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Is the German Corporate Governance Code futile for investors' assessments? – Family firms' code compliance and implications for company valuation

Abstract

The analysis deals with the influence of ownership characteristics on companies' compliance with the German Corporate Governance Code. It is distinguished between family and non-family firms. The sample consists of companies listed in the stock price segment German Prime Standard in 2004, 2007, and 2010, which allows an analysis of code compliance over time. The results of pooled regression models show that family firms have significantly lower compliance compared to non-family firms. Recommendations for the supervisory board and timely reporting and auditing issues are particularly critical. More precise, the definition of age limits and the publication of individual compensation indicate low compliance rates. In addition to family influence, company size and leverage affect code compliance. However, investors do not seem to penalize low compliance, since the level of code compliance has no significant influence on company valuation, as measured by Tobin's Q. This effect holds for family firms as well as for non-family firms.

Keywords: corporate governance, corporate governance code, family firm, compliance, company performance, Prime Standard, Tobin's Q.

JEL Classification: G34, M14, M41.

Introduction

Due to financial scandals and the lack of trust in companies' financial reporting, many countries have introduced instructions for "good" corporate governance in recent years. The objective of these regulations is to achieve higher transparency for investors (Cromme, 2005; Mallin, 2007; Sheridan et al., 2006; Talauciar & Werder, 2008). Germany introduced the German Corporate Governance Code (GCGC) in 2002 by the permanent commission installed by the government (Nietsch, 2005; Werder et al., 2005). It is anchored in the German Stock Corporation Law (§161 Aktiengesetz) and is checked yearly for necessary adaptations.

The main objective of the code is to increase the attractiveness of German companies for domestic and foreign investors (Regierungskommission Deutscher Corporate Governance Kodex, 2002). Compliance with the code is not legally binding, but its so-called "comply or explain" principle encourages companies to adhere voluntarily to the recommendations (Arcot et al., 2010; Cromme, 2005; Nowak et al., 2005; Ringleb et al., 2005). This principle means that companies have to publish a declaration of conformity about their compliance so that investors can potentially penalize non-compliance (Arcot et al., 2010; Bassen, 2002).

Several international studies, using mainly U.S. samples, note the relevance of good corporate governance in capital markets. Most find a positive relation between measures of good corporate

governance and company performance (Ammann et al., 2011; Bebchuk & Cohen, 2005; Beiner et al., 2006; Durnev & Kim, 2005; Gompers et al., 2003), some find a weak relation (Brown & Caylor, 2006), and some find no (Weir & Laing, 2000), or a negative relation (Bassen et al., 2006).

Studies suggest that ownership structure also influences code compliance, which in turn may affect firm value. In particular, family firms differ substantially from non-family firms with regard to corporate governance structure (Bartholomeusz & Tanewski, 2006). Listed family firms play an important role in the German capital market and account for 44.6% of the companies listed in the CDAX (Achleitner et al., 2009). They are characterized by special governance structures that differ from those of privately held family firms, on the one hand, and from those of listed companies, which are widely held, on the other hand (Combs, 2008). The GCGC regulations target mainly the latter, which leads to the question of the extent of differences in code compliance between listed family and non-family firms.

Research has neglected thus far to analyze the multivariate effects of family influence on compliance with corporate governance codes and the relevance of compliance to firm performance. This study contributes to closing this research gap by analyzing whether the differences in governance structure between family and non-family firms affect code compliance. It addresses this issue with an empirical analysis of the compliance of 796 observations of family firms and non-family firms listed in the Prime Standard to the GCGC. This is

the first study to consider an extensive period of code compliance by considering the years 2004, 2007, and 2010. It is evaluated in a further step whether family firm compliance with the GCGC determines Tobin's Q and contributes to the ongoing debate about the relevance of compliance with governance codes to firm value with evidence from a dual board structure system.

The results show that the rates of compliance to the GCGC differ significantly between family and non-family firms. Regression analysis reveals that the lower compliance of family firms to the code is driven by both ownership and management participation and is particularly obvious in highly leveraged companies. This finding leads to the conclusion that the lower disclosure by family firms leads to the expropriation of minority shareholders. The analyses of the performance relevance of code compliance reveal that a lower compliance rate is not accompanied by decreasing Tobin's Q indicating the need to adapt the GCGC for investors' needs. As the main intention of the code was to attract domestic and foreign investments, this aspect is of high relevance.

The study is structured as follows. Section 1 reviews the literature on compliance and the performance relevance of corporate governance, taking family influence into account. Section 2 describes the dataset and presents the empirical results for family and non-family firms, respectively. It then tests the robustness of the results and discusses certain limitations. Section 3 presents the implications for the code's further development and future avenues for research.

1. Literature and hypotheses

1.1. Compliance with the GCGC. The GCGC consists of a preamble (Section 1) and addresses shareholder rights and duties (Section 2); collaboration between the board of directors and the supervisory board (Section 3); the tasks, responsibilities, and compensation of the board of directors (Section 4); the responsibilities of the supervisory board (Section 5); information disclosure (Section 6); and accounting and auditing regulations (Section 7).

The code consists of three different types of regulations. The first are directives, which are legally binding and therefore not regarded in detail in this study. The second type of GCGC regulation consists of recommendations. They are characterized as being "shall" regulations. Companies must publish a declaration of conformity yearly in which they explain if they deviate from certain recommendations (the principle of comply or explain). This allows

companies flexibility with the code according to their needs (Nietsch, 2005). As a third type of regulation, the code includes suggestions that are characterized by the terms *should* and *can*. Companies do not have to give reasons for deviations from these suggestions so that a consistent assessment of which suggestions they fulfill is unfortunately impossible (Bassen et al., 2006).

The GCGC includes regulations that the Government Commission considers rules for good and responsible management that are valued by investors. High compliance with the code is consequently seen to be a sign of good corporate governance. However, good corporate governance is only concordant with a high compliance rate of the code if several conditions are fulfilled. First, the code's regulations must coincide with investor perceptions of good corporate governance. Since the Governance Commission is an assembly of directors, scientists, employee representatives, as well as small shareholders, it can be assumed that investors' main interests are covered. Second, investors must have the opportunity to learn about companies' code compliance (Bassen et al., 2006; Nowak et al., 2005). This condition can be assumed to be met because companies have to publish declarations of conformity (Arcot et al., 2010). Third, companies have to abide by the regulations they indicate as being fulfilled in practice. It is almost impossible for general investors to evaluate this aspect. In addition, it is questionable whether investors really penalize companies with low compliance rates. This aspect is further arguable, since the GCGC contains a variety of regulations that may not be relevant for capital markets (Nowak et al., 2005). Hence, this study intends to determine whether the GCGC is enforced by investor reactions.

Studies investigate two main aspects in the context of corporate governance: compliance and whether it affects company performance. Since a few years the Berlin Center of Corporate Governance has been studying general code compliance of German companies by surveys (Werder & Talaulicar, 2007; Werder & Talaulicar, 2009). In a survey of 408 German listed companies in 2003, Werder et al. (2005) find that company size plays a decisive role in code compliance. The recommendations for directors and officers insurance, the disclosure of the compensation of board members, the composition of the supervisory board and its duty to install committees, and the publication of company statements are identified as neuralgic, i.e. they are followed by less than 90% of companies.

The following two studies deal with family firms' compliance of governance standards. Using a

sample of 132 Spanish listed companies, Navarro & Ansón (2009) find that the periods of office of family firm CEOs are longer than for non-family firms and that family firms have fewer committees. Zülch et al. (2011) analyze 111 declarations of conformity of family firms listed in the DAX, the GEX, and the DAX plus family in 2009. They find that family firms' code compliance is substantially lower than that of non-family firms. However, their study is purely descriptive and lacks a multivariate analysis of several influential factors of code compliance.

Agency theory predicts that family members in public listed companies can use their substantial influence to control company governance issues and the disclosure thereof (Anderson & Reeb, 2004; DeAngelo & DeAngelo, 2000). The optimal effort that managers and owners put into company corporate governance is determined by the balance of the costs and benefits of such effort (Anderson et al., 2003). Under the assumption that family firms act value maximizing, it is ex ante unclear whether family firms have higher or lower code compliance compared to non-family firms. According to the Type 1 agency problem, ownership and management are more entangled in family firms, so that it is easier for owners to enforce code compliance. Family member wealth is typically largely concentrated in the family firm (Achleitner et al., 2010). Therefore, the family may have an interest in high code compliance, since they fear a share price decline induced by other shareholders due to low code compliance. Thus, it is hypothesized:

H1a: The rate of family firm compliance with GCGC recommendations is higher than that of non-family firms.

On the other hand, the Type 2 agency problem, which explains the large-small shareholder conflict prevalent in family firms, should result in the inferior code compliance of family firms (Demsetz, 1983; Gilson & Gordon, 2003). Family members with deep insight into a public company may have no interest in the disclosure of information demanded by the code and can enforce non-disclosure by their dominant control (Chen et al., 2007; Karamanou & Vafeas, 2005; Pieper et al., 2008). Therefore, the point where the cost of additional code compliance outweighs the benefits may be lower for family firms than for non-family firms.

In addition, some GCGC recommendations may not be in line with common practices in family firms such as the disclosure of compensation or sensitive information, or the succession in boards for family members above a certain age (Chen et al., 2007; Hutton et al., 2003; PricewaterhouseCoopers, 2006; Witt, 2008). Hence, it is put forth the following hypothesis:

H1b: The rate of family firm compliance with GCGC recommendations is lower than that of non-family firms.

1.2. Influence of code compliance rates on firm value. Since the corporate governance code requires an increase in obligatory as well as voluntary disclosure, this can reduce agency costs (Hart, 1995; Shleifer & Vishny, 1997; Tirole, 2001). Additionally, the corporate governance code can lead to adaptations of company governance structures resulting in reduced agency costs (Amihud & Mendelson, 1986; Botosan, 1997; Diamond & Verrecchia, 1991; Hail, 2002; Sengupta, 1998), which entails a twofold effect.

First, if investors value higher disclosure and adherence to specific governance structures, the capital market's valuation of companies with good code compliance will increase. The second effect is not as obvious. Since the abundant supply of information from good corporate governance leads to lower costs for monitoring and auditing, the costs of capital are reduced leading to an increase in companies' operating performance (Ammann et al., 2011; Drobetz et al., 2004; Grossman & Hart, 1983; Jensen & Meckling, 1976; Larcker et al., 2007; Ross, 1973; Shleifer & Vishny, 1997; see Figure 1).

On the one hand, higher operating performance due to a reduction in costs of capital involves an increase in firm value. On the other hand, if investors value good code compliance, high code compliance may also increase firm valuation in the capital markets (Arcot et al., 2010). But one must take into consideration that adherence to the corporate governance code regulations creates, among other things, high administrative costs that could have been invested elsewhere in the company (Bruno & Claessens, 2010; Chhaochharia & Grinstein, 2007; Chhaochharia & Laeven, 2009). However, one can assume that the positive effects prevail so that the correlation between compliance with governance codes and firm value should be positive.

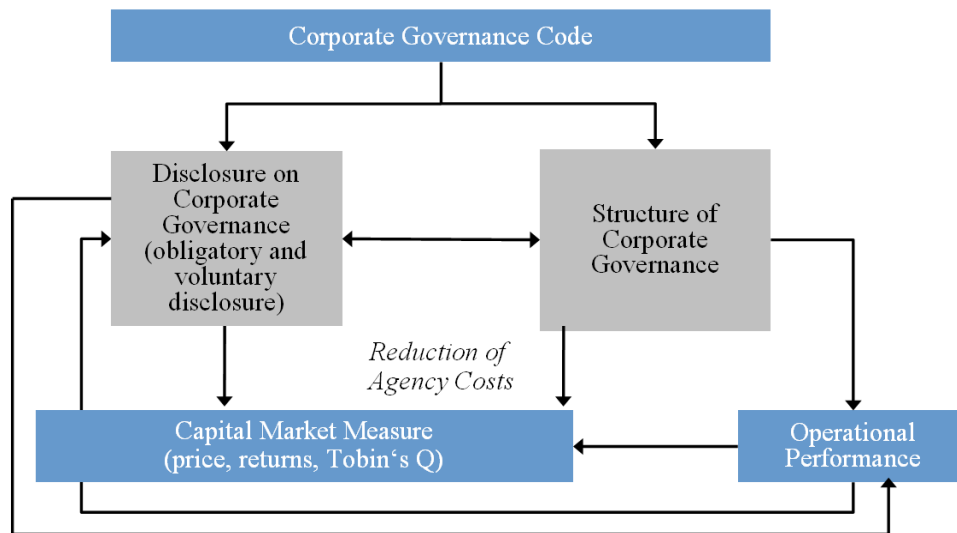


Fig. 1. Corporate governance codes and the reduction of agency costs

A large number of national and international studies deal with the issue of determining whether a relation exists between good corporate governance and various performance measures. Table 1 presents the results of the most relevant analyses for this study, incorporating different regions and measures of corporate governance.

Concerning family firms, it is ex ante unclear whether family influence and its interaction with good corporate governance affects capital market value. The interrelation is of special interest since

the performance of family firms in capital markets is at least as good or better than that of non-family firms (Andres, 2008; Astrachan & Zellweger, 2008; Miller et al., 2007; Villalonga & Amit, 2006). In a study on about 120 companies listed in the Swiss Stock Exchange in 2003, Beiner et al. (2006) find no influence of ownership structure in the context of corporate governance on firm value. Some studies document, however, that the presence of large shareholders entails lower compliance with corporate governance criteria (Ammann et al., 2011; Chhaochharia & Laeven, 2009).

Table 1. Overview of selected studies on the context of corporate governance compliance and performance

Country	Authors	CG measure	Performance relevance	
USA	Gompers, Ishii and Metrick (2003)	Own variables (Comparison of portfolio)	Higher performance with good corporate governance	+
USA	Bebchuk and Cohen (2005)	CG measured as variable "entrenched boards"	Negative effect of entrenched boards on firm value	+
USA	Brown and Caylor (2006)	Own index	Small performance effect on Tobin's Q	+
USA	Bebchuk, Cohen and Ferrell (2004)	Own CG index according to restricted shareholder rights and takeover provisions	Negative influence of the created "entrenchment index" on Tobin's Q	+
Int.	Durnev and Kim (2005)	Credit Lyonnais Securities Asia Index / S&P data	Positive influence of CG on firm value	+
Int.	Ammann, Oesch and Schmid (2011)	Own CG index	Strong positive influence of good CG on firm value	+
EU	Bauer, Guenster and Otten (2004)	CG rating of consultant firm "Deminor"	Positive influence of CG rating on Tobin's Q in Europe, but not in the UK	+
UK	Weir and Laing (2000)	UK – Cadbury Report	No significant performance effect	0
CH	Beiner, Drobetz, Schmid and Zimmermann (2006)	Own CG index built of 38 attributes	Positive relationship between good CG and firm value	+
GER	Drobetz, Schillhofer and Zimmermann (2004)	GCGC rating	Positive influence of CG rating on firm value	+
GER	Nowak, Rott and Mahr (2005)	GCGC rating	No significant share price reactions analyzed by event studies	0
GER	Goncharov, Werner and Zimmermann (2006)	GCGC rating	Positive effect of code compliance on company value	+
GER	Bassen et al. (2006)	GCGC based portfolio comparison	No significant effect of good CG on Tobin's Q	0

Bartholomeusz & Tanewski (2006) find that Australian family firms' governance structures entail deterioration of the company's Tobin's Q

compared to non-family firms. No further studies seem to deal specifically with family influence on compliance with corporate governance codes in

relation to firm value, especially compliance with country-specific codes. This study contributes to closing this research gap by considering the extent to which GCGC compliance by family firms affects Tobin's Q. A particularly relevant aspect in the German context is that due to the dual board structure prevalent in listed companies, investors may rely on the supervisory board's role in controlling the company and less on compliance with the GCGC. However, family members may exert influence on management as well as the supervisory board such that investors demand higher code compliance, which leads to the following hypothesis.

H2: The relation between GCGC compliance rates and firm value differs between family firms and non-family firms.

2. Empirical analysis

2.1. Database and variables. To analyze GCGC compliance and differences in its performance relevance between family firms and non-family firms, all firms listed in the Prime Standard of the German stock exchange¹ in the years 2004, 2007, and 2010 are inspected. To guarantee better comparability between companies, financial companies were excluded. The database comprises declarations of conformity available on companies' homepages or by contacting them and whose ownership structure could be determined. If firms delisted, they had to be excluded from the sample and newly listed firms for which the data were available were added, for a final sample of 796 observations. The 2004 sample includes 230 companies, the 2007 sample 299 companies, and the 2010 sample 267 companies. The ownership structure and board composition were determined by the Hoppenstedt *Aktienführer*, the Bureau van Dijk's *Amadeus*, the Commerzbank's *Wergehörtzuwem* database, the *Director's Dealings* database of the Bundesanstalt für Finanzdienstleistungsaufsicht, and Internet searches. Information on founders was identified by Hoover's Online Profile, company archives, press releases, and Internet searches. Accounting and capital markets data were collected by the Thomson One Banker Worldscope and Datastream databases.

Following several closely related studies (Anderson & Reeb, 2003; Andres, 2008; Bertrand et al., 2004; Miller et al., 2007), the founding family definition was chosen to identify family firms. This definition classifies a family firm according to three criteria – ownership, control, and management (Achleitner et al., 2009; Villalonga & Amit, 2006). Accordingly, a

company is coded as one for the dichotomous variable "Dummy Family" if the founder or members of the founding family own at least 25%² and/or at least one family member is a member of the board of directors or supervisory board³. Based on these criteria, 129 of 230 companies were identified as family firms in 2004, 147 of 299 in 2007, and 100 of 267 in 2010. In addition, family influence is measured by its impact of ownership and management participation. The variable "Family Ownership" signifies the proportion of shares held by the family. The dummy variable "Family Managed" is coded as one if a family member is in the position of a director. The variable "Ownership Directors FF" represents the cumulative shares in the hands of family members who are directors, whereas "Ownership Directors NFF" represents the cumulative shares of directors that are not family members.

To analyze code compliance, the published corporate governance reports and declarations of conformity were evaluated. The year 2004 was chosen as the first year to be analyzed because reliable data were then available for the first time after an adaptation period since the code's introduction in 2002 (Bassen et al., 2006; Werder et al., 2003, 2004). The time lags were chosen because both code compliance and explanatory factors such as ownership structure do not vary much within one year. Further, while the GCGC is amended with new recommendations each year, general acceptance of the new regulations is often obvious only after some years.

A pooled regression model for an unbalanced panel is applied since not all companies are included in the dataset each year. Pearson's correlation coefficients and variance inflation factors (VIF) do not indicate multicollinearity. If ownership changes and a family firm becomes a non-family firm, the dummy variable "Dummy Family" changes from one to zero in the respective year. Single subsections of the code can contain more than one recommendation. A company *i*'s overall compliance rate is calculated as follows:

$$\text{Overall compliance rate}_i = \frac{\text{Recommendations followed}_i}{\text{All recommendations}} \quad (1)$$

Further, the compliance rate of neuralgic recommendations is determined (Bassen et al., 2006). This

² The threshold level of 25% is considered because of the so-called blocking minority rule. According to German stock corporation law, important decisions at annual stockholders meetings must be made with 75% of the votes, such as capital increases, changes in the bylaws, or recalling a member of the supervisory board. A shareholder owning 25% of voting rights can block these decisions.

³ All persons who are family members by name, blood, or marriage belong to the founding family (Flören, 2002, p. 28; Klein, 2004, p. 11).

¹ The data are from the Deutsche Börse.

so-called “Neuro-Index” is an alternative and more specific measure of code compliance. It is composed of recommendations that were identified as neuralgic in a year, that is, fewer than 90% of the companies fulfill them and is calculated for company i as follows:

$$Neuro - Index_i = \frac{Neuralgic\ recommendations\ followed_i}{Neuralgic\ recommendations} \quad (2)$$

Consequently, this variable reflects the fulfillment of recommendations that are considered very critical. It serves better to assess the fulfillment of the most critical recommendations of the code than the total compliance rate and avoids substitution effects that can occur when considering compliance to all the recommendations together. The compliance rates are calculated separately for 2004, 2007, and 2010. This approach allows the consideration of annual amendments to the GCGC. The overall compliance rate and the compliance rate of neuralgic recommendations serve as dependent variables.

Control variables derived from the literature are added to analyze the effects on code compliance. Appendix (Table 1A) gives an overview of the expected relation between the different control variables and governance ratings derived from other studies. Since the ownership variables and leverage can affect family and non-family firms differently, the dichotomous variables “Dummy Family” and “Family Managed” are interacted with “Insider Ownership”, “Institutional Investors”, and “Leverage”. Dummy variables control for years and industries (Bartholomeusz & Tanewski, 2006; Drobetz et al., 2004). Companies are classified according to the one-digit Industry Classification Benchmark (ICB) used in Thomson Financial Datastream. The natural logarithm of several variables is used to ensure a normal distribution of error terms (e.g., “Total Assets”, “Age since IPO”). To allow for intrafirm correlation, standard errors are clustered at the firm level.

The first specification of the first regression is estimated according to the following equation:

$$DepVar_i = \beta_0 + \beta_1 Dummy\ Family + \beta_2 Insider\ Ownership + \beta_3 Institutional\ Investors + \beta_4 Freefloat + \beta_5 Total\ Assets + \beta_7 Age\ since\ IPO + \beta_8 Growth +$$

$$+ \beta_9 Return\ on\ Assets + \beta_{10} Leverage + \beta_{11} Heir\ CEO + \beta_{12} Big4 + \beta_{13} Year_i + \beta_{14} Industry + \varepsilon_i, \quad (3)$$

where $DepVar$ represents the overall compliance rate or the “Neuro-Index” respectively.

In a second step, the relation between code compliance and firm value is analyzed. Tobin’s Q is taken as a dependent variable, where Tobin’s Q is total assets minus the book value of equity plus the market value of equity, divided by total assets (Ammann et al., 2011). This analysis controls for certain effects that may stem from other variables that are chosen based on the findings of previous studies investigating the relation of corporate governance and Tobin’s Q as a performance measure (see Appendix Table 2A for the predicted relation), including again year and industry fixed effects. The regression equation for the first specification takes the form

$$Tobin's\ Q_i = \beta_0 + \beta_1 Compliance\ rate + \beta_2 Dummy\ FU * Compliance\ rate + \beta_3 Insider\ Ownership + \beta_4 Institutional\ Investors + \beta_5 Freefloat + \beta_6 Total\ Assets + \beta_7 Age\ since\ IPO + \beta_8 Growth + \beta_9 Return\ on\ Assets + \beta_{10} Leverage + \beta_{11} Fixed\ Assets + \beta_{12} Liquidity + \beta_{13} CAPEX + \beta_{14} Year_i + \beta_{15} Industry_i + \varepsilon_i. \quad (4)$$

2.2. Descriptive findings. In this section code compliance is reviewed. The assumption that code compliance rises over time cannot be supported. This finding may be due to the fact that new recommendations are constantly added to the code that usually have lower compliance. Table 2 shows that the average compliance rate of family firms is significantly below that of non-family firms in all three years.

For a deeper analysis of the differences in code compliance between the two types of companies, the neuralgic recommendations are evaluated first for all companies together and then separately for family and non-family firms. A total of 20 recommendations were identified as neuralgic for all companies in 2004, 20 in 2007, and 26 in 2010. Table 3 shows the code compliance rates for the recommendations identified as neuralgic in all three years of the sample. Comparing the rates of compliance with neuralgic recommendations for family and non-family firms shows that the rates for family firms are almost always lower than those for non-family firms.

Table 2. Overall index and Neuro-Index compliance rates for family and non-family firms

Variable	Year	FF		NFF		Sign. of diff.	
		Mean	Median	Mean	Median	Mean	Median
Compliance rate overall index	2004	90.48%	92%	93.6%	94%	***	***
Compliance rate overall index	2007	88.98%	91%	92.62%	94%	***	***
Compliance rate overall index	2010	87.19%	87%	91.43%	93%	***	***

Table 2 (cont.). Overall index and Neuro-Index compliance rates for family and non-family firms

Variable	Year	FF		NFF		Sign. of diff.	
		Mean	Median	Mean	Median	Mean	Median
Compliance rate Neuro-Index	2004	90.11%	91%	93.47%	94%	***	***
Compliance rate Neuro-Index	2007	86.9%	89%	90.5%	91%	***	***
Compliance rate Neuro-Index	2010	86.23%	86%	90.4%	92%	***	***
Observations	2004	129		101			
	2007	140		145			
	2010	100		167			

Notes: *Compliance rate overall index* denotes the share of the GCGC’s recommendations that are fulfilled; *Compliance rate Neuro-Index* is composed of the share of recommendations of one year that are not fulfilled (see section 2.1). *FF* indicates family firms, *NFF* – non-family firms. In order to compare means of compliance rates in the single years, a *t*-test for heterogeneous variances is used. In order to compare medians of compliance rates of the single years, a two-sided Wilcoxon rank sum test is used. ***, **, * indicate significance levels of differences between FF and NFF at the 1%, 5%, and 10% levels, respectively.

Table 3. Rate of compliance with neuralgic subsections in 2004, 2007, and 2010

Content	Expected neuralgic subsection	Compliance rates		
		2004	2007	2010
Recommendation on the personal liability of members of the boards	Subsection 3.8	T: 48.1% FF: 46.9% NFF: 49.2%	T: 43.1% FF: 42.5% NFF: 43.9%	T: 52.1% FF: 45.7% NFF: 57.0%
Recommendation on the performance relevance of compensation and the individual disclosure of fixed and variable compensation of members of the board of directors	Subsection 4.2.3, paragraph 2, sentence 2 (2004), subsection 4.2.3, paragraph 3, sentence 2 (2007, 2010)	T: 86.1% FF: 82.3% NFF: 89.8%	T: 85.4% FF: 87.5% NFF: 84.8%	T: 88.3% FF: 85.7% NFF: 90.9%
Definition of age limits for members of the board of directors	Subsection 5.1.2, paragraph 2, sentence 3	T: 77.9% FF: 75.2% NFF: 80.5%	T: 71.9% FF: 66.7% NFF: 75.0%	T: 70.4% FF: 59.0% NFF: 76.5%
Recommendations on the individual disclosure of fixed and variable compensation of members of the supervisory board	Subsection 5.4.5, paragraph 1, sentence 3, 2. half sentence (2004), subsection 5.4.7, paragraph 1, sentence 3 (2007), subsection 5.4.6, paragraph 1, sentence 3, 2. half sentence (2010)	T: 81.0% FF: 77.0% NFF: 84.8%	T: 83.3% FF: 83.3% NFF: 83.0%	T: 83.2% FF: 79.1% NFF: 85.5%
	Subsection 5.4.5, paragraph 2, sentence 1 (2004), subsection 5.4.7, paragraph 2, sentence 1 (2007), subsection 5.4.6, paragraph 2, sentence 1 (2010)	T: 60.6% FF: 51.3% NFF: 69.5%	T: 63.2% FF: 59.2% NFF: 65.9%	T: 64.6% FF: 61.0% NFF: 66.1%
	Subsection 5.4.5, paragraph 3, sentence 1 (2004), subsection 5.4.7, paragraph 3, sentence 1 (2007), subsection 5.4.6, paragraph 3, sentence 1 (2010)	T: 57.1% FF: 55.8% NFF: 58.5%	T: 77.1% FF: 77.5% NFF: 77.4%	T: 82.1% FF: 81.0% NFF: 83.0%
Definition of age limits for members of the supervisory board	Subsection 5.4.1, sentence 2 (2004, 2007), subsection 5.4.1, sentence 2, 2. half sentence (2010)	T: 57.6% FF: 56.6% NFF: 58.5%	T: 67.4% FF: 65.0% NFF: 68.3%	T: 49.6% FF: 41.0% NFF: 55.8%
Recommendation on the installation of committees of the supervisory board and on the installation of an audit committee	Subsection 5.3.1	T: 71.9% FF: 62.0% NFF: 81.4%	T: 67.7% FF: 55.0% NFF: 76.2%	T: 68.6% FF: 52.4% NFF: 78.2%
	Subsection 5.3.2, sentence 1	T: 64.5% FF: 54.9% NFF: 73.7%	T: 61.5% FF: 46.7% NFF: 71.3%	T: 63.5% FF: 47.6% NFF: 72.7%
Recommendations on the timely disclosure of company reports	Subsection 7.1.2, sentence 2, 1. half sentence (2004), subsection 7.1.2, sentence 3, 1. half sentence (2007), subsection 7.1.2, sentence 4, 1. half sentence (2010)	T: 76.2% FF: 72.6% NFF: 79.7%	T: 74.3% FF: 68.3% NFF: 79.3%	T: 79.6% FF: 71.4% NFF: 84.5%
	Subsection 7.1.2, sentence 2, 2. half sentence (2004), subsection 7.1.2, sentence 3, 2. half sentence (2007), subsection 7.1.2, sentence 4, 2. half sentence (2010)	T: 77.5% FF: 70.8% NFF: 79.7%	T: 74.3% FF: 71.7% NFF: 76.8%	T: 79.9% FF: 74.3% NFF: 84.2%

2.3. Multivariate results. The results of multivariate analyses for influence on overall code compliance in Table 4 show that classification as a family firm according to the founding family definition (“Dummy Family”) has a strong negative effect on compliance with the total code (Model 1). Model 3 reflects the

results when family influence is measured by cumulative shares in the hands of the family (“Family Ownership”). The coefficient for this variable shows that it has a negative effect on code compliance. The effect is economically important, since a 10 percentage points higher share in the

hands of a family leads to a reduction in code compliance of 2.74 percentage points. This finding is supported by the results of Model 5, which shows that “Ownership directors FF” (shares held by family members on the board of directors) has a significantly negative effect on overall code compliance. However, the debt level of family firms seems to have a major influence in this context. In Model 2, where the interaction term of “Dummy Family” and the ownership variables as well as leverage is included, particularly family firms with high leverage show lower code compliance. Both

“Dummy Family” and “Leverage” become insignificant in this case. When a family’s ownership share as well as the dummy variable indicating family membership on the board of directors (“Family Managed”) interacted with the ownership variables and leverage are included (Model 4), the interaction terms of “Family Managed” and “Leverage” reveal a significantly negative effect on code compliance. Thus, mainly companies with high leverage and that are managed by a family member are reluctant to follow the code. These results indicate that H1b cannot be rejected.

Table 4. Multivariate analyses of the overall index for family firm compliance

Dependent variable: Overall index											
Independent variables	Expected sign	Model 1		Model 2		Model 3		Model 4		Model 5	
		Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF
Constant	?	0.840*** (0.0135)		0.836*** (0.0146)		0.839*** (0.0149)		0.843*** (0.0152)		0.840*** (0.0132)	
Dummy family	-	-0.0141** (0.00610)	1.44	-0.00640 (0.00879)	3.13						
Family ownership	-					-0.0290* (0.0155)	1.71	-0.0251 (0.0158)	1.99		
Family managed	-							0.00222 (0.00984)	3.34		
Ownership directors FF	-									-0.0447** (0.0189)	1.71
Ownership directors NFF	-									0.00278 (0.0225)	1.54
Dummy family * Insider ownership				0.00801 (0.0329)	1.89						
Dummy family * Institutional investors				0.0191 (0.0360)	1.91						
Dummy family * Leverage				-0.0542*** (0.0139)	2.77						
Family managed * Insider ownership								-0.0181 (0.0404)	1.65		
Family managed * Institutional investors								-0.0375 (0.0509)	1.71		
Family managed * Leverage								-0.0467*** (0.0125)	2.41		
Insider ownership	-	-0.00723 (0.0154)	1.22	-0.0111 (0.0175)	1.93	-0.00940 (0.0151)	1.28	-0.00920 (0.0157)	1.56	-0.0140 (0.0162)	1.40
Institutional investors	?	-0.00701 (0.0154)	1.28	-0.0133 (0.0151)	1.89	-0.0142 (0.0155)	1.52	-0.00845 (0.0147)	1.73	-0.0123 (0.0152)	1.35
Free float	+	0.0258** (0.0108)	1.23	0.0271** (0.0108)	1.25	0.0176 (0.0120)	1.52	0.0193 (0.0119)	1.54	0.0200* (0.0111)	1.32
Total assets (log)	+	0.0120*** (0.00136)	2.02	0.0117*** (0.00137)	2.03	0.0128*** (0.00133)	1.89	0.0118*** (0.00133)	2.04	0.0125*** (0.00135)	1.91
Age since IPO (log)	?	0.00113 (0.00323)	1.52	0.00210 (0.00317)	1.54	0.00108 (0.00336)	1.53	0.000751 (0.00326)	1.56	0.000607 (0.00327)	1.55
Growth	?	-0.00429 (0.00451)	1.06	-0.00347 (0.00395)	1.07	-0.00433 (0.00438)	1.07	-0.00332 (0.00430)	1.08	-0.00475 (0.00424)	1.07
Return on assets	?	-0.00969 (0.0153)	1.19	-0.0205 (0.0144)	1.27	-0.00898 (0.0154)	1.19	-0.0202 (0.0144)	1.30	-0.00942 (0.0149)	1.20
Leverage	-	-0.0240** (0.0106)	1.20	0.00179 (0.00946)	2.26	-0.0241** (0.0111)	1.20	-0.00689 (0.00817)	2.04	-0.0247** (0.0112)	1.20
Heir CEO	-	-0.0162 (0.0142)	1.08	-0.0153 (0.0140)	1.10	-0.0164 (0.0142)	1.09	-0.0126 (0.0146)	1.19	-0.0149 (0.0130)	1.09
Big 4	+	0.0169** (0.00659)	1.16	0.0149** (0.00654)	1.17	0.0161** (0.00664)	1.16	0.0158** (0.00670)	1.17	0.0159** (0.00681)	1.17

Table 4 (cont.). Multivariate analyses of the overall index for family firm compliance

Independent variables	Expected sign	Model 1		Model 2		Model 3		Model 4		Model 5	
		Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF
<i>Year dummies</i>			Yes		Yes		Yes		Yes		Yes
<i>Industry dummies</i>			Yes		Yes		Yes		Yes		Yes
Mean VIF			1.35		1.65		1.39		1.62		1.39
F-value			15.60		17.99		16.04		16.98		15.75
Significance F-test			0.000		0.000		0.000		0.000		0.000
Adj. R ²			0.295		0.303		0.293		0.305		0.296
N			654		654		654		644		654

Notes: *Overall index* denotes the share of the GCGC’s recommendations that are fulfilled (compliance rate), *Dummy family* is a binary variable that has a value of 1 if the founder and/or his family own more than 25% of shares or have a seat in the board of directors or the supervisory board of the company. *Family ownership* is the cumulated ownership share held by the founder and/or his family. *Family managed* is a dummy variable that takes the value of 1 if a family member has one or more seats in the board of directors and otherwise the value is 0. *Ownership directors FF* is the cumulated share that is held by directors that are family members, while *Ownership directors NFF* declares the shares held by directors who are not members of the founding family. *Institutional investors* is the cumulated share that is held by institutional investors such as funds, banks, insurance companies, or private equity firms. *Free float* is the percentage of shares owned by diverse shareholders. *Total assets (log)* is the natural logarithm of total assets; *Age since IPO (log)* is the natural logarithm of the difference between the year considered and the year of the company’s IPO; *Growth* corresponds to the increase of Sales compared to the preceding year; *Return on assets* corresponds to the operating income divided by the average of total assets; *Leverage* is defined as share of liabilities to total assets; *Heir CEO* is a dummy variable that has a value of 1 if the CEO is a heir of the founder; *Big 4* is a dichotomous variable that takes a value of 1 if the company is audited by a Big 4 company. Standard errors are clustered on firm-level. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

The results for compliance with the GCGC overall are confirmed if the Neuro-Index is used as a dependent variable (see Table 5).

In a next step, the relation between code compliance and company performance is considered in four different specifications. Model 1 includes the compliance rate for the overall code. Family influence is measured by the dichotomous variable “Dummy Family”. An interaction term between the dummy and code compliance tests whether family firm code compliance has a specific influence on performance in Model 2. Model 3 corresponds to Model 1 and Model 4 to Model 2, with the Neuro-Index replacing overall compliance.

The regressions with Tobin’s Q as a dependent variable show that code compliance is not relevant to

firm value (see Table 6). Model 1 shows that compliance with the overall index does not exert a significant effect on Tobin’s Q, although the coefficient has a negative sign. The different variables for ownership structure do not exert a significant effect on firm value either. This finding is true for the classification as family firm, as well as for “Insider Ownership”, the cumulative shares held by institutional investors, and “Freefloat”. When code compliance by family firms (“Dummy Family * Overall index”) is added to Model 2, no significant effect is found for the interaction effect. The results are consistent with those when the Neuro-Index is a dependent variable (Model 3). No effect can be found for either ownership structure or the interaction effect in Model 4, so H2 is not supported. Again, the VIFs do not indicate a problem of multicollinearity.

Table 5. Multivariate analyses on family firm compliance with the Neuro-Index

Dependent variable: Neuro-Index											
Independent variables	Expected sign	Model 1		Model 2		Model 3		Model 4		Model 5	
		Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF
Constant	?	0.840*** (0.0135)		0.836*** (0.0146)		0.839*** (0.0149)		0.843*** (0.0152)		0.840*** (0.0132)	
Dummy family	-	-0.0141** (0.00610)	1.44	-0.00640 (0.00879)	3.13						
Family ownership	-					-0.0290* (0.0155)	1.71	-0.0251 (0.0158)	1.99		
Family managed	-							0.00222 (0.00984)	3.34		
Ownership directors FF	-									0.0447** (0.0189)	1.71
Ownership directors NFF	-									0.00278 (0.0225)	1.54

Table 5 (cont.). Multivariate analyses on family firm compliance with the Neuro-Index

Independent variables	Expected sign	Model 1		Model 2		Model 3		Model 4		Model 5	
		Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF	Coeff. (Std. error)	VIF
Dummy family * Insider ownership				0.00801 (0.0329)	1.89						
Dummy family * Institutional investors				0.0191 (0.0360)	1.91						
Dummy family * Leverage				-0.0542*** (0.0139)	2.77						
Family managed * Insider ownership								-0.0181 (0.0404)	1.65		
Family managed * Institutional investors								-0.0375 (0.0509)	1.71		
Family managed * Leverage								-0.0467*** (0.0125)	2.41		
Insider ownership	-	-0.00723 (0.0154)	1.22	-0.0111 (0.0175)	1.93	-0.00940 (0.0151)	1.28	-0.00920 (0.0157)	1.56	-0.0140 (0.0162)	1.40
Institutional investors	?	-0.00701 (0.0154)	1.28	-0.0133 (0.0151)	1.89	-0.0142 (0.0155)	1.52	-0.00845 (0.0147)	1.73	-0.0123 (0.0152)	1.35
Free float	+	0.0258** (0.0108)	1.23	0.0271** (0.0108)	1.25	0.0176 (0.0120)	1.52	0.0193 (0.0119)	1.54	0.0200* (0.0111)	1.32
Total assets (log)	+	0.0120*** (0.00136)	2.02	0.0117*** (0.00137)	2.03	0.0128*** (0.00133)	1.89	0.0118*** (0.00133)	2.04	0.0125*** (0.00135)	1.91
Age since IPO (log)	?	0.00113 (0.00323)	1.52	0.00210 (0.00317)	1.54	0.00108 (0.00336)	1.53	0.000751 (0.00326)	1.56	0.000607 (0.00327)	1.55
Growth	?	-0.00429 (0.00451)	1.06	-0.00347 (0.00395)	1.07	-0.00433 (0.00438)	1.07	-0.00332 (0.00430)	1.08	-0.00475 (0.00424)	1.07
Return on assets	?	-0.00969 (0.0153)	1.19	-0.0205 (0.0144)	1.27	-0.00898 (0.0154)	1.19	-0.0202 (0.0144)	1.30	-0.00942 (0.0149)	1.20
Leverage	-	-0.0240** (0.0106)	1.20	0.00179 (0.00946)	2.26	-0.0241** (0.0111)	1.20	-0.00689 (0.00817)	2.04	-0.0247** (0.0112)	1.20
Heir CEO	-	-0.0162 (0.0142)	1.08	-0.0153 (0.0140)	1.10	-0.0164 (0.0142)	1.09	-0.0126 (0.0146)	1.19	-0.0149 (0.0130)	1.09
Big 4	+	0.0169** (0.00659)	1.16	0.0149** (0.00654)	1.17	0.0161** (0.00664)	1.16	0.0158** (0.00670)	1.17	0.0159 (0.00681)	1.17
Year dummies			Yes		Yes		Yes		Yes		Yes
Industry dummies			Yes		Yes		Yes		Yes		Yes
Mean VIF			1.35		1.65		1.39		1.62		1.39
F-value			16.26		20.11		16.79		20.53		16.60
Significance F-test			0.000		0.000		0.000		0.000		0.000
Adj. R ²			0.295		0.303		0.293		0.305		0.296
N			654		654		654		644		654

Notes: *Neuro-Index* is built of the share of neuralgic characteristics identified for a year that are not fulfilled (see section 2.1), *Dummy family* is a binary variable that has a value of 1 if the founder and/or his family own more than 25% of shares or have a seat in the board of directors or the supervisory board of the company. *Family ownership* is the cumulated ownership share held by the founder and/or his family. *Family managed* is a dummy variable that takes the value of 1 if a family member has one or more seats in the board of directors and otherwise the value is 0. *Ownership directors FF* is the cumulated share that is held by directors that are family members, while *Ownership directors NFF* declares the shares held by directors who are not members of the founding family. *Institutional investors* is the cumulated share that is held by institutional investors such as funds, banks, insurance companies, or private equity firms. *Free float* is the percentage of shares owned by diverse shareholders. *Total assets (log)* is the natural logarithm of total assets; *Age since IPO (log)* is the natural logarithm of the difference between the year considered and the year of the company's IPO; *Growth* corresponds to the increase of Sales compared to the preceeding year; *Return on assets* corresponds to the operating income divided by the average of total assets; *Leverage* is defined as share of liabilities to total assets; *Heir CEO* is a dummy variable that has a value of 1 if the CEO is a heir of the founder; *Big 4* is a dichotomous variable that takes a value of 1 if the company is audited by a Big 4 company. Standard errors are clustered on firm-level. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Multivariate analysis of the influence of code compliance on Tobin's Q

Dependent variable: Tobin's Q									
Independent variables	Expected sign	Model 1		Model 2		Model 3		Model 4	
		Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error
Constant	?	2.815***	(0.705)	3.071***	(1.061)	2.876***	(0.716)	3.204***	(1.090)
Overall index	+	-0.240	(0.825)	-0.541	(1.192)				
Neuro-Index	+					-0.323	(0.836)	-0.716	(1.234)
Dummy_Family	-	-0.00964	(0.100)	-0.501	(1.527)	-0.0112	(0.101)	-0.635	(1.543)
Dummy_Family * Overall-Index	-			0.542	(1.647)				
Dummy_Family * Neuro-Index	-							0.697	(1.686)
Insider ownership	+	-0.128	(0.199)	-0.137	(0.207)	-0.127	(0.199)	-0.135	(0.205)
Institutional investors	?	0.197	(0.238)	0.198	(0.239)	0.196	(0.238)	0.198	(0.238)
Free float	?	-0.0699	(0.163)	-0.0690	(0.163)	-0.0679	(0.164)	-0.0640	(0.165)
Total assets (log)	-	-0.0796	(0.0712)	-0.0747	(0.0685)	-0.0767	(0.0705)	-0.0701	(0.0678)
Age since IPO	-	-0.0264	(0.0496)	-0.0276	(0.0477)	-0.0265	(0.0495)	-0.0282	(0.0475)
Return on assets	?	0.439	(0.527)	0.444	(0.521)	0.438	(0.527)	0.445	(0.520)
Growth	?	0.928***	(0.118)	0.924***	(0.112)	0.928***	(0.117)	0.923***	(0.112)
Leverage	+	-1.545***	(0.240)	-1.548***	(0.241)	-1.548***	(0.240)	-1.553***	(0.242)
Fixed assets	-	0.199***	(0.0456)	0.201***	(0.0441)	0.199***	(0.0455)	0.202***	(0.0442)
Liquidity	+	2.217**	(0.885)	2.216**	(0.882)	2.211**	(0.884)	2.208**	(0.878)
CAPEX	+	0.398	(1.634)	0.476	(1.635)	0.387	(1.634)	0.485	(1.636)
Year dummies	?	Yes		Yes		Yes		Yes	
Industry dummies	?	Yes		Yes		Yes		Yes	
F-value		20.03		18.95		20.06		18.88	
Significance F-test		0.000		0.000		0.000		0.000	
Adj. R ²		0.297		0.296		0.297		0.296	
N		630		630		630		630	

Notes: *Tobin's Q* corresponds to total assets minus the book value of equity divided by total assets. *Overall index* denotes the share of the GCGC's recommendations that are fulfilled (compliance rate), the *Neuro-Index* is built of the share of neuralgic characteristics identified for a year that are not fulfilled (see Section 3.1). *Dummy family* is a binary variable that has a value of 1 if the founder and/or his family own more than 25% of shares or have a seat in the board of directors or the supervisory board of the company. *Insider ownership* denotes the cumulated share that is held by members of the board of directors or the supervisory board that do not belong to the founding family. *Institutional investors* is the cumulated share that is held by institutional investors such as funds, banks, insurance companies, or private equity firms. *Free float* is the percentage of shares owned by diverse shareholders. *Total assets (log)* is the natural logarithm of total assets; *Age since IPO (log)* is the natural logarithm of the difference between the year considered and the year of the company's IPO; *Growth* corresponds to the Increase of Sales compared to the preceding year; *Return on assets* corresponds to the operating income divided by the average of total assets; *Leverage* is defined as share of liabilities to total assets; *Fixed assets* is fixed assets scaled by total assets; *Liquidity* is cash and liquid assets scaled by total assets; *CAPEX* is the share of capital expenditure to total assets. Standard errors are clustered on firm-level. ***, **, * indicate significance levels of 1%, 5%, 10%, respectively.

2.4. Discussion. The descriptive results for compliance with the GCGC demonstrate that family firms deviate mostly from code regulations related to the personal rights of board members. The fact that the recommendations for the performance-based compensation of supervisory board members, the definition of age limits for board members, and the installation of committees are not fulfilled by many family firms underpins this notion. An explanation for this effect may be that family firms particularly want to protect the personal rights of family members and do not want to define age limits for officers because they want family members to serve on boards for a long time.

When overall code compliance and the Neuro-Index are considered in the multivariate analyses, it becomes obvious that family firms have signi-

ficantly lower compliance with the code, a finding that is robust for various measures of family influence. When "Dummy Family" and "Family Managed" are interacted with "Leverage" (Models 2 and 4, respectively), the term has a strong negative effect on code compliance. This finding is in line with other studies that find that companies with high leverage provide less information on corporate governance (Beiner et al., 2006; Cremers & Ferrell, 2009). A possible explanation may be that highly leveraged family firms put less emphasis on code compliance and concentrate instead on generating growth and repaying debt.

In all models, company size exerts a significantly positive effect on code compliance. This finding supports the assumption that code compliance is more easily realizable for large companies due to the lower

costs of alignment and compliance (Bassen et al., 2006; Beiner et al., 2006; Bruno & Claessens, 2010; Chhaochharia & Grinstein, 2007; Chhaochharia & Laeven, 2009). A further reason is that larger companies follow the code because they must obligatorily disclose information anyway that is also demanded by the corporate governance code. If companies have a high proportion of shares in freefloat, they seem to abide more to code regulations since their fulfillment may be valued by small shareholders (see Tables 4 and 5, Models 1 and 2). This is also true for family firms. A reason for the greater code compliance of firms audited by Big 4 companies may be that the Big 4 have greater competence in advising companies about the installation of structures considered important by the GCGC.

The regressions of code compliance on Tobin's Q do not reveal a significant effect. These results are not as surprising as they might seem at first instance, since Bassen et al. (2006) even find a negative effect of code compliance on Tobin's Q. The fact that no significant effect of code compliance on Tobin's Q can be detected for all companies or for family firms reveals that investors in German companies do not seem to penalize low code compliance.

2.5. Robustness tests and tests for endogeneity. Various studies point out that problems of endogeneity can constrain causal conclusions drawn from research on the correlation between corporate governance and capital market performance as factors can influence code compliance and capital market performance at the same time (Adams et al., 2009; Bruno & Claessens, 2010; Chhaochharia & Laeven, 2009). Furthermore, a problem with reverse causality can exist.

Endogeneity leads to violation of the assumption that the error terms in the regressions are not correlated, causing distorted estimators. Testing for endogeneity in the case of code compliance and Tobin's Q is not without difficulty as a good instrument for corporate governance in relation to its effect on Tobin's Q does not exist (Brown & Caylor, 2006; Bruno & Claessens, 2010; Durnev & Kim, 2005). However, a generalized method of moments (GMM) estimation with the so-called C-statistic, also known as the difference-in-Sargan statistic, can be applied to examine the endogeneity of corporate governance and firm valuation (Ammann et al., 2011; Chhaochharia & Laeven, 2009; Hayashi, 2000). The statistic indicates slight endogeneity concerning the overall index and Neuro-Index compliance rates. Dynamic models are estimated treating the compliance rates as pre-

determined variables and using the lagged values of the compliance rates and Tobin's Q as instruments for compliance and the Big 4 variable as further instrument (Ammann et al., 2011; Chhaochharia & Laeven, 2009).

The GMM regressions displayed in the Appendix in Table 3A show that the results are not materially different from the pooled regressions. However, the endogenous variables for the overall and Neuro-Index compliance rates indicate a positive effect on Tobin's Q. This finding suggests that Tobin's Q can be partly ascribed to the instrumented variable of compliance with the GCGC, which is not surprising, since other studies find high coefficients for corporate governance variables in endogeneity tests (Beiner et al., 2006; Black et al., 2006; Chhaochharia & Laeven, 2009; Durnev & Kim, 2005). Black et al. (2006) stress that the coefficients for the compliance rates measure first and foremost the effect of the instrumented part of the compliance rates on Tobin's Q. Since the instrumented compliance rates in the analyses are measured by lagged compliance and Tobin's Q, as well as the Big 4 dummy variable, the result is easily interpretable. However, the interpretation of the results should consider the possibility that the results are affected by endogeneity.

To determine the robustness of the results, analyses are also run on a balanced panel consisting of the companies included in all years in the sample, for a total of 453 firm-year observations¹. The results for code compliance and Tobin's Q as dependent variables remain materially unchanged. This finding assures that the analysis is not distorted by using an unbalanced panel. In addition, further firm value specifications are tested. Besides the main measure for Tobin's Q, the market-to-book ratio and Tobin's Q measured as the book value of assets plus the market value of equity minus the book value of equity minus deferred taxes are tested alternatively. Multivariate analyses of the effects of code compliance provide results that are consistent with the main results for the basic measure of Tobin's Q. These robustness tests lead to the conclusion that the results modeled in the main part of the results section are robust in their effects on Tobin's Q.

Conclusion

Analysis of compliance with the GCGC shows that mean code compliance is around 90% for all companies listed in the Prime Standard. Family firms' more restricted compliance is particularly true for the disclosure of information concerning board members' personal rights, such as the

¹ The results are available upon request from the author.

definition of age limits or individual compensation. This finding undermines the assumption that family firms are less willing to provide information demanded by the German code. Further, the results of investigating German code compliance over the long period between 2004 and 2010 do not support the assumptions that code compliance increases over time (Bassen et al., 2006). This is especially the case since code recommendations are tightened and new recommendations are added that are characterized by lower compliance rates after their introduction. Multivariate analyses confirm that family firms follow the GCGC significantly less than non-family firms concerning compliance with the overall code and with the Neuro-Index. This finding gives one reason to believe that the Type 2 agency problem prevails in family firms and the interests of small shareholders are disregarded. The results are valid for family influence measured by the ownership or management component.

These findings lead to important implications. They assure policy makers and advisors that family firms have their own needs concerning corporate governance that should be taken into account when formulating recommendations. The recommendations should emphasize that ownership structure be communicated in the declarations so that investors can better evaluate deviations from governance standards¹.

In addition, company size is identified as a major influence on compliance rates. This result leads to the conclusion that larger companies, on the one hand, concentrate on the provision of information to the public and, on the other hand, that costs of compliance are less relevant for them. The exact causation should be evaluated in further studies, since such insight can provide important suggestions for policy makers.

Even if larger companies provide better information, high compliance rates are not necessarily relevant to the capital markets, as rising compliance rates do not increase firm value (also see Bassen et al., 2006; Bauer et al., 2004). Neither does lower code compliance of family firms. This finding implies that the Type 1 agency problem prevails in this context, since investors in German companies do not seem to penalize low GCGC compliance rates in their investment decisions (Arcot et al., 2010). Consequently, it is not in the main interest of companies to achieve high code compliance. This

fact has an important policy implication. The lack of value relevance may be due to the fact that the GCGC's regulations do not reflect what investors consider good governance and thus the GCGC has to be revised to meet investors' governance preferences. However, it may also be the case that the voluntary enforcement effect intended by the GCGC is not advanced enough in the German context so that self-regulation in capital markets with low code compliance does not (yet) work. Policy makers are also challenged in this case to develop a corporate governance code that deploys its effect in the German context.

Certain limitations apply to the results, as is the case for any empirical study. First, in order to examine sample selection issues, general company characteristics are compared between in- and out-of-sample Prime Standard companies. The comparisons reveal that sample selection is not an issue. The companies included in the sample are even smaller than the companies not included in the sample and larger companies generally have higher code compliance.

Second, rates of compliance with the GCGC and their performance relevance are only provided if companies practice the code in the way they state (Arcot et al., 2010). This aspect cannot be detected by the research design in this study, but surveys or personal interviews are needed to deduct the code's practical implications. An approximation of the official declarations on corporate governance can, however, serve as a realistic assessment concerning companies listed in the Prime Standard, since investors usually do not have access to different information.

So far it is not evident that the GCGC Commission plans a revision of the code adapted to the needs of family firms. A special code for family firms must not be approved, since listed family firms as well as listed non-family firms are subject to the same disclosure regulations of the capital market. When further adapting the code, policy makers should nevertheless respect the fact that family firms have different requirements concerning certain recommendations. By responding to this demand, the GCGC may finally achieve its intended effect so that it reflects recommendations that investors judge to be value relevant.

Acknowledgements

The author thanks anonymous referees for helpful comments and Ann-Kristin Achleitner and Nina Fichtl for making this paper possible.

¹ See for further information on the influence of ownership changes on corporate governance in Ukrainian companies Estrin & Rosevear (2003).

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Appendix

Table 1A. Overview on the influence of various variables on governance compliance in other studies

Variable	Study	Expected effect on governance compliance rates	Expected sign in this study
Insider ownership	Goncharov et al. (2006)	-	-
Institutional investors	Fama and Jensen (1983) Jensen and Meckling (1976)	+	+
Freefloat	Goncharov et al. (2006)	+	+
Growth	Drobetz et al. (2004) Gompers, Ishii and Metrick (2003)	+	+
Total assets	Bartholomeusz and Tanewski (2006) Drobetz et al. (2004)	+	+

Table 1A (cont.). Overview on the influence of various variables on governance compliance in other studies

Variable	Study	Expected effect on governance compliance rates	Expected sign in this study
Leverage	Beiner et al. (2006)	-	-
	Cremers and Ferrell (2009)	-	
	Goncharov et al. (2006)	+	
Management style (Heir CEO)	Anderson et al. (2009)	-	-
Audit quality	Carcello et al. (2011)	+	+
	DeAngelo (1981)	+	
	Van Tendeloo and Vanstraelen (2008)	+	

Notes: The table shows the relation between different variables and governance compliance concerning previous studies on Corporate Governance. “+” indicates a positive relation, “-” indicates a negative relation. “?” indicates that no definit significant relation could be identified. Based on these findings, the expected relation for the study at hand is deducted. The classification in column 4 is made on the basis of the majority of the relations identified in column 3.

Table 2A. Overview on the influence of various variables on Tobin’s Q in other studies

Variable	Study	Expected effect on Tobin's Q as measure of firm value	Expected sign in this study
Different governance variables	Bebchuk and Cohen (2005)	-	+
	Cremers and Ferrell (2009)	-	
	Ammann et al. (2011)	+	
	Beiner et al. (2006)	+	
	Brown and Caylor (2006)	+	
	Gompers, Ishii and Metrick (2003)	+	
Share of family on board	Bartholomeusz and Tanewski (2006)	+	+
Family influence	Setia-Atmaja, Tanewski and Skully (2009)	+	+
Share of largest shareholder	Beiner et al. (2006)	?	?
	Black et al. (2006)	?	
Outside blockholders	Beiner et al. (2006)	?	?
Insider ownership	Bebchuk and Cohen (2005)	+	+
	Beiner et al. (2006)	+	
Total assets	Bebchuk and Cohen (2005)	?	-
	Ammann et al. (2011)	-	
	Beiner et al. (2006)	-	
	Black et al. (2006)	-	
	Brown and Caylor (2006)	-	
	Bebchuk et al. (2004)	+	
Company age	Bebchuk et al. (2004)	-	-
	Bebchuk and Cohen (2005)	-	
	Black et al. (2006)	-	
	Brown and Caylor (2006)	?	
Return	Bebchuk and Cohen (2005)	?	?
	Black et al. (2006)	?	
	Beiner et al. (2006)	+	
CAPEX / Total assets	Ammann et al. (2011)	+	+
	Bebchuk et al. (2004)	+	
	Bebchuk and Cohen (2005)	+	
	Cremers and Ferrell (2009)	?	
Leverage	Ammann et al. (2011)	+	+
	Black et al. (2006)	+	
	Cremers and Ferrell (2009)	+	
	Beiner et al. (2006)	?	
	Bebchuk et al. (2004)	-	
Fixed assets / Total assets respectively fixed assets / Sales	Cremers and Ferrell (2009)	?	-
	Ammann et al. (2011)	-	
	Black et al. (2006)	-	
Growth	Beiner et al. (2006)	+	?
	Ammann et al. (2011)	?	
	Black et al. (2006)	?	
Liquidity / Sales	Ammann et al. (2011)	+	+

Notes: The table shows the relation between different variables and Tobin’s Q concerning previous studies on Corporate Governance. “+” indicates a positive relation, “-” indicates a negative relation. “?” indicates that no definit significant relation could be identified. Based on these findings, the expected relation for the study at hand is deducted. The classification in column 4 is made on the basis of the majority of the relations identified in column 3.

Table 3A. GMM estimations of the influence of code compliance on Tobin's Q

GMM estimation dependent variable: Tobin's Q									
Independent variables	Expected sign	Model 1		Model 2		Model 3		Model 4	
		Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error
Constant	?	-0.830	(0.896)	-0.742	(0.875)	-1.131	(0.926)	-1.046	(0.908)
Overall index	+	2.017*	(1.034)	1.944*	(1.030)				
Neuro-Index	+					-0.378	(0.901)	2.347**	(1.083)
Dummy Family	-	0.179*	(0.0950)			0.185*	(0.0948)		
Dummy Family * Overall Index	-			0.163	(0.108)				
Dummy Family * Neuro-Index	-							0.182*	(0.107)
Insider ownership	+	0.146	(0.272)	0.127	(0.271)	0.157	(0.273)	0.136	(0.272)
Institutional investors	?	0.529*	(0.275)	0.509*	(0.272)	0.537*	(0.276)	0.513*	(0.273)
Free float	?	0.0913	(0.175)	0.0850	(0.175)	0.0831	(0.175)	0.0751	(0.174)
Total assets (log)	-	-0.0219	(0.0299)	-0.0225	(0.0305)	-0.0273	(0.0305)	-0.0283	(0.0312)
Age since IPO (log)	-	0.0345	(0.0472)	0.0325	(0.0471)	0.0340	(0.0475)	0.0317	(0.0474)
Growth	?	1.015***	(0.109)	1.012***	(0.108)	1.016***	(0.111)	1.012***	(0.110)
Return on assets	?	0.112	(0.507)	0.123	(0.505)	0.100	(0.506)	0.113	(0.503)
Leverage	+	-1.409***	(0.282)	-1.406***	(0.282)	-1.414***	(0.282)	-1.410***	(0.283)
Fixed assets	-	0.640	(0.443)	0.645	(0.447)	0.656	(0.444)	0.662	(0.448)
Liquidity	+	2.029***	(0.448)	2.034***	(0.448)	2.050***	(0.451)	2.056***	(0.451)
CAPEX	+	-0.424	(1.050)	-0.426	(0.578)	-0.453	(0.578)	-0.455	(0.577)
Year dummies		Yes		Yes		Yes		Yes	
Industry dummies		Yes		Yes		Yes		Yes	
Adj. R ²		0.423		0.423		0.419		0.419	
N		353		353		353		353	

Notes: *Tobin's Q* corresponds to total assets minus the book value of equity divided by total assets. *Overall index* denotes the share of the GCGC's recommendations that are fulfilled (compliance rate), the *Neuro-Index* is built of the share of neuralgic characteristics identified for a year that are not fulfilled (see section 3.1). *Dummy family* is a binary variable that has a value of 1 if the founder and/or his family own more than 25% of shares or have a seat in the board of directors or the supervisory board of the company. *Insider ownership* denotes the cumulated share that is held by members of the board of directors or the supervisory board that do not belong to the founding family. *Institutional investors* is the cumulated share that is held by institutional investors such as funds, banks, insurance companies, or private equity firms. *Free float* is the percentage of shares owned by diverse shareholders. *Total assets (log)* is the natural logarithm of total assets; *Age since IPO (log)* is the natural logarithm of the difference between the year considered and the year of the company's IPO; *Growth* corresponds to the Increase of Sales compared to the preceeding year; *Return on assets* corresponds to the operating income divided by the average of total assets; *Leverage* is defined as share of liabilities to total assets; *Fixed assets* is fixed assets scaled by total assets; *Liquidity* is cash and liquid assets scaled by total assets; *CAPEX* is the share of capital expenditure to total assets. *Overall index* and *Neuro-Index* are treated as endogeneous. As instrumental variables, the lagged values of these compliance rates and of Tobin's Q are used as well as a dichotomous variable Big 4 taking the value of 1 if a company is audited by a Big 4 company. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4A. Descriptive statistics

Variable	Mean			Median			Standard deviation			N			Sign. of diff.	
	Total	FF	NFF	Total	FF	NFF	Total	FF	NFF	Total	FF	NFF	Mean	Median
<i>Compliance rate</i>														
Overall index	0.9080	0.8902	0.9238	0.92	0.90	0.93	0.0698	0.0716	0.0641	782	369	413	***	***
Neuro-Index	0.8961	0.8784	0.9119	0.91	0.89	0.92	0.0696	0.0717	0.0637	782	369	413	***	***
<i>Ownership structure</i>														
Family ownership	0.1625	0.2933	0.0333	0.0000	0.2829	0.0000	0.2282	0.2382	0.1181	757	376	381	***	***
Insider ownership	0.0825	0.0687	0.0961	0.0000	0.0000	0.0000	0.1615	0.1328	0.1847	756	376	380	**	---
Institutional investors	0.1318	0.0991	0.1632	0.0581	0.0317	0.0822	0.1827	0.1472	0.2065	768	376	392	***	***
Free float	0.4758	0.4537	0.4976	0.4515	0.431	0.4926	0.2304	0.2108	0.2465	757	376	381	***	**
<i>Company characteristics</i>														
Tobin's Q	1.9680	2.1475	1.8054	1.6318	1.8073	1.5257	1.3079	1.2629	1.3281	772	367	405	***	***
Total assets (log)	5.7887	4.8565	6.6335	5.3162	4.5138	6.4252	2.2111	1.6073	2.3420	772	367	405	***	***
Leverage	0.1996	0.1703	0.2261	0.1680	0.1153	0.1979	0.2721	0.268	0.2734	779	371	408	***	***
Return on assets	0.0176	0.0192	0.0162	0.0398	0.0429	0.0389	0.2170	0.2329	0.2019	752	356	396	---	---
Age since IPO (log)	2.2211	1.8931	2.5445	2.0794	1.9459	2.3979	0.9411	0.7526	0.9958	725	360	365	***	***
Growth	0.1539	0.1567	0.1513	0.0900	0.1012	0.0864	0.5489	0.3857	0.6622	773	365	408	---	---
Fixed assets	0.1329	0.1636	0.1050	0.0011	0.0007	0.0015	1.3692	1.9733	0.2107	729	347	382	---	***
Liquidity	0.0646	0.0643	0.0649	0.0003	0.0003	0.0002	0.1349	0.1436	0.1267	765	364	401	---	---
CAPEX	0.0446	0.0448	0.0446	0.3241	0.0293	0.0342	0.0469	0.0531	0.0405	768	365	403	---	*

Notes: *Compliance rate overall index* denotes the share of the GCGC's recommendations that are fulfilled; *Compliance rate Neuro-Index* is composed of the share of recommendations of one year that are not fulfilled (see section 2.1). *Family ownership* is the cumulated share of ownership held by the founder and/or family. *Insider ownership* denotes the cumulated share that is held by members of the board of directors or the supervisory board that do not belong to the founding family. *Institutional investors* is the cumulated share that is held by institutional investors such as funds, banks, insurance companies, or private equity firms. *Free float* is the percentage of shares owned by diverse shareholders. *Tobin's Q* denotes total assets minus the book value of equity divided by total assets. *Total assets (log)* is the natural logarithm of total assets; *Age since IPO (log)* is the natural logarithm of the difference between the year considered and the year of the company's IPO; *Return on assets* corresponds to the operating income divided by the average of total assets; *Growth* corresponds to the Increase of Sales compared to the preceding year; *Leverage* is defined as share of liabilities to total assets; *Fixed assets* is fixed assets scaled by total assets; *Liquidity* is cash and liquid assets scaled by total assets; *CAPEX* is the share of capital expenditure to total assets. In order to compare means of compliance rates in the single years, a *t*-test for heterogeneous variances is used. In order to compare medians of compliance rates of the single years, a two-sided Wilcoxon-rank-sum-test is used. ***, **, * indicate significance levels of differences between FF and NFF at the 1%, 5%, and 10% levels.