
GCGC aggregate*	Reg.coefficient	-0.02	-0.03	-0.11	-0.09	-0.21	0.03	-0.01	0.04	-0.02	0.01	0.05	0.05
	stand. Reg.coeff.	-0.26	-0.23	-0.16	-0.19	-0.18	0.29	-0.18	0.18	-0.17	0.15	0.22	0.21
	p-value (two-sided)	(1.8)	(1.4)	(8.7)	(4.4)	(7.0)	(1.2)	(9.3)	(9.6)	(9.4)	(9.3)	(1.3)	(3.7)
lnSIZE	Reg.coefficient	-0.15	-0.15	-0.12	-0.12	-0.17							
	stand. Reg.coeff.	-0.82	-0.82	-0.64	-0.65	-0.55							
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)							
GROWTH	Reg.coefficient						0.03	0.03	0.10	0.11	0.48	0.49	0.52
	stand. Reg.coeff.						0.22	0.24	0.29	0.33	0.26	0.27	0.30
	p-value (two-sided)						(3.4)	(2.3)	(0.5)	(0.1)	(0.4)	(0.3)	(0.2)
BLOCK	Reg.coefficient	0.19	0.20	0.30	0.33	0.56	0.01	0.01					
	stand. Reg.coeff.	0.15	0.15	0.22	0.24	0.25	0.09	0.10					
	p-value (two-sided)	(10.7)	(9.0)	(1.8)	(1.0)	(1.3)	(43.1)	(33.2)					
VOL	Reg.coefficient								-0.03	-0.04			
	stand. Reg.coeff.								-0.07	-0.11			
	p-value (two-sided)								(51.0)	(26.8)			
BETA	Reg.coefficient										-0.34	-0.33	-0.09
	stand. Reg.coeff.										-0.48	-0.46	-0.14
	p-value (two-sided)										(0.0)	(0.0)	(28.9)
MDAX	Reg.coefficient	-0.32	-0.27	-0.16	-0.19	-0.30	0.00	0.00					0.11
	stand. Reg.coeff.	-0.48	-0.40	-0.23	-0.28	-0.26	-0.04	-0.06					0.21
	p-value (two-sided)	(0.2)	(0.4)	(8.9)	(4.2)	(6.7)	(70.9)	(63.0)					(10.9)
TECDAX	Reg.coefficient	-0.69	-0.63	-0.42	-0.46	-0.72	0.01	0.00				0.00	0.04
	stand. Reg.coeff.	-0.85	-0.78	-0.51	-0.55	-0.53	0.12	0.01				-0.01	0.06
	p-value (two-sided)	(0.0)	(0.0)	(0.1)	(0.0)	(0.2)	(31.5)	(91.0)				(88.4)	(58.6)
Adj. R^2		32.2	32.5	25.4	26.3	16.4	8.2	4.5	11.2	12.2	26.7	29.5	14.8
p-value of F in %		0.0	0.0	0.0	0.0	0.1	3.2	10.9	0.4	0.3	0.0	0.0	0.2
n		94	94	96	96	98	90	93	89	91	93	93	94
Exclusions		6	6	4	4	2	10	7	10	8	6	6	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 only reports significant (10% level) combinations of performance measure and GCGC aggregate. p-values better than 10% are shaded. The variables are defined in Table 3.

* The GCGC aggregate under investigation can be found in the third line.

** The distribution of the residuals of the ROA_ia regressions do not resemble a normal distribution; these results should be interpreted with the utmost caution.

Table 6: GCGC Recommendations with the Lowest Compliance Rate

Short Cut	Recomendation Number	Recommendation	Compliance Rate
REC3.21	4.2.4.2	Compensation of the members of the Management Board: 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 to 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)

Variables/Statistics		Regression Results																	
		lnQ_ia			lnMTB_ia			ROA_ia		ROE_ia			SR			SR_ia			
Constant	Reg.coefficient	1.67	2.67	1.63	1.86	1.30	2.65	0.01	0.05	-0.08	0.00	0.04	0.25	-0.05	0.39	-0.17	-0.31	-0.17	0.30
	stand. Reg.coeff.																		
	p-value (two-sided)	(0.0)	(0.1)	(0.0)	(0.0)	(37.5)	(7.8)	(9.7)	(28.1)	(42.9)	(84.0)	(73.2)	(0.5)	(93.1)	(0.0)	(16.0)	(61.2)	(10.2)	(67.4)
REC2.7	Reg.coefficient				-0.21	-0.22				-0.02									
	stand. Reg.coeff.				-0.18	-0.19				-0.18									
	p-value (two-sided)				(7.4)	(6.9)				(8.8)									
REC3.14	Reg.coefficient												0.19	0.17		0.18	0.17		
	stand. Reg.coeff.												0.22	0.20		0.22	0.21		
	p-value (two-sided)												(1.5)	(3.4)		(2.8)	(4.1)		
REC3.16	Reg.coefficient	-0.32	-0.30																
	stand. Reg.coeff.	-0.34	-0.31																
	p-value (two-sided)	(0.0)	(0.1)																
REC3.21	Reg.coefficient														0.09			0.13	0.14
	stand. Reg.coeff.														0.17			0.23	0.25
	p-value (two-sided)														(6.5)			(1.8)	(1.5)
REC4.35	Reg.coefficient			-0.17															
	stand. Reg.coeff.			-0.17															
	p-value (two-sided)			(5.5)															
REC4.39	Reg.coefficient							-0.01	-0.01										
	stand. Reg.coeff.							-0.23	-0.22										
	p-value (two-sided)							(3.6)	(4.6)										
REC4.42	Reg.coefficient						0.22				0.02	0.02							
	stand. Reg.coeff.						0.18				0.19	0.20							
	p-value (two-sided)						(7.9)				(5.8)	(5.6)							
GCGC_REC w/o1	Reg.coefficient		-0.01			0.01	-0.02		0.00	0.00		0.00		0.00			0.00		-0.01
	stand. Reg.coeff.		-0.13			0.04	-0.09		-0.10	0.10		-0.04		0.05			0.02		-0.07
	p-value (two-sided)		(15.7)			(68.1)	(37.0)		(39.1)	(30.8)		(71.2)		(58.7)			(81.9)		(50.3)
lnSIZE	Reg.coefficient	-0.13	-0.13	-0.14	-0.17	-0.17	-0.15												
	stand. Reg.coeff.	-0.72	-0.75	-0.77	-0.55	-0.55	-0.50												
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)												
BLOCK	Reg.coefficient	0.21	0.19	0.21	0.55	0.57	0.45	0.01	0.01										
	stand. Reg.coeff.	0.16	0.15	0.16	0.25	0.26	0.20	0.13	0.11										
	p-value (two-sided)	(6.6)	(9.6)	(9.1)	(1.4)	(1.3)	(4.4)	(22.5)	(29.4)										
VOL	Reg.coefficient									-0.04	-0.03	-0.03							
	stand. Reg.coeff.									-0.10	-0.07	-0.08							
	p-value (two-sided)									(30.8)	(45.5)	(42.9)							
BETA	Reg.coefficient												-0.33	-0.34	-0.35	-0.09	-0.09	0.01	0.01
	stand. Reg.coeff.												-0.46	-0.47	-0.49	-0.13	-0.13	0.01	0.01
	p-value (two-sided)												(0.0)	(0.0)	(0.0)	(32.5)	(31.9)	(95.2)	(93.5)
GROWTH	Reg.coefficient							0.03	0.03	0.12	0.12	0.11	0.47	0.48	0.46	0.51	0.51	0.65	0.63
	stand. Reg.coeff.							0.22	0.22	0.35	0.35	0.34	0.26	0.26	0.25	0.29	0.30	0.34	0.33
	p-value (two-sided)							(3.2)	(4.0)	(0.1)	(0.1)	(0.1)	(0.4)	(0.4)	(0.6)	(0.3)	(0.3)	(0.0)	(0.1)
MDAX	Reg.coefficient	-0.19	-0.23	-0.21	-0.30	-0.29	-0.21	0.00	0.00							0.11	0.12	0.16	0.14
	stand. Reg.coeff.	-0.28	-0.34	-0.31	-0.26	-0.25	-0.18	-0.07	-0.10							0.23	0.23	0.28	0.26
	p-value (two-sided)	(2.3)	(0.9)	(2.0)	(6.3)	(8.3)	(21.6)	(54.2)	(41.5)							(8.9)	(8.9)	(3.1)	(5.3)
TECDAX	Reg.coefficient	-0.64	-0.68	-0.55	-0.72	-0.71	-0.60	0.00	0.00							0.03	0.04	-0.01	-0.03
	stand. Reg.coeff.	-0.80	-0.84	-0.67	-0.53	-0.52	-0.44	0.05	0.02							0.05	0.06	-0.02	-0.04
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.8)	(65.2)	(86.2)							(64.0)	(61.4)	(85.0)	(70.7)
Adj. R^2		39.7	40.4	30.7	16.4	15.6	15.6	8.1	7.8	11.9	13.0	12.1	29.2	28.7	27.2	15.3	14.3	17.8	17.3
p-value of F in %		0.0	0.0	0.0	0.1	0.1	0.1	3.1	4.3	0.5	0.2	0.4	0.0	0.0	0.0	0.1	0.3	0.0	0.1
n		93	93	94	98	98	98	92	92	91	91	91	93	93	93	94	94	96	96
Exclusions		7	7	6	2	2	2	8	8	8	8	8	6	6	6	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 only reports regressions in which the single GCGC recommendation possesses a significant (10% level) regression coefficient. p-values better than 10% are shaded. The variables are defined in Table 3 and Table 6.

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

Variables/Statistics		Regression Results																							
		lnQ_ia				lnMTB_ia				ROA_ia				ROE_ia				SR				SR_ia			
		Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For	Inclu	Step	Back	For
Constant	Reg.coefficient	1.74	1.45	1.45	1.45	2.24	1.47	1.03	1.47	0.05	0.01	0.00	0.01	0.00	-0.01	-0.01	-0.01	0.41	0.25	0.18	0.25	0.00	-0.28	-0.28	-0.28
	stand. Reg.coeff.																								
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.0)	(1.1)	(0.0)	(4.6)	(5.5)	(48.1)	(5.5)	(96.0)	(18.4)	(18.4)	(18.4)	(13.2)	(0.4)	(13.6)	(0.4)	(99.0)	(0.1)	(0.1)	(0.1)
REC2.7	Reg.coefficient					-0.23																			
	stand. Reg.coeff.					-0.20																			
	p-value (two-sided)					(7.8)																			
REC3.14	Reg.coefficient	0.24	0.24	0.24	0.24			0.31										0.15	0.15	0.16	0.15	0.19	0.15	0.15	0.15
	stand. Reg.coeff.	0.22	0.22	0.22	0.22			0.17										0.17	0.18	0.19	0.18	0.24	0.19	0.19	0.19
	p-value (two-sided)	(2.7)	(1.8)	(1.8)	(1.8)			(9.5)										(9.5)	(4.2)	(3.0)	(4.2)	(3.6)	(4.6)	(4.6)	(4.6)
REC3.16	Reg.coefficient	-0.31	-0.35	-0.35	-0.35		-0.32	-0.34	-0.32																
	stand. Reg.coeff.	-0.31	-0.35	-0.35	-0.35		-0.19	-0.20	-0.19																
	p-value (two-sided)	(0.3)	(0.0)	(0.0)	(0.0)		(6.8)	(5.2)	(6.8)																
REC3.21	Reg.coefficient																			0.09		0.11	0.09	0.09	0.09
	stand. Reg.coeff.																			0.17		0.23	0.17	0.17	0.17
	p-value (two-sided)																			(6.0)		(6.4)	(7.7)	(7.7)	(7.7)
REC4.35	Reg.coefficient		-0.19	-0.19	-0.19																				
	stand. Reg.coeff.		-0.19	-0.19	-0.19																				
	p-value (two-sided)		(3.0)	(3.0)	(3.0)																				
REC4.39	Reg.coefficient									-0.01	-0.01		-0.01	-0.03											
	stand. Reg.coeff.									-0.22	-0.19		-0.19	-0.21											
	p-value (two-sided)									(8.8)	(7.5)		(7.5)	(8.8)											
REC4.42	Reg.coefficient		0.12	0.12	0.12	0.31	0.24	0.23	0.24					0.03	0.02	0.02	0.02								
	stand. Reg.coeff.		0.16	0.16	0.16	0.26	0.19	0.19	0.19					0.27	0.19	0.19	0.19								
	p-value (two-sided)		(5.9)	(5.9)	(5.9)	(6.5)	(4.4)	(4.7)	(4.4)					(8.1)	(5.3)	(5.3)	(5.3)								
lnSIZE	Reg.coefficient	-0.10	-0.07	-0.07	-0.07	-0.16	-0.13	-0.12	-0.13	0.00				0.00				0.00				0.00			
	stand. Reg.coeff.	-0.56	-0.40	-0.40	-0.40	-0.53	-0.42	-0.40	-0.42	-0.13				0.09				-0.03				0.02			
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.0)	(0.1)	(0.0)	(42.9)				(54.7)				(82.9)				(90.8)			
BLOCK	Reg.coefficient	0.17				0.46		0.43		0.01				0.02				-0.08				-0.03			
	stand. Reg.coeff.	0.13				0.21		0.19		0.12				0.14				-0.08				-0.03			
	p-value (two-sided)	(21.8)				(7.3)		(5.0)		(36.6)				(27.7)				(47.5)				(82.9)			
VOL	Reg.coefficient	-0.59	-0.83	-0.83	-0.83	-0.56				-0.04				-0.04				-0.53		-0.58		-0.01			
	stand. Reg.coeff.	-0.20	-0.28	-0.28	-0.28	-0.11				-0.21				-0.11				-0.19		-0.21		0.00			
	p-value (two-sided)	(9.2)	(0.9)	(0.9)	(0.9)	(39.4)				(16.4)				(43.8)				(25.6)		(3.5)		(99.1)			
BETA	Reg.coefficient	-0.34	-0.37	-0.37	-0.37	-0.22				-0.01				0.00				-0.19	-0.26	-0.16	-0.26	-0.10			
	stand. Reg.coeff.	-0.36	-0.38	-0.38	-0.38	-0.15				-0.13				0.03				-0.27	-0.36	-0.23	-0.36	-0.15			
	p-value (two-sided)	(0.2)	(0.0)	(0.0)	(0.0)	(25.1)				(36.7)				(81.6)				(6.2)	(0.1)	(7.4)	(0.1)	(34.6)			
GROWTH	Reg.coefficient	0.04				0.22				0.02	0.03	0.04	0.03	0.09	0.12	0.12	0.12	0.43	0.46	0.50	0.46	0.41	0.51	0.51	0.51
	stand. Reg.coeff.	0.02				0.06				0.15	0.24	0.27	0.24	0.27	0.35	0.35	0.35	0.23	0.26	0.27	0.26	0.24	0.29	0.29	0.29
	p-value (two-sided)	(84.4)				(52.6)				(22.5)	(2.4)	(0.9)	(2.4)	(1.7)	(0.1)	(0.1)	(0.1)	(1.9)	(0.4)	(0.2)	(0.4)	(3.2)	(0.2)	(0.2)	(0.2)
MDAX	Reg.coefficient	-0.18				-0.26				-0.01				0.00				0.12		0.14		0.11	0.16	0.16	0.16
	stand. Reg.coeff.	-0.26				-0.22				-0.18				-0.03				0.22		0.26		0.22	0.32	0.32	0.32
	p-value (two-sided)	(7.6)				(17.5)				(33.0)				(84.5)				(18.4)		(2.4)		(24.2)	(0.2)	(0.2)	(0.2)
TECDAX	Reg.coefficient	-0.28				-0.56	-0.50	-0.43	-0.50	0.00				0.01				-0.05	-0.14		-0.14	0.02			
	stand. Reg.coeff.	-0.34				-0.41	-0.37	-0.32	-0.37	0.03				0.07				-0.08	-0.22		-0.22	0.04			
	p-value (two-sided)	(5.2)				(3.4)	(0.2)	(0.7)	(0.2)	(88.8)				(73.6)				(68.8)	(3.5)		(3.5)	(86.4)			
Adj. R^2		37.2	39.0	39.0	39.0	18.4	16.5	19.5	16.5	2.6	8.7	6.4	8.7	9.2	13.4	13.4	13.4	28.5	32.0	35.1	32.0	9.6	18.2	18.2	18.2
p-value of F in %		0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	34.2	0.7	0.9	0.7	11.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0
n		95	95	95	95	97	97	97	97	91	91	91	91	91	91	91	91	93	93	93	93	94	94	94	94
Exclusions		4	4	4	4	2	2	2	2	8	8	8	8	8	8	8	8	6	6	6	6	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 recommendation + all control variables

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**"). p-values better than 10% are shaded. 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	Significance with Performance Measure					
				lnQ_ia	lnMTB_ia	ROA_ia	ROE_ia	SR	SR_ia
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	Compensation of the members of the Management Board: 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 to 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 a significant (10% level) positive (negative) regression coefficient, a vacancy an insignificant regression coefficient.

Table 10: Regression Results for the Optimized Recommendations Sets

Variables/Statistics		Regression Results																							
		lnQ_ia				lnMTB_ia				ROA_ia				ROE_ia				SR				SR_ia			
Constant	Reg.coefficient	3.20	1.28	3.55	2.92	1.86	1.51	1.86	2.06	0.04	0.01	0.05	0.03	-0.04	0.02	0.03	-0.03	-0.41	0.29	-0.21	0.33	-0.68	-0.14	-0.35	0.26
	stand. Reg.coeff.																								
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(20.0)	(0.1)	(25.2)	(18.6)	(34.6)	(13.1)	(24.9)	(47.4)	(69.6)	(6.7)	(77.5)	(76.1)	(44.8)	(0.0)	(71.8)	(59.1)	(25.1)	(18.7)	(58.4)	(68.1)
GCGC_REC	Reg.coefficient	-0.03				0.00				0.00				0.00				0.01				0.01			
	stand. Reg.coeff.	-0.23				-0.02				-0.10				0.05				0.14				0.13			
	p-value (two-sided)	(1.6)				(85.6)				(32.3)				(62.3)				(12.7)				(22.7)			
REC_OPT	Reg.coefficient		0.14		0.11		0.21		0.21		0.01		0.01		0.01		0.01		0.10		0.11		0.12		0.13
	stand. Reg.coeff.		0.29		0.23		0.30		0.30		0.22		0.20		0.25		0.27		0.25		0.25		0.32		0.35
	p-value (two-sided)		(0.1)		(1.0)		(0.2)		(0.2)		(3.2)		(6.5)		(1.1)		(1.0)		(0.6)		(1.2)		(0.2)		(0.2)
GCGC_REC w/o REC_OPT	Reg.coefficient			-0.03	-0.02			0.00	-0.01			0.00	0.00			0.00	0.00			0.01	0.00			0.01	-0.01
	stand. Reg.coeff.			-0.28	-0.22			-0.02	-0.04			-0.13	-0.06			-0.02	0.06			0.10	-0.01			0.06	-0.07
	p-value (two-sided)			(0.2)	(1.7)			(87.3)	(71.4)			(23.1)	(60.1)			(85.3)	(59.0)			(29.2)	(95.0)			(55.3)	(52.4)
lnSIZE	Reg.coefficient	-0.14	-0.12	-0.14	-0.12	-0.16	-0.15	-0.16	-0.15																
	stand. Reg.coeff.	-0.81	-0.68	-0.80	-0.71	-0.52	-0.50	-0.52	-0.50																
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)																
BLOCK	Reg.coefficient	0.23	0.27	0.22	0.22	0.47	0.58	0.47	0.56																
	stand. Reg.coeff.	0.18	0.21	0.17	0.17	0.21	0.26	0.21	0.25																
	p-value (two-sided)	(4.9)	(1.7)	(5.7)	(4.3)	(3.6)	(0.8)	(3.7)	(1.0)																
VOL	Reg.coefficient									0.01	0.01	0.01	0.01	-0.03	-0.03	-0.03	-0.03								
	stand. Reg.coeff.									0.10	0.15	0.10	0.13	-0.07	-0.09	-0.08	-0.08								
	p-value (two-sided)									(34.0)	(14.7)	(35.0)	(20.8)	(46.9)	(36.9)	(40.8)	(42.3)								
BETA	Reg.coefficient																	-0.34	-0.36	-0.33	-0.36	-0.11	-0.13	-0.10	-0.12
	stand. Reg.coeff.																	-0.48	-0.50	-0.47	-0.50	-0.17	-0.20	-0.16	-0.19
	p-value (two-sided)																	(0.0)	(0.0)	(0.0)	(0.0)	(22.4)	(13.7)	(25.7)	(15.0)
GROWTH	Reg.coefficient									0.04	0.03	0.04	0.03	0.12	0.11	0.11	0.11	0.49	0.47	0.48	0.46	0.39	0.36	0.38	0.34
	stand. Reg.coeff.									0.28	0.26	0.28	0.25	0.35	0.32	0.34	0.32	0.27	0.26	0.26	0.26	0.22	0.21	0.22	0.20
	p-value (two-sided)									(0.7)	(1.3)	(0.8)	(1.6)	(0.1)	(0.2)	(0.1)	(0.2)	(0.4)	(0.4)	(0.5)	(0.5)	(3.0)	(3.5)	(3.5)	(4.5)
MDAX	Reg.coefficient	-0.27	-0.13	-0.26	-0.19	-0.26	-0.21	-0.25	-0.22													0.10	0.12	0.09	0.11
	stand. Reg.coeff.	-0.40	-0.20	-0.39	-0.29	-0.22	-0.18	-0.22	-0.19													0.21	0.24	0.19	0.23
	p-value (two-sided)	(0.3)	(11.8)	(0.3)	(2.8)	(12.6)	(18.3)	(12.6)	(17.0)													(13.5)	(7.0)	(17.9)	(9.3)
TECDAX	Reg.coefficient	-0.65	-0.52	-0.66	-0.59	-0.61	-0.66	-0.61	-0.67													0.05	0.06	0.04	0.05
	stand. Reg.coeff.	-0.81	-0.64	-0.82	-0.73	-0.45	-0.49	-0.45	-0.49													0.09	0.10	0.06	0.09
	p-value (two-sided)	(0.0)	(0.0)	(0.0)	(0.0)	(0.8)	(0.2)	(0.7)	(0.2)													(49.1)	(36.4)	(61.7)	(47.3)
Adj. R^2		34.5	38.0	37.3	41.3	13.4	21.7	13.4	21.0	8.2	12.0	8.7	11.3	9.5	15.8	9.3	15.1	26.3	30.4	25.3	29.7	7.8	16.3	6.7	15.7
p-value of F in %		0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	1.5	0.3	1.2	0.6	0.8	0.0	0.9	0.1	0.0	0.0	0.0	0.0	3.3	0.1	5.1	0.2
n		93	93	93	93	98	98	98	98	91	91	91	91	91	91	91	91	93	93	93	93	93	93	93	93
Exclusions		7	7	7	7	2	2	2	2	9	9	9	9	8	8	8	8	6	6	6	6	6	6	6	6

Notes: This table displays the results of four regressions for each performance measure:

performance measure = GCGC_REC + performance-measure-specific control variables

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

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

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

p-values better than 10% are shaded. 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_OPT(lnMTB_ia)**: - REC2.7 + REC3.14 – REC3.16 + REC4.42; **REC_OPT(ROA_ia)**: - REC4.39; **REC_OPT(ROE_ia)**: - REC2.7 – REC4.39 + REC4.42; **REC_OPT(SR)**: REC3.14 + REC3.21; **REC_OPT(SR_ia)**: REC3.14 + REC3.21.

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