International Corporate Governance and Firm Value

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St. Gallen, May 13, 2011

The President:

Prof. Dr. Thomas Bieger

To my parents.

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Abstract

This thesis uses a previously unexplored dataset on international corporate governance attributes provided by Governance Metrics International (GMI) to investigate three distinct research questions. The first question is whether companies adopting better corporate governance are rewarded with higher firm valuations by capital markets. Regardless of the estimation technique we use, we find that better firm-level corporate governance is associated with higher firm valuation. The second question is whether the value relevance of firm-level corporate governance depends on the competitiveness of the industry a company operates in. Using governance and competition measures superior to those used in previous U.S.-specific studies, we show that better corporate governance leads to higher firm values only in concentrated industries. This finding is robust to a battery of robustness tests and different estimation methodologies. As to what concerns the channels through which governance increases firm value in non-competitive industries, we find evidence that good governance for firms operating in non-competitive industries leads them to have more capital expenditures and less expenditures on acquisitions. They are also less likely to engage in value-destroying diversification. The third and final question deals with cash holdings, the corporate assets which are most susceptible to being misused by poorly governed managers. The main findings are that companies with relatively poor corporate governance hold more cash, and that the positive effect of cash holdings on firm value can only be observed for companies with relatively good corporate governance.

Abstract (in German)

Diese Dissertation untersucht anhand eines bisher nicht verwendeten Datensets von Governance Metrics International (GMI) drei verschiedene Forschungsfragen. Die erste Forschungsfrage befasst sich damit, ob Firmen mit besserer Corporate Governance von Kapitalmärkten mit höheren Firmenbewertungen belohnt werden. Es wird empirisch aufgezeigt, dass bessere Corporate Governance mit höheren Firmenbewertungen verbunden ist. Die zweite Frage untersucht, ob die Bewertungsrelevanz von Corporate Governance von der Wettbewerbsintensität der Industrie, in der eine Firma tätig ist, abhängt. Es wird gezeigt, dass bessere Corporate Governance nur in konzentrierten Industrien zu höheren Firmenbewertungen führt. Konkret bringt gute Corporate Governance Firmen in wettbewerbsarmen Industrien dazu, mehr Kapitalausgaben und weniger Ausgaben für Übernahmen und Wert vernichtende Diversifikation zu tätigen. Die dritte und letzte Forschungsfrage beschäftigt sich mit dem Halten von liquiden Mitteln (Cash), den Anlagen, die am einfachsten von schlecht beaufsichtigten Managern für unrentable Projekte gebraucht werden können. Die Hauptresultate sind, dass Firmen mit schlechter Corporate Governance mehr Cash halten, und dass der positive Effekt von Cash auf die Firmenbewertung nur für Firmen mit guter Corporate Governance beobachtet werden kann.

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1   Introduction

It is likely that a thesis like this one would not have been written 10 years ago. The main reason for this is that the topic of this dissertation, firm-level corporate governance in international companies, was largely under-researched and had captured little attention at the time. Over the last ten years, however, interest in corporate governance has grown tremendously and both the general public and the academic literature have covered various issues related to corporate governance. To some degree at least, this increase in attention happened for all the wrong reasons. Unfortunately, both the 2001/2002 and the 2007/2008 stock market crashes were closely linked to the failure or the lack of corporate governance mechanisms at some of the world's biggest companies. In 2002, corporate scandals at companies such as WorldCom or Enron were accompanied by spectacular malfunctions of corporate governance and initiated widespread discussions about the design of more effective governance systems. Eventually, this led to the Sarbanes-Oxley Act of 2002, a new legislation that aimed at improving corporate governance at public companies. Merely five years later, however, the governance debate ensued again. During the financial crisis of 2007/2008, the reckless risk-taking of some financial institutions worldwide led to questions about why corporate governance was not able to prevent some of these extreme exposures. Both these events highlighted the need for more empirical research on corporate governance.

Until the 1990s, the bulk of the academic work on corporate governance was heavily focused on the U.S., mainly for reasons of data availability. Research on corporate governance in an international context started in the middle of the 1990s with the work of La Porta et al. (1998, 2000a, 2000b, 2002). In these papers, the authors use differences in legal systems between countries to investigate if these differences have an effect on firm valuation and firm performance. This proved to be a very popular research topic, and the anti-director index

introduced by La Porta et al. (1998) has been used numerous times in academic research as a measure of country-level corporate governance. One aspect that is not captured by using measures of country-level governance is the fact that corporate governance attributes at the country-level still allow firms some flexibility in choosing individual governance attributes. While the U.S. literature on firm-level governance has blossomed after the introduction of the so-called G-Index, which consists of 24 anti-takeover provisions and was first used by Gompers et al. (2003), international work on this topic has been limited due to the enormous costs involved in gathering individual governance provisions for a large international sample. The recent emergence of data providers that collect such datasets has enabled a whole new stream of research on international corporate governance. While there are some papers using the international governance database provided by Institutional Shareholder Services (ISS) (now called RiskMetrics) such as Aggarwal et al. (2009), Chhaochharia and Laeven (2009), or Bruno and Claessens (2010), there is still much room for further research using these new data sources.

This thesis aims at making a contribution to this relatively new and unexplored field of research by investigating three distinct questions concerning international corporate governance. To answer the three research questions, we benefit from using a new dataset provided by Governance Metrics International (GMI), which has not been explored in academic research so far. The governance data we use covers 64 different individual governance attributes which are classified into six categories by GMI, namely board accountability, financial disclosure and internal control, shareholder rights, remuneration, market for control, and corporate behavior.

The first question we investigate is whether better firm-level corporate governance leads to higher firm value. In other words, if a company chooses to voluntarily adopt corpo-

rate governance attributes, do the capital markets reward this company by means of a higher valuation? The majority of the previous literature investigating this relation has documented a positive relationship between better corporate governance and firm valuation (e.g., Yermack, 1996, or Gompers et al., 2003, among others). While the early part of this literature dealt with specific corporate governance attributes such as board size, a newer strand of literature has started to aggregate individual corporate governance attributes into governance indices. The seminal work of Gompers et al. (2003) demonstrates how an index constructed of anti-takeover provisions is negatively related to firm value in a U.S. sample. The number of studies investigating the value effect of firm-level corporate governance in international samples is still relatively small. The main reason for this is that until a few years ago, suitable data was extremely hard to come by. Some studies such as Drobetz et al. (2004) or Beiner et al. (2006) use hand-collected datasets for individual countries. For a comprehensive international sample, however, such an approach is clearly not feasible. This changed when more detailed information on firm-level corporate governance became available for large international samples, leading to a new stream of research using this data. Aggarwal et al. (2009), for instance, use data from ISS to compare the corporate governance of firms listed in countries outside the U.S. with a matched sample of U.S. firms. They find that the firm value of non-U.S. firms falls when their governance index value decreases as compared to the governance index of matched U.S. firms. Bruno and Claessens (2010) also use data from ISS. They report that firm value depends on both country-level and firm-level corporate governance and that this finding is more pronounced for companies that depend more heavily on external financing. Chhaochharia and Laeven (2009) also use the ISS database and differentiate between governance attributes that are legally required and attributes that are adopted voluntarily. Their results show that firms that voluntarily adopt a more rigorous governance structure are more highly valued by the capital markets. We provide new evidence on the relationship

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between firm-level governance and firm value. We use a dataset on 64 individual corporate governance attributes provided by Governance Metrics International. The dataset used in this study covers 22 developed countries (excluding the U.S.) and the time period from 2003 to 2007. A major advantage of this dataset is that it contains the longest panel used in international studies on the value effect of firm-level governance so far. While Aggarwal et al. (2009) and Bruno and Claessens (2010) use purely cross-sectional datasets, the panel employed by Chhaoccharia and Laeven (2009) covers three years only. Since our dataset is a five-year panel, this allows us to better investigate the dynamics of the relationship between corporate governance and firm value and thereby account for the potential endogeneity of corporate governance in a dynamic panel GMM approach. Moreover, we contribute to the literature on how to measure corporate governance. Besides using two additive ways to combine the 64 individual governance provisions into an operational corporate governance index, we use a multitude of governance indices that are based on principal component analysis (PCA). Our results document a positive and statistically significant relation between corporate governance and firm value. This finding is robust to different ways used to construct the governance index, to different sub-sample analyses, and alternative estimation methodologies. Additionally, the richness of the GMI dataset allows us to show that governance attributes documenting a company's social behavior also have a significantly positive effect on firm value, regardless of whether these attributes are studied individually or aggregated into an index. The value relevance of these attributes also holds when we control for the effect of standard governance attributes. We also document the economic importance of the valuation effect of corporate governance and show that the choice of governance index has an important influence on the economic significance of the valuation effect.

While the first research question analyzes the value relevance across a broad cross-section of firms, the second research question investigated in this thesis looks at cross-

sectional differences in the value relevance of corporate governance. A number of recent studies have raised the question whether it is possible for all firms to equally benefit from good corporate governance. As an alternative, product market competition might act as a substitute for corporate governance because competitive pressures enforce managerial discipline and value maximization. Thus, corporate governance would matter more in less competitive industries than in more competitive industries. Existing U.S. evidence (e.g., Giroud and Mueller, 2010, 2011) finds empirical support for this hypothesis. They find that in the most competitive industries, there is no significant relationship between corporate governance and different measures of firm value or firm performance. However, studies focusing on U.S. firms are plagued by two very important problems related to the measurement of corporate governance and competition. First, corporate governance is routinely measured by the G-Index, thus focusing mainly on anti-takeover provisions. Existing corporate governance research (e.g., Yermack, 1996; Faleye, 2007; Habib and Ljungqvist, 2005) has shown that other governance variables such as board characteristics or CEO ownership and power matter for firm value, too. Second, U.S. studies usually measure competition using a Herfindahl-Hirschman index (HHI) based on all firms in Compustat (i.e. all public firms), a HHI from the U.S. Economic Census, which is computed using the largest 50 companies of each industry, or the so-called "four-firm domestic concentration ratio" from the U.S. Economic Census, which is based on the largest four firms in a given industry. All of these measures, however, have their own problems. Ali at al. (2009) argue that competition measures calculated based on public firms included in Compustat alone are a poor proxy for actual competition. They show that the correlation between Compustat-based competition measures and the HHI obtained from the U.S. Census, which is based on the 50 largest (public or private) firms of each industry, is only 13 percent. But even if the U.S. Census-based measures are a better proxy for competition, they have their own flaws. First, they cover manufacturing firms only and

thus neglect important industries of a developed country's economy. Second, the HHIs from the U.S. Census are updated every five years only. Both the governance and competition measures we use in this study overcome these serious drawbacks of the U.S. data. To measure competition, we use a HHI which is based on all listed firms contained in Thomson Financial's Worldscope database and all non-listed firms contained in Bureau van Dijk's Amadeus database, which provides extensive coverage of non-listed firms in Europe. This HHI can be calculated for each year, for each industry, and it is not restricted to the 50 largest companies of each industry. To measure governance, we use the 64 individual governance provisions from the GMI dataset. Based on data availability from the Amadeus database, we use all observations from the 14 European Union (EU) countries for which we have corporate governance data. We use all available years, resulting in an unbalanced panel covering the time period from 2003 until 2007. Our results indicate that the effect of corporate governance is significant only for companies operating in the least competitive industries. These results are remarkably robust and hold if we use different regression specifications, alternative competition measures, or different definitions of competitiveness. Furthermore, we document the channels through which corporate governance affects firm value in the least competitive industries. Firms with good corporate governance operating in comparatively less competitive industries have more capital expenditures, spend less resources on acquisitions, and are less likely to engage in value-destroying diversification compared to companies operating in comparatively more competitive industries.

The third research question of this thesis investigates companies' cash holdings. Holding cash can be a double-edged sword for a firm. On the one hand, it provides flexibility. When the possibility to undertake a positive-NPV project suddenly arises, cash holdings allow a company to carry out the project without having to raise extra capital. On the other hand, cash holdings are the assets which are most easily misused by managers who seek to

invest in negative-NPV projects to extract private benefits. The existing evidence on the relationship between corporate governance and cash holdings is inconclusive. For country-level corporate governance, Dittmar et al. (2003) show that firms in countries with weak shareholder rights hold more cash than firms in countries with strong shareholder rights. Additionally, Pinkowitz et al. (2006) show that the relation between firm value and cash holdings is weaker in countries with weak shareholder protection. For firm-level corporate governance, there is ample evidence of the value of cash holdings when potential underinvestment problems are prevalent (e.g., Mikkelson and Partch, 2003; Almeida et al., 2004). Existing studies using international or U.S. samples, however, have failed to document evidence that poor firm-level governance is related to higher cash holdings or that large cash holdings in poorly governed firms have a negative impact on firm value. For example, recent U.S. evidence by Harford et al. (2008) suggests that firms with poor corporate governance do not hold more but less cash. Kalcheva and Lins (2007) use an international sample and find no significant relationship between firm-level governance and cash holdings. In our study, we use improved measures of firm-level corporate governance to investigate the relationship between cash holdings and corporate governance, and the effect of these two variables – and their interaction – on firm value. To do this, we use data on the 64 individual governance attributes provided by GMI. To be able to account for corporate governance at the country-level, we use the cross-section of 2007 because GMI considerably increased the number of countries it covered in 2007. Our empirical analyses yield three main findings. First, there is a negative relationship between firm-level governance and cash holdings. Consistent with the free cash flow hypothesis, firms with relatively poor governance hold significantly more liquid assets. We also present evidence consistent with earlier literature showing that both better governance and more cash holdings have a positive effect on firm value. The second main finding, however, states that the higher valuation from holding more cash is not evenly distributed

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among all firms. In fact, to be able to reap the benefits of holding more cash, a company has to have better firm-level corporate governance in place. The third main finding shows that for companies with comparatively poor firm-level governance, there is still a way to benefit from holding cash as long as it is paid out in the form of dividends.

The remainder of this thesis is structured as follows. Chapter 2 presents new international evidence on the relationship between corporate governance and firm value. In Chapter 3, we investigate to what extent the positive effect of corporate governance on firm valuation depends on the competitiveness of the industry a company operates in. In Chapter 4, we analyze cash holdings, the corporate assets that are most easily misused by poorly governed managers. Chapter 5 concludes.

2   Corporate Governance and Firm Value: International Evidence

2.1   Introduction

Agency problems, and therefore good corporate governance helping to overcome them, may affect firm value in two different ways.[1] First, good corporate governance may lead to high stock price multiples as investors anticipate that less cash flows will be diverted and a higher fraction of the firm's profits will come back to them as interest or dividends (Jensen and Meckling, 1976; La Porta et al., 2002). Second, good corporate governance may reduce the expected return on equity to the extent that it reduces shareholders' monitoring and auditing costs, leading to lower costs of capital (Shleifer and Vishny, 1997). However, it is not unequivocally clear that better governance is in fact related to higher company valuations as the costs associated with the implementation of stronger governance mechanisms may outweigh the benefits (e.g., Gillan et al., 2003; Chhaochharia and Grinstein, 2007; Bruno and Claessens, 2010).

The majority of the prior literature on the relation between corporate governance and firm value, documents that a stronger corporate governance is associated with a higher firm valuation (e.g., Yermack, 1996; Gompers et al., 2003; Cremers and Nair, 2005; Core et al., 2006; Bebchuck et al., 2009). While much of this literature deals with specific aspects of corporate governance, such as ownership or board structure, part of the literature aggregates individual corporate governance attributes to corporate governance indices. For the U.S., a number of studies (e.g., Gompers et al., 2003; Bebchuck and Cohen, 2005; Bebchuck et al., 2009) demonstrate the value relevance of such governance indices aggregating a number of firm-level governance attributes. Relatively few studies investigate the valuation impact of

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[1] The findings presented in this chapter are based on Ammann et al. (2011a).

firm-level corporate governance practices in an international context, notable exceptions being La Porta et al. (2002), Klapper and Love (2004), Durnev and Kim (2005), and Francis et al. (2005). However, these studies use data compiled by La Porta et al. (1998) on minority shareholder rights protection, CLSA (Credit Lyonnais Securities Asia) scores, whose usefulness has been questioned by Khanna et al. (2006) for example, or governance attributes related to disclosure only as measured by Standard & Poor's rankings. To overcome the problem of data availability, some studies use hand-collected and survey-based datasets on the firms' corporate governance structure within one specific country. For example, Drobetz et al. (2004), Beiner et al. (2006), Black et al. (2006), and Balasubramaniam et al. (2009) document a positive relationship between governance practices and firm valuation for German, Swiss, Korean, and Indian public firms, respectively.

With the emergence of more detailed information on firm-level corporate governance for large samples of firms from multiple countries, a new stream of research has emerged. Aggarwal et al. (2009), for example, use data from Institutional Shareholder Services (ISS) (now called RiskMetrics) and compare the governance of non-U.S. firms with a matched set of U.S. firms and find that the valuation of non-U.S. firms falls as their governance index value decreases as compared to the governance index of matching U.S. firms. Bruno and Claessens (2010) also use ISS data and find that firm value depends on both country-level shareholder protection laws and firm-level corporate governance attributes. In addition, these relations are more pronounced in companies that depend on external financing. Chhaochharia and Laeven (2009), also using the ISS database, distinguish between governance attributes that are legally required and attributes that are adopted voluntarily. They show that firms that

voluntarily adopt a more rigorous corporate governance structure are rewarded with a higher firm value.[2]

In this chapter, we provide new evidence on the relationship between firm-level corporate governance and company valuation in an international setting. We contribute to the literature by using a new and previously unexplored dataset from Governance Metrics International (GMI). Using a new dataset is important as the quality of corporate governance data has been questioned (e.g., Khanna et al., 2006) and a check of prior results based on a new dataset provides an important "out-of-sample" test. Our GMI dataset covers 22 developed countries (excluding the U.S.) around the world over the time period from 2003 to 2007. The governance data we use is much richer than the datasets used in prior studies. It covers 64 different governance attributes classified by GMI in six categories, namely board accountability, financial disclosure and internal control, shareholder rights, remuneration, market for control, and corporate behavior. One benefit emerging from the breadth of our database is that we are able to investigate the valuation effect of specific governance attributes that document a company's social behavior, also termed "corporate social responsibility (CSR)". To our knowledge, there are only three previous studies that investigate whether a company's CSR has an impact on firm value when standard corporate governance attributes are accounted for (Fisman et al., 2006; Harjoto and Jo, 2009; Barnea and Rubin, 2010).[3] Another advantage of our GMI dataset is that it contains the longest panel used in international studies on the valuation effect of firm-level corporate governance so far. Aggarwal et al. (2009) and Bruno and Claessens (2010) use purely cross-sectional datasets and Chhaochharia and Laeven (2009) a three-year panel dataset. Our five-year panel covering the time period from

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[2] Aggarwal and Williamson (2006) and Brown and Caylor (2006) use the ISS database to construct governance indices for U.S. firms only and both find a positive relation between corporate governance and firm value.

[3] A common problem in all these studies is that the measure of CSR, obtained from the Kinder, Lydenberg, and Domini's (KLD) Socrates database, is binary and only indicates whether a firm invests in CSR or not. Moreover, only Harjoto and Jo (2009) account for the endogeneity of CSR and none of the studies attempt to simultaneously account for the endogeneity of corporate governance.

2003 to 2007 has two major advantages. First, our sample size is substantially larger than that of Aggarwal et al. (2009) and Bruno and Claessens (2010) and similar to that of Chhaochharia and Laeven (2009) even though our dataset does not include any U.S. firms which account for approximately 1,500 observations (20%) of Chhaochharia and Laeven's (2009) sample. Second, the longer time-series enables us to better investigate the dynamics of the relation between corporate governance and firm value and thereby accounting for the endogeneity of corporate governance in a dynamic panel GMM approach.

Even though there is an extensive literature investigating the relationship between corporate governance and firm value, there is still no consensus on how to measure corporate governance (e.g., Larcker et al., 2007; Ertugrul and Hegde, 2009). Besides using a new dataset, we contribute to the literature by testing alternative and distinct approaches on how to condense the large number of governance variables contained in our database into one measure of corporate governance. Prior literature almost exclusively uses additive indices giving mostly equal weights to each considered governance attribute. In addition to using two alternative additive approaches to construct a governance index, we rely on principal component analysis (PCA) to condense the information content of a large number of variables into a small and tractable number of governance indices as recently proposed by Larcker et al. (2007). The first of the two additive approaches we use is based on Aggarwal et al. (2009) and Chhaochharia and Laeven (2009). To construct this index, we first determine the number of governance attributes with data available for each firm-year observation and then define the governance index as the percentage of attributes a particular company has in place. The second additive approach employs a similar procedure but treats a governance attribute for which there is no information as if this attribute was not in place, instead of omitting such missing observations from the index construction. If firms are more likely to disclose information on governance attributes that are adopted, we would expect a stronger valuation effect

of this second index as compared to the first one. The third alternative index, which uses PCA and is based on Larcker et al. (2007), condenses the information contained in the individual governance attributes into a smaller number of governance indices by finding the linear combination of the original governance attributes that accounts for as much variation in the original dataset as possible. Hence, the weighting scheme in this third index is based on a statistical procedure instead of using equal or arbitrarily chosen weights.

Our results indicate a strong and positive relation between firm-level corporate governance and firm valuation. These results are robust to alternative calculation procedures for the corporate governance indices, a breakdown of the sample by calendar year, and alternative estimation techniques. Moreover, we show that governance attributes documenting a company's social behavior also have a significantly positive effect on firm value, regardless of whether these variables are studied individually or aggregated to governance indices. The value relevance of these attributes is also robust to controlling for the effect of standard corporate governance attributes and different approaches to index calculation. When additionally including an interaction term between corporate governance and CSR, we find that the positive valuation effect of CSR is restricted to firms with a good corporate governance structure. Hence, a good corporate governance seems to assure that CSR expenditures are profit-oriented rather than serving the managers' personal ambitions, for example to improve their reputation as good global citizens.

To release the assumption underlying our fixed effects panel regressions that all the unobserved heterogeneity that leads to the correlation between the corporate governance variables and the error term is constant over time we estimate a dynamic panel GMM estimator as proposed by Wintoki et al. (2008). This approach additionally alleviates the problem of slowly moving corporate governance indices over time, thus rendering fixed effects tech-

niques ineffective (e.g., Coles et al., 2007). The results turn out to be robust and indicate a causal link between our three alternative corporate governance indices and firm value.

Finally, we investigate the economic importance of the valuation effect of corporate governance. The majority of previous research focuses on the statistical rather than the economic significance. Hence, there is little guidance from academic research on how large the potential valuation benefits associated with a good corporate governance in fact are. We show that, when using a similar approach to construct the corporate governance index as in Aggarwal et al. (2009) and Chhaochharia and Laeven (2009), we find a similar valuation effect of corporate governance. Specifically, we find that a one standard deviation increase in the first additive governance index is associated with an increase in Tobin's Q of about 0.06 which corresponds to 3.5% (4.2%) of mean (median) Q in our sample. However, the economic significance of the valuation effect strongly depends on how the index is constructed. In particular, when we account for the fact that companies are more likely to report information on corporate governance attributes they have adopted or when we focus on changes in the governance scores which are truly firm-specific and not influenced by country-specific differences in legal regimes, the economic importance of the valuation effect substantially increases. In contrast, the magnitude of the valuation effect is virtually unaffected by the estimation methodology and remains similar in size even when we account for a potential endogeneity of corporate governance in a dynamic panel GMM setup.

The remainder of the chapter is organized as follows. Section 2.2 describes the data, defines our variables, and explains the construction of our governance indices. Section 2.3 presents the main results. Section 2.4 contains robustness tests and extensions. Section 2.5 concludes.

2.2   Data and variables

In this section, we first describe the corporate governance data used in our study. We then show how we aggregate the individual governance attributes to construct different corporate governance indices. Finally, we describe the financial data we use to construct the control variables used for the tests in the empirical section.

2.2.1   Firm-level data on corporate governance attributes

We use firm-level data on corporate governance attributes provided by Governance Metrics International (GMI). GMI started providing data on firm-level governance in 2003. It collects data on both U.S. and non-U.S. firms fully covering the MSCI World and the MSCI EAFE Index. GMI produces a governance rating for the covered firms using a proprietary scoring algorithm. To construct these ratings (which are not used in this study), GMI gathers information on individual governance attributes. These individual governance attributes are used for the construction of our governance indices. The starting point of our sample are all 7,092 non-U.S. firm-year observations on roughly 2,300 firms over the full sample period from 2003 to 2007. The panel is unbalanced as the number of firms grows considerably over time (from 605 in 2003 to 2,215 in 2007). We drop countries with less than 10 firm-year observations in total (i.e., Argentina, Colombia, Czech Republic, Egypt, Hungary, Iceland, Israel, Jordan, Morocco, Pakistan, Peru, Philippines, Thailand, and Venezuela) as well as developing and emerging countries (i.e., Brazil, Chile, China, India, Indonesia, Malaysia, Mexico, Russia, South Africa, South Korea, Taiwan, and Turkey) as the valuation effect of firm-level corporate governance attributes may substantially differ between developed and developing countries.[4] These sample restrictions leave us with a sample of 6,663 firm-year observations. Table 2.1 shows the distribution of firm-year observations across the 22 countries

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[4] Klapper and Love (2004), for example, show that firm-level corporate governance matters more in countries with weak legal environments and argue that firms can partially compensate for ineffective laws and enforcement.

included in our sample. The countries with the largest number of firm-year observations are Japan (1,762), UK (1,407), and Canada (471), while Portugal (45) and New Zealand (45) have the smallest number of firm-year observations.

We use a sample of 64 governance attributes that have been compiled by GMI. For each of these attributes, GMI assesses whether a firm attains a minimum level of implementation. The 64 attributes we consider are sub-categorized by GMI into 1) board accountability, 2) financial disclosure and internal control, 3) shareholder rights, 4) remuneration, 5) market for control, and 6) corporate behavior. Table 2.2 provides an overview of the 64 governance attributes and shows the percentage of firms meeting these criteria according to GMI's thresholds. The two studies most comparable to ours, both using ISS / RiskMetrics data for an international sample of firms headquartered in developed countries, use 17 (Chhaochharia and Laeven, 2009) and 44 (Aggarwal et al., 2009) attributes, respectively. The most notable difference between our GMI dataset and these datasets from ISS is that GMI includes nine governance attributes that document a company's corporate social responsibility (CSR). Moreover, GMI provides more attributes in the category of financial disclosure and internal control. While our study includes eight attributes in this category, Aggarwal et al. (2009) and Chhaochharia and Laeven (2009) use only two and one attributes, respectively. In the other four categories, our dataset includes between three (shareholder rights and market for corporate control) and eight (remuneration) attributes that are not included in Aggarwal et al. (2009). The large difference in the remuneration category is mainly due to the fact that the attributes related to remuneration (and ownership) differ between the two databases.[5]

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[5] The 17 attributes in Chhaochharia and Laeven (2009) are basically a sub-set of the 44 attributes in Aggarwal et al. (2009) as 16 of them are included in the latter study. Chhaochharia and Laeven (2009) do not include any attributes related to compensation and ownership and very few attributes related to the board of directors as compared to Aggarwal et al. (2009) and our study.

Various of the 64 governance attributes are met by the majority of sample firms. For example, seven of the 20 attributes pertaining to board accountability are fulfilled by over 80 percent of the firms in our sample. These attributes are: board performance is periodically evaluated, the board or a committee is responsible for CEO succession planning, the company has not failed to adopt the recommendations of a majority-approved shareholder proposal, the company has a separated chairman and CEO, all board members attended at least 75% of the board meetings, the number of shares held by officers and directors has not decreased by 10% or more over the last year, and the board has more than five but less than 16 directors. For the attributes on financial disclosure and internal control, five of the eight attributes are met by more than 80% of the firms in our sample: the company has not had a material earnings restatement in the past three years, the company has not received a qualified audit opinion within the last two fiscal years, the company is not currently under investigation for accounting irregularities, someone other than senior management has the sole authority to hire the outside auditor, and the company did not pay its auditor less for audit related services than for other services. In the category shareholder rights attributes, more than 90% of the firms allow shareholders to convene an EGM with 10% or less of the shares requesting one and do not cap voting rights at a certain percentage. More than 90% of the firms included in our sample meet five of the 12 governance criteria on remuneration: the CEO is without an employment agreement that provides for guaranteed bonus payments, the CEO/managing director does not sit on the remuneration committee, the company has neither repriced outstanding executive stock options nor used an option exchange program, and the dilution resulting from stock options that have been granted does not exceed 20%. For the governance attributes on the market for corporate control, there is only one attribute that more than 90% of the companies in our sample fulfill, which is the absence of a shareholder rights plan ("poison pill"). Finally, for the attributes on corporate behavior, only two requirements (dis-

closure of a company's workplace safety record and disclosure of the company's policy regarding political donations) are met by less than 50%. A comparison of Table 2.2 with commensurate results from studies using the ISS database such as, for example, Aggarwal et al. (2009) reveals that the level of implementation of governance attributes is similar for the governance attributes provided by both data providers.

2.2.2 Corporate governance index construction

We use all 64 individual governance attributes to construct three alternative corporate governance indices. As a first step, we assign a value of one to each governance attribute that a firm has in place and zero otherwise. Our first index, CGI1, is then simply calculated as the percentage of attributes a company has adopted (i.e., attributes which have been assigned a value of one). If a company satisfies all 64 attributes, CGI1 for this company would be equal to 100. If the company does not provide information on an attribute, we eliminate this attribute from the computation of the index. The value of CGI1 can thus be regarded as the percentage of attributes that are not missing and that a company satisfies. This approach is the same as the one used by Aggarwal et al. (2009).

Our second index, CGI2, is built in the same way as CGI1, with the exception that we do not exclude missing attributes from the computation but give each missing attribute a score of 0, effectively treating it as if the company had not adopted the respective governance attribute (as opposed to simply not disclosing the information whether the attribute is adopted). If the probability that a firm discloses information on a specific governance attribute is positively correlated with the probability that an attribute is adopted, we would expect a stronger valuation effect of CGI2 as compared to CGI1. Both CGI1 and CGI2 are additive indices, a feature common in the literature (see, e.g., Gompers et al., 2003; Bebchuck and Cohen, 2005; Bebchuk et al., 2009). Panel A of Table 2.3 provides information on the first

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two governance indices, CGI1 and CGI2. The empirical distributions of CGI1 and CGI2 are displayed in Figure 2.1. The means (medians) of CGI1 and CGI2 are 61.47 (60.71) and 53.32 (50.77), respectively, indicating a reasonably symmetric distribution. Figure 2.1 also reveals that there are substantial differences in corporate governance between the firms in our sample, regardless of which index we use. We thus conclude that our corporate governance proxies are selected and constructed in a way that leads to sufficient variance in the cross-section.

For our third alternative index construction, we follow Larcker et al. (2007) and apply principal component analysis (PCA) to condense the information contained in the governance attributes. There is no well-developed conceptual basis for selecting the relevant corporate governance variables and their relative weights to include in a corporate governance index. PCA allows us to explore the unknown nature of the factor structure that is hidden behind our set of individual governance attributes.[6] Specifically, PCA condenses the information contained in the individual governance attributes into one corporate governance index, or a small number of governance indices (as done in the robustness tests in Section 2.4.1), by finding the linear combination of the original governance attributes that account for as much variation in the original dataset as possible. Hence, the weighting scheme in our PCA-based index is based on a statistical procedure instead of using equal or arbitrarily chosen weights and aims at "optimally" reflecting the underlying dimension or structure of the individual corporate governance attributes. Larcker et al. (2007) show that such a PCA-based governance index has considerably less measurement error than any individual corporate governance variables or arbitrarily constructed indices. To enhance the interpretability of the PCA results, we use an oblique rotation that allows the principal components to be correlated.

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[6] In the robustness tests of Section 2.4, we follow Larcker et al. (2007) and construct alternative indices for which PCA not only determines the relative weights of the individual corporate governance attributes but also whether an attribute is included in the index in the first place. We do this by requiring a factor loading in excess of 0.40 in absolute value. Instead of directly using the principal components as governance indices, we then construct governance indices by calculating equally weighted averages of standardized versions of these governance attributes with factor loadings in excess of 0.40 in absolute value.

PCA requires the availability of all governance attributes for one specific firm-year observation. As we have an unbalanced panel, we first reduce the number of governance attributes to a number which assures a sufficiently large sample size while including the presumably most important governance attributes. For example, requiring the availability of all variables included in the first sub-category (board accountability) would reduce our sample size to 830 firm-years. Hence, we restrict the governance attributes used in the standard PCA approach to the 17 governance attributes reported in Panel A of Table 2.4 which we consider to be of high importance and which do not reduce sample size too strongly. We admit that this choice of governance attributes might seem somewhat arbitrary. However, many of the 17 variables have been analyzed as individual corporate governance attributes in prior research, examples being related-party transactions (e.g., Gordon et al., 2006), board size (Yermack, 1996), equity capital structure (e.g., Gompers et al., 2010), or whether the board is classified (e.g., Faleye, 2007). Moreover, of these 17 attributes, eight coincide with attributes used in Chhaochharia and Laeven (2009) and 12 are included in Aggarwal et al. (2009). The reduction in sample size when using this PCA-based index is 823 firm-years (15.1%) resulting in 4,630 firm-year observations in the multivariate analyses.[7] Applying PCA to the 17 governance attributes, we set CGI3 equal to the first principal component (which explains 16.4% of total variance in the governance attributes). Panel A of Table 2.3 provides summary statistics for CGI3.[8]

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[7] In the robustness tests in Section 2.4.1, we use an extended set of 21 governance attributes for the PCA-based index that additionally includes the following four attributes: dummy variables whether the company has not adopted a shareholder rights plan ("poison pill"), whether the CEO/managing director does not sit on the remuneration committee, whether the remuneration committee is wholly composed of independent board members, and whether the company has separated the chairman and CEO positions. The addition of these four governance attributes, however, reduces the sample size in the multivariate analyses by another 802 observations (17.3%).

[8] In the robustness tests of Section 2.4, we will use various alternative approaches to construct our PCA-based governance indices.

2.2.3 Financial data

We obtain the financial data for the companies included in our sample from World-scope. We use Tobin's Q as our main performance measure. Following La Porta et al. (2000a) and Doidge et al. (2004), we compute Tobin's Q as the sum of total assets less the book value of equity plus the market value of equity, divided by total assets. In the multivariate analysis, we use several control variables. We control for firm size by using the logarithm of total assets (LNTA). Further, and in accordance to prior work investigating the relation between corporate governance and firm value (e.g., see Aggarwal et al., 2009), we control for the past growth in sales over the last two years (PGSALES), the ratio of research and development expenditures to sales (RD/SALES), the ratio of cash to total assets (CASH/ASSETS), the ratio of capital expenditures to assets (CAPEX/ASSETS), the ratio of property-plants-equipment to sales (PPE/SALES), the ratio of earnings before interest and taxes to sales (EBIT/SALES), leverage (LEVERAGE) defined as the ratio of total debt to total assets, a dummy variable whether the firm has American Depository Receipts (ADR), and the percentage of shares that are closely held, i.e., held by blockholders with ownership stakes exceeding five percent of the company's equity (CLOSELY HELD). All variables are denoted in U.S. dollars. To address the problem of outliers and influential observations, we winsorize the variables PGSALES, PPE/SALES, and EBIT/SALES at the 1% and the 99% percentiles and restrict our sample to firm-years with a Tobin's Q of less than or equal to 6 and a LEVERAGE less than or equal to 1.[9] The summary statistics for Tobin's Q and all control variables are reported in Panel B of Table 2.3.

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[9] In unreported robustness tests, we find all our results to remain qualitatively unchanged when we omit the winsorization and sample restriction based on the Q- and LEVERAGE-values.

2.3   Valuation effect of main corporate governance indices

In this section, we investigate the valuation effect of our alternative corporate govern-ance indices in a multivariate framework. Specifically, we estimate panel regressions of To-bin's Q on our three alternative governance indices (CGI1, CGI2, and CGI3) and a set of con-trol variables. The choice of control variables is based on Aggarwal et al. (2009). To control for firm size, we include the natural logarithm of total assets (LNTA). The ratio of property-plants-equipment to sales (PPE/SALES) is included as companies operating with higher (lower) proportions of fixed (intangible) assets may consider it less optimal to adopt a strict corporate governance practice due to less scope to misuse assets. We also control for vari-ables which are usually found to be associated with firm performance: the two-year growth of sales (PGSALES), the ratio of capital expenditures to assets (CAPEX/ASSETS), the ratio of R&D expenditures to sales (RD/SALES), the ratio of cash to total assets (CASH/ASSETS), the ratio of EBIT to sales (EBIT/SALES), leverage (LEVERAGE), and the percentage of shares that are closely held (CLOSELY HELD). Finally, empirical evidence suggests that companies which are cross-listed on a U.S. exchange are valued higher (Doidge et al., 2004). Hence, we also include a dummy variable whether the firm has American Depositary Re-ceipts outstanding (ADR).[10]

Columns 1 to 3 in Table 2.5 report the results for the three governance indices, CGI1, CGI2, and CGI3, respectively. To eliminate a potential omitted variables bias and control for the effect of unobserved variables that are constant over time, we include firm fixed effects. We use Driscoll and Kraay (1998) standard errors, which are heteroskedasticity-consistent

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[10] In unreported robustness tests, we include a number of additional control variables including the log of firm age, the percentage of foreign owned shares, and, based on Aggarwal et al. (2009), the ratio of foreign to total sales. The coefficient on age is always estimated positive and often significant while the coefficients on both the percentage of foreign owned shares and the ratio of foreign to total sales are estimated insignificant in all speci-fications. Moreover, inclusion of the latter two explanatory variables reduces sample size by approximately 10% and 20%, respectively. Most importantly, the coefficient on corporate governance remains positive and signifi-cant in all specifications. Hence, we do not report these extended regression specifications for space reasons.

and robust to general forms of cross-sectional and temporal dependence.[11] Most importantly, the coefficients on all three governance indices are estimated positive and significant. Moreover, the coefficient estimates on the governance indices suggest that a one standard deviation increase in CGI1 is associated with an increase in Tobin's Q of 0.06 which amounts to 3.5% (4.2%) of mean (median) Q in our sample. This valuation effect of corporate governance in our sample is comparable to that reported in Chhaochharia and Laeven (2009). The economic magnitude of the valuation effect of CGI3 is somewhat larger (0.08) while the one of CGI2 is substantially larger and amounts to 0.15 or 9% (11%) of mean (median) Q in our sample. Hence, accounting for the fact that companies are more likely to report information on corporate governance attributes they have adopted, an approach that to our knowledge has not been used in prior research, leads to a substantial increase in the estimate of the valuation effect of corporate governance.[12] Regarding the control variables, our findings largely correspond to those of Aggarwal et al. (2009) with four exceptions. First, the coefficient of RD/SALES is not significant in all three specifications. However, if we follow Aggarwal et al. (2009) and include industry fixed effects (as we do in Columns 4 to 6), the coefficient of RD/SALES turns positive and significant as well. Second, consistent with Aggarwal et al. (2009), the coefficients of PPE/SALES are negative. However, in Table 2.5 they are all significant at the 1% while being insignificant in Aggarwal et al. (2009). Third, the coefficient on LEVERAGE is in some specifications significantly negative whereas the estimations of Aggarwal et al. (2009) never show significant coefficients for LEVERAGE. Fourth, the coefficient on CLOSELY HELD is negative and significant in all three specifications. This finding contrasts with Aggarwal et al. (2009) and earlier literature (e.g., La Porta et al., 1999;

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[11] Driscoll and Kraay (1998) show that erroneously ignoring cross-sectional dependence in the estimation of linear panel models can lead to severely biased statistical inference. In the context of this study, cross-sectional correlation may arise when the decision to implement a specific corporate governance provision of one particular firm is related to or coincides with the decisions of other firms. Alternatively, we also perform the estimations with cluster-robust standard errors and find the results to remain qualitatively unchanged.

[12] We further analyze the economic effect of corporate governance on firm value in Section 2.4.5.

Stulz, 2005) and might be due to the relatively high mean (24%) and median (28%) values of closely held shares in our sample.[13] In their seminal paper, Morck et al. (1988) report a negative relationship between share ownership of the board of directors and firm value in the 5% to 25% ownership range and attribute these findings to a domination of the incentive alignment effect by the entrenchment effect. A similar effect might be at work for block ownership more generally in our sample.

Variations across countries have been shown to matter a lot for corporate governance (see, e.g., Doidge et al., 2007). We aim to account for this fact in two ways. First, in Columns 4 to 6 of Table 2.5, we control for country-specific instead of firm-specific unobservable heteroskedasticity by including country instead of firm fixed effects. In addition, we include industry and year fixed effects. Second, in Columns 7 and 8, we follow Chhaochharia and Laeven (2009) and adjust the CGI scores by subtracting the number of governance attributes that every firm of a country fulfills in a given year from the number of attributes a firm has in place. Doing so enables us to focus on changes in the governance scores which are truly firm-specific and not influenced by country-specific differences in legal regimes. For the PCA-based CGI3, such an adjustment is not possible. The results in Columns 4 to 8 show that these alternative specifications leave the results of Columns 1 to 3 qualitatively unchanged. Most importantly, the coefficients on the governance indices all remain positive and significant. The only notable change in the control variables is that the coefficient on RD/SALES turns positive and significant when country dummy variables are included (Columns 4 to 6).

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[13] Unfortunately, Aggarwal et al. (2009) do not report descriptive statistics for closely held shares and therefore we cannot compare the distribution of the variable between the two samples.

2.4 Robustness tests and extensions

2.4.1 Robustness of main results

One possible concern about the results reported in the previous section is that they could be driven by one single year or one single country. In our first set of robustness tests, we thus analyze our sample on a year-by-year basis and for the five countries with the most firm-year observations. The results are reported in Table 2.6 and show that the positive effect of corporate governance on firm value in general remains significant both over time and if we restrict our sample to specific countries. The two exceptions are the analysis for 2003 (Column 1) and Japan (Column 6). The insignificant coefficient on CGI1 in Column 1 might be related to the relatively small sample size as compared to the four subsequent years. As for Japan, Japanese corporate governance is well-known to differ from that in other countries (e.g., Berglöf and Perotti, 1994; La Porta et al., 2000a; Claessens et al., 2002). Hence, it is not surprising that our results show no relation between our governance indices and firm value in Japan.[14] To save space, we only report the results for regressions including CGI1. However, all results reported in Table 2.6 remain qualitatively unchanged when CGI1 is replaced by CGI2 or CGI3. For Canada, we exclude the control variable CASH/ASSETS since Worldscope's coverage of this variable for Canadian firms is very poor, leading to a reduction in the sample size by about 60%.

In Table 2.7, we report the results of our next robustness test, where we use a number of alternative approaches to construct our PCA-based governance indices. In the first approach (Column 1), we use the same 17 governance attributes as before but retain the first five components, which jointly explain 51.3% of total variance in the original governance

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[14] In Japan keiretsu membership seems to be the most important corporate governance attribute while others, such as for example ownership structure, are of less, if of any, importance. Lins and Servaes (1999), for example, find that a strong keiretsu membership is an indicator of corporate governance problems while ownership structure is not. Claessens et al. (2002) exclude Japan from their analysis of ownership structure in East Asia because the keiretsu system affects governance in ways that cannot be captured by ownership variables.

attributes. That is, we have five governance indices in the specific regression equation. In the second approach (Columns 2 and 3), used to enhance the interpretability of the results and to check for their robustness, we use a similar approach as Larcker et al. (2007) and associate with each component those governance attributes that have a factor loading in excess of 0.40 in absolute value. Instead of directly using the principal components as governance indices, we then follow Larcker et al. (2007) and construct governance indices ("construct scores") by calculating equally weighted averages of standardized versions of the governance attributes with factor loadings in excess of 0.40 in absolute value. Since these alternative governance indices are weighted averages of standardized variables, their mean is equal to zero and the variance equal to one. Panel B of Table 2.4 reports the expected sign of the correlation between the principal components and firm value and the percentage of variance explained by each component and cumulatively. The expected sign is derived from the signs and magnitudes of the factor loadings of the individual governance attributes in each component. For the governance indices directly based on the first five principal components, we sum all factor loadings over the 17 governance attributes and attribute a positive expectation for the principal components with a value larger than one (the sums of factor loadings for the five components are 0.24, 2.06, 1.96, 0.30, and 1.09, respectively). For the governance indices based on the equally weighted averages of the standardized attributes, we derive the sign of the expected correlation from whether the sum of factor loadings in excess of 0.40 in absolute terms is larger than zero (larger than 0.5), smaller than zero (smaller than -0.5), or close to zero (between -0.5 and 0.5). However, as the importance of the individual attributes may differ substantially, lower sums of the factor loadings might nevertheless be associated with higher positive coefficients than larger sums with relatively less weights attributed to the most important governance attributes. The factor loadings for the first five principal components are reported in Panel A of Table 2.4.

The third (Columns 4 and 5) and fourth (Columns 6 and 7) alternative approaches are identical to the first two approaches but are based on a larger set of 21 governance attributes. This set additionally includes dummy variables whether the company has not adopted a shareholder rights plan ("poison pill"), whether the CEO/managing director does not sit on the remuneration committee, whether the remuneration committee is wholly composed of independent board members, and whether the company has separated the chairman and CEO positions. Three of these four potentially important governance attributes are included in Chhaochharia and Laeven (2009) and two in Aggarwal et al. (2009). The addition of these four governance attributes, however, reduces the sample size in the multivariate analyses by 802 observations (17.3%) when directly using the principal components as governance indices. In contrast, when we use the equally weighted average of the standardized versions of the governance attributes, which exhibit factor loadings in excess of 0.40 in absolute value, as governance indices, the sample size remains unchanged.

Overall, the results of these different variants of our PCA-based corporate governance indices in Table 2.7 show that the positive and significant effect of corporate governance on firm value is robust to the alternative specifications of the PCA-based governance indices − at least for the governance indices based on the first, second, and fourth principal components.

2.4.2 Corporate social responsibility

Using GMI's dataset enables us to investigate the value of corporate behavior attributes such as for example whether the company discloses its policy regarding corporate level political donations or whether the company has been charged with workplace safety violations. Such "soft" factors, often termed "corporate social responsibility (CSR)", have not yet been included in the previous literature on corporate governance and firm value with very few exceptions. There exists some research on some specific aspects of CSR such as corpo-

rate tax avoidance (e.g., Desai and Dharmapala, 2009). The majority of prior research on the relation between CSR and financial performance, however, use a measure of environmental performance as their measure of CSR. Konar and Cohen (2001), for example, examine the extent to which a firm's environmental reputation is valued by investors. They find that, after controlling for other variables known to affect the market value of a firm, bad environmental performance is negatively correlated with the intangible asset value of S&P 500 firms. Consistently, Dowell et al. (2000) find that U.S.-based multinational enterprises adopting a single, stringent global environmental standard have much higher market values than firms defaulting to less stringent, or poorly enforced host country standards.[15] Another problem of prior research, besides using a very narrow definition of CSR, is that these studies do not account for standard corporate governance attributes when investigating the valuation effect of corporate social responsibility.

The only three exceptions we are aware of, and the research closest to ours, are Fisman et al. (2006), Harjoto and Jo (2009), and Barnea and Rubin (2010). Fisman et al. (2006) use data on CSR from the Kinder, Lydenberg, and Domini's (KLD) Socrates database and find in general a negative relation between CSR and firm value. However, they show that the presence of outside blockholders with board representation and a stronger competition on the product markets both lead to a more positive relationship between CSR and profitability. Harjoto and Jo (2009) use corporate governance data from IRRC / RiskMetrics and CSR data from the KLD Socrates database to obtain a panel dataset from 1993 to 2004. Most importantly, they show that CSR is positively associated with corporate governance and that both corporate governance and CSR have a positive valuation effect. They argue that firms use corporate governance mechanisms along with CSR to reduce the conflicts-of-interest between

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[15] Consistent with these findings, Kempf and Osthoff (2007) show in a recent paper that buying stocks of companies with good social behavior and selling stocks of social underperformers generates an abnormal return of 8.7% per year.

shareholders and non-investing stakeholders. Barnea and Rubin (2010) argue that a firm's managers and large blockholders may seek to over-invest in CSR for their private benefit to the extent that doing so improves their reputation as good global citizens. Using CSR data also from the KLD Socrates database, they find that managers' ownership is negatively related to the firms' CSR, while institutional ownership is uncorrelated with it. Hence, they conclude that insiders induce firms to over-invest in CSR when they bear little of the cost of doing so. A common problem in all these studies is that the measure of CSR is binary and only indicates whether a firm invests in CSR or not. Moreover, while Harjoto and Jo (2009) account for the endogeneity of CSR but not corporate governance, the other two studies do not account for a potential endogeneity of both CSR and corporate governance.

To investigate the value impact of CSR, we first aggregate the nine variables pertaining to GMI's corporate behavior category to an index. Similar as for the corporate governance index, we construct three different indices. The first index, termed CSRI, is constructed in the same way as CGI2, namely by dividing the number of attributes a company has adopted by the total number of CSR attributes. This index construction treats missing attributes as if these attributes were not adopted. The second index, CSRI_PCA, is constructed in the same way as CGI3 by employing principal component analysis and using the first principal component as the governance index. The third index, CSRI_ADJ is equal to CSRI but adjusted according to Chhaochharia and Laeven (2009) by subtracting the number of governance attributes that every company in a given country fulfills in a given year.

Before investigating the valuation effect of CSR, we investigate the relation between corporate governance and CSR. Harjoto and Jo (2009) find that CSR is positively associated with corporate governance while Barnea and Rubin (2010) find a negative relation (when governance is measured by managerial ownership). In our sample, the correlations between

the three alternative CSR indices and corporate governance are all positive and significant at the 1% level (0.36, 0.12, and 0.29). As various firm characteristics may be related to both corporate governance and CSR, we also estimate similar regressions of our CSR indices on corporate governance and a set of control variables as in Harjoto and Jo (2009). Independent of the set of control variables and the type of fixed effects we include, the coefficient on corporate governance is always estimated positive and significant at the 1% level. Hence, our results are rather consistent with Harjoto and Jo (2009) than with Barnea and Rubin (2010) who only use ownership as a measure of corporate governance. Moreover, we find that larger and more profitable firms and firms with ADRs have higher CSR index values. The coefficients on all other variables are not consistently significant across the alternative specifications we tested (the results are not reported for space reasons).

To investigate the possible relation between CSR and firm value, we re-estimate the main regression specification of Table 2.5 and replace the original governance indices by the CSR indices. To eliminate potentially spurious regression results by simply picking up the effect of corporate governance, we control for the "standard" corporate governance attributes by including the additional control variable CGI_CONTR, which is an auxiliary governance index constructed in the same way as CGI2 but excluding the nine CSR attributes. The results are reported in Columns 1 to 3 of Table 2.8 and show a significant and robust positive effect of good corporate behavior on firm value for all three alternative CSR indices. Moreover, the relation between the governance control index, CGI_CONTR, and firm value remains positive and highly significant. In Columns 4 and 5, we replace the firm fixed effects by industry, country, and year fixed effects and find the results to remain virtually unchanged.

CSR may be less profit-motivated in companies with poor corporate governance as ineffective monitoring and control mechanisms may allow the board and management to

make CSR expenditures according to their personal preferences rather than profit concerns (e.g., Fisman et al., 2006; Harjoto and Jo, 2009). Hence, in Columns 6 and 7, we additionally include interaction terms between CSRI and CGI_CONTR and between CSRI_PCA and CSRI_CONTR, respectively. If a good corporate governance in fact assures that CSR expenditures are profit-oriented rather than serving the managers' personal ambitions, for example to improve their reputations as good global citizens, we would expect a positive and significant coefficient on the interaction term. In fact, the coefficient on the interaction term is positive and significant at the 1% and 5% level in Columns 6 and 7, respectively, while the coefficient on CSR turns insignificant in both specifications. Hence, the positive valuation effect of CSR only applies to firms with a good corporate governance structure.

2.4.3 Endogeneity

Endogeneity is a crucial issue in investigating the effects of corporate governance on firm value. Recent papers additionally argue that such endogenous relations may be dynamic (e.g., Wintoki et al., 2008). Hermalin and Weisbach (2004) and Wintoki et al. (2008) argue that current actions of a firm affect future corporate governance as well as performance, which will in turn affect the firms' future actions.

To control for such a dynamic endogeneity, unobservable heterogeneity, and simultaneity, we follow Wintoki et al. (2008) and use the dynamic panel GMM estimator as proposed by Arellano and Bover (1995) and Blundell and Bond (1998). The estimation consists of the following three steps: First, we rewrite the regression equation as a dynamic model that includes lagged performance as an explanatory variable. Second, we first difference all variables. This controls for unobserved heterogeneity and eliminates a potential omitted variables bias. Third, we estimate the model by GMM and use lagged values of the governance indices and performance as instruments. Using lagged variables as instruments for the present values

of these variables controls for potential simultaneity and reverse causality. In addition, this estimation procedure allows all the explanatory variables (i.e., the governance indices and all control variables) to be treated as endogenous.[16]

The results for the three alternative corporate governance indices are reported in the first three columns of Table 2.9. They indicate that the coefficients on all three alternative governance indices remain positive and statistically significant at the 10% level or better. These results alleviate endogeneity concerns and provide evidence of a causal link between our corporate governance indices and firm value.

The same endogeneity concerns also apply to CSR. Specifically, firms that have performed better in the past can possibly afford to act more socially responsible. Hence, in a next step, we extend our dynamic panel GMM regressions to include CSR as an additional endogenous variable. The results for the two alternative CSR indices, CSRI and CSRI_PCA, are reported in Columns 4 and 5 of Table 2.9. Again we find the coefficients on both CSR indices as well as on the corporate governance indices to remain positive and statistically significant at the 10% level or better indicating a causal link between corporate governance and firm value *and* between CSR and firm value.

Finally, we follow Harjoto and Jo (2009) and estimate Heckman (1979) selection model regressions to account for a potential endogeneity of CSR. In contrast to the GMM approach, this analysis neglects the endogeneity of corporate governance and other variables. In a first step, we redefine CSRI and CSRI_PCA into dummy variables that equal one for firm-

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[16] Many papers in the literature use instrumental variables regressions. However, instrumental variables approaches are problematic because of a lack of suitable instruments for corporate governance (e.g., Larcker et al., 2007). An approach recently used by Aggrawal et al. (2009) to circumvent the problem of identifying valid instruments is to replace firm-level governance by the average governance index value of all firms in the same country, industry, and year. When applied to our sample, we find our results to remain qualitatively unchanged and therefore do not report them in a table.

years for which the value of CSRI (CSRI_PCA) is larger than the median value.[17] These dummy variables are the dependent variables of the first-stage probit regressions. The explanatory variables in the first stage regressions are based on Harjoto and Jo (2009) and include CGI_CONTR, LNTA, RD/SALES, EBIT/SALES, LEVERAGE, and industry dummy variables.[18] We do not report the results in a table for space reasons. Most importantly, the coefficients on corporate governance, firm size, and profitability (EBIT/SALES) are estimated positive and significant in all specifications. The dependent variable of the second-stage regressions is Tobin's Q and we include the same set of explanatory variables as in the GMM regressions reported in Columns 4 and 5. LAMBDA is the self-selection parameter (or inverse Mill's ratio) from the first-stage probit regressions. The results are reported in the last two columns of Table 2.9. Again, we find positive and significant coefficients on both CSR indices as well as on the corporate governance control indices. The coefficient on LAMBDA is significant in both regressions indicating that firm characteristics that make firms choose to spend more on CSR are significantly correlated with firm value.

2.4.4 Individual governance attributes

So far, we have focused on governance indices and their value impact. However, academic studies, the regulatory bodies, and the press at large generally pay more attention to individual governance attributes than to an aggregate of attributes. In addition, it is potentially interesting and revealing to learn which specific attributes are significantly related to firm value and thereby contribute to the positive valuation effect of the governance indices. Hence, in this section, we investigate the relation between two different subsets of individual

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[17] In unreported robustness tests, we alternatively use dummy variables for whether CSRI or CSRI_PCA are in in top 25% percentile of the distribution. The results are virtually unchanged and therefore not reported for space reasons.

[18] In unreported robustness tests, we use a number of additional control variables including past sales growth (PGSALES), the ratio of cash to total assets (CASH/ASSETS), the ratio of capital expenditures to assets (CAPEX/ASSETS), the ratio of property-plants-equipments to sales (PPE/SALES), a dummy variable whether the firm has ADRs (ADR), and the percenatge of closely held shares (CLOSELY HELD). The results of the second-stage regressions remain qualitatively unchanged.

governance attributes and firm value. First, we include the 17 variables contained in our main PCA-based governance index, CGI3. The second subset consists of our nine CSR attributes. Panel A of Table 2.10 lists the 17 individual governance attributes, Panel B of Table 2.10 the nine CSR attributes. We investigate the valuation effect of the individual corporate governance and CSR attributes based on similar fixed effects regressions as reported in Column 1 of Table 2.5. In Column 1 of Table 2.10, we include each governance / CSR attribute separately – along with the set of control variables. In Column 2, we additionally include the remaining 16 (8) individual governance (corporate social responsibility) attributes as control variables. In Panel B, we also include CGI_CONTR to control for the effect of corporate governance on firm value.

The results in Panel A show that some of the included attributes have a significantly positive effect on firm value, regardless of whether they are included individually in the regression or whether they are included jointly with the other 16 attributes. Most importantly, board size, a dummy variable whether a company has received a qualified audit opinion, a dummy variable whether a company has a one-share-one-vote policy, a dummy variable whether shareholders have the right to convene an EGM, and a dummy variable whether the audit committee is wholly composed of independent members are all positive and significant at the 5% level or better. In contrast, not requiring a supermajority to approve a merger has a negative effect on firm value. Many of these results confirm earlier findings in the literature, for example on board size (e.g., Yermack, 1996) and audit committee composition (Chan and Li, 2008).

In Panel B of Table 2.10, we find that four CSR attributes have a positive effect on firm value, regardless of whether they are included individually in the regression or whether they are regressed jointly along with the other eight attributes. These attributes include

dummy variables whether the company discloses its workplace safety record, if regulatory investigation for a material issue other than accounting irregularities is under way, if the company discloses its policy regarding corporate level political donations, and if the company has not been charged with workplace safety violations. These results provide further validation of our finding that governance attributes describing certain behavioral aspects of a company have a strong positive effect on firm value even when standard governance attributes are accounted for, a relationship that has not been investigated or documented in the literature to date.

2.4.5 The economic importance of corporate governance

In this last section of the chapter, we investigate the economic importance of the valuation effect of corporate governance. As the majority of previous research focuses on the statistical significance of the governance coefficient, academic research provides little insight into the economic significance of the effect of corporate governance on firm value. Hence, in a first step, we provide an overview of the economic effect of corporate governance on firm value as estimated in seven recent, and mostly well-known and often-cited academic studies in the area. To be included in our survey, the studies have to use Tobin's Q as a measure of firm value / performance, use a comprehensive corporate governance index and not individual corporate governance attributes, and include either the U.S. or several non-U.S. countries in the sample. Moreover, the paper has to provide an estimate of the standard deviation of the corporate governance index for that the economic effect can be estimated.[19] In a second step, we investigate differences in the economic effect that result from changes in the index con-

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[19] Examples of studies we considered, but which could not be included for one or another reason are Doidge et al. (2007) and Larcker et al. (2007) as both studies do not investigate the valuation effect of governance. Bebchuck et al. (2009) had to be excluded as the standard deviation of the governance index is not reported. Cremers and Nair (2005) and Bruno and Claessens (2010) do not estimate standard Q-regressions that allow to infer the economic effect of firm-level corporate governance.

struction and alternative econometric estimation techniques based on our international sample using governance data from GMI.

A survey of the seven papers is provided in Table 2.11. Most importantly, the economic effect varies widely between the different studies and sometimes also within the studies, in particular in studies that additionally attempt to control for endogeneity (e.g., Chhaochharia and Laeven, 2009).[20] The smallest effect found in these studies is in Cremers and Ferrell (2010), who find an increase in the G-Index to be associated with a decrease in Q of approximately 0.033, or 2% of mean Q in their U.S. sample covering nearly 30 years. The largest effect of 0.421 (22% of mean Q) is found by Durnev and Kim (2005) when they account for endogeneity concerns by estimating a system of simultaneous equations with three-stage least squares. The average of the OLS-based estimates in the seven surveyed papers is an increase in Q of 0.13 when the governance index increases (decreases in the case of the G-Index) by one standard deviation. If we only consider developed countries, as we do in this study, the effect drops to 0.09. For developing countries, the economic effect is substantially larger (0.25). This finding is not surprising given the evidence in Klapper and Love (2004) and Durnev and Kim (2005) both documenting a stronger effect of corporate governance on firm value in less investor-friendly countries.

To assess the economic effect of corporate governance on firm value in this study, we start with the first three columns of Table 2.5. The coefficient estimate on CGI1 shows that a one standard deviation increase in CGI1 is associated with an increase in Q of 0.06 (0.005 * 11.12) which amounts to 3.5% (4.2%) of mean (median) Q. This finding is similar to but somewhat lower than those in Aggarwal et al. (2009) and Chhaochharia and Laeven (2009) which are the studies most comparable to ours. A one standard deviation increase in CGI2

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[20] For simplicity, we do not report all different estimates reported in a study but only those of the main regression specification of the paper. We report two values if there is a major change in the setup within a paper (e.g., Chhaochharia and Laeven, 2009).

and CGI3 is associated with an increase in Q of 0.15 and 0.08, respectively. Hence, in particular the economic effect of CGI2 on Q is substantially larger, confirming the conjecture, stated in Section 2.2.2, that the probability that a firm discloses information on a specific governance attribute is positively correlated with the probability that an attribute is adopted. Columns 4 to 6 show that using country, industry, and year instead of firm fixed effects leaves the magnitude of the valuation effect virtually unchanged. In contrast, when we adjust the CGI scores by subtracting the number of governance attributes that every firm of a country fulfills in a given year from the number of attributes a firm has in place, the economic effect increases substantially. Specifically, a one standard deviation increase in such an adjusted version of CGI1 and CGI2 is associated with an increase in Q of 0.14 and 0.28, respectively. As this alternative index construction enables us to focus on changes in the governance scores which are truly firm-specific and not influenced by country-specific differences in legal regimes, we would in fact expect a lager economic effect of these indices.

Table 2.11 shows that alternative estimation techniques may strongly affect the estimate of the economic size of the valuation effect of governance. In particular, methods that account for the endogeneity of corporate governance (and possibly other variables) seem to boost the economic significance of the valuation effect (e.g., Durnev and Kim, 2005; Chhaochharia and Laeven, 2009).[21] When looking at the GMM results in Table 2.9, we find little differences in the economic effect of corporate governance on Q as compared to the OLS specifications in Table 2.5.[22] A one standard deviation increase in CGI1, CGI2, and CGI3 is associated with an increase in Q of 0.08, 0.10, and 0.08. Hence, the differences re-

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[21] Beiner et al. (2006) and Black et al. (2006) show that instrumental variables approaches may lead to an overestimate of the valuation effect of corporate governance.

[22] One reason might be that we have a longer panel and therefore more lags (and consequently better instruments) and less problems with sample size when using lagged variables as instruments as compared to Chhaochharia and Laeven (2009), for example.

sulting from the alternative approaches to construct the indices are somewhat reduced but the effect of CGI2 remains larger than the effect of CGI1 and CGI3.

To summarize, our results in Sections 2.3 and 2.4 indicate that the statistical significance of the valuation effect of corporate governance is virtually unaffected by both the construction of the index and the choice of the estimation methodology. In this sub-section, however, we show that the economic significance of this valuation effect strongly depends on how the index is constructed. In particular, when we account for the fact that companies are more likely to report information on corporate governance attributes they have adopted or focus on changes in the governance scores which are truly firm-specific and not influenced by country-specific differences in legal regimes, the economic importance of the valuation effect substantially increases.

2.5 Conclusions

In this chapter, we investigate the effect of firm-level corporate governance on firm value using a previously unused dataset by Governance Metrics International (GMI) which covers 64 individual corporate governance attributes on over 2,300 firms from 22 developed countries over a five-year time period from 2003 to 2007. We aggregate the 64 governance attributes to governance indices using different techniques. First, based on related previous work (e.g., Aggarwal et al., 2009), we construct additive indices. Second, we use principal component analysis (PCA) to extract governance indices from the 64 attributes. Moreover, we specifically investigate whether governance attributes that reflect a company's social behavior also affect firm value.

We find a strong and positive relation between firm-level corporate governance and firm valuation and between a company's social behavior and firm value. These results are

robust to the different techniques used to construct the corporate governance indices, a break-down of the sample by both calendar year and country, and a dynamic panel GMM estimator.

Our results indicate that better corporate governance practices are reflected in statistically and economically significantly higher market values. Hence, at least for the average firm in our sample, the costs of the implementation of the corporate governance mechanisms seem to be smaller than the monitoring benefits, resulting in higher cash flows accruing to investors and lower costs of capital for the firms. Consequently, from the companies' perspective, corporate governance should be understood as an opportunity rather than an obligation and pure cost factor.

2.6   Appendix

Table 2.1: Overview of countries included in the sample

Country	Observations	% of sample
Australia	419	6.29%
Austria	56	0.84%
Belgium	90	1.35%
Canada	471	7.07%
Denmark	80	1.20%
Finland	92	1.38%
France	344	5.16%
Germany	337	5.06%
Greece	88	1.32%
Hong Kong	203	3.05%
Ireland	61	0.92%
Italy	201	3.02%
Japan	1,762	26.44%
Netherlands	147	2.21%
New Zealand	45	0.68%
Norway	57	0.86%
Portugal	45	0.68%
Singapore	208	3.12%
Spain	173	2.60%
Sweden	194	2.91%
Switzerland	183	2.75%
UK	1,407	21.12%
Total	6,663	100%

The table reports the number of observations (Observations) and the percentage each country accounts for in the full sample (% of sample) for each country covered in the study. The total sample consists of 6,663 firm years. We drop countries for which we have less than 10 firm-year observations (i.e., Argentina, Colombia, Czech Republic, Egypt, Hungary, Iceland, Israel, Jordan, Morocco, Pakistan, Peru, Philippines, Thailand, and Venezuela) and emerging and developing countries (i.e., Brazil, Chile, China, India, Indonesia, Malaysia, Mexico, Russia, South Africa, South Korea, Taiwan, and Turkey).

Table 2.2: List of corporate governance attributes and the percentage of firms meetings the requirement for these attributes

Individual governance attribute	% of firms meeting attribute
Board Accountability	
1. Board members are subject to annual election by all shareholders	22.2%
2. Non-executive board members have a formal session without executives once a year	55.3%
3. Board performance is periodically evaluated	86.2%
4. Company discloses a code of ethics for senior executives	45.3%
5. Company discloses its corporate governance policies or guidelines	64.2%
6. Board or a committee is responsible for CEO succession planning	82.8%
7. Company has not failed to adopt the recommendations of a shareholder proposal	99.8%
8. All executive board members own shares after excluding options held	73.1%
9. All non-executive board members own shares after excluding options held	37.5%
10. Company has a separated chairman and CEO	86.0%
11. All members attended at least 75% of the board meetings	80.5%
12. Company has a designated "lead" or senior non-executive board member	28.5%
13. There have been no related-party transactions in the past three years	50.0%
14. The governance/nomination committee is composed of independent board members	20.9%
15. No former CEO of the company serves on the board	72.2%
16. Nr. of shares held by officers and directors has not decreased by 10% or more	84.2%
17. Nr. of shares held by officers and directors has increased by 10% or more	26.0%
18. Governance/nomination committee has a written charter or terms of reference	50.6%
19. Board size is greater than five but less than 16	80.5%
20. Board is controlled by more than 50% of independent outside directors	40.7%
Financial Disclosure and Internal Control	
21. Company has not had a material earnings restatement in the past three years	98.3%
22. Audit committee has a written charter or terms of reference	63.9%
23. Company has not received a qualified audit opinion within the last two fiscal years	99.4%
24. Company is not currently under investigation for accounting irregularities	98.8%
25. Audit committee is wholly composed of independent board members	43.8%
26. Someone other than senior management with sole authority to hire outside auditor	85.1%
27. Audit committee with sole authority to approve non-audit services from outside auditor	41.9%
28. Company did not pay its auditor less for audit related services than for other services	84.4%
Shareholder Rights	
29. Vote results for the last shareholder meeting are disclosed within 14 calendar days	78.5%
30. All common or ordinary equity shares have one-share, one-vote, with no restrictions	68.0%
31. The company provides confidential voting with no or with reasonable exceptions	50.5%
32. Shareholders have a right to convene an EGM with 10% or less of the shares requesting one	90.8%
33. Shareowners have a right to act in concert through written communication	17.6%
34. Voting rights are not capped at a certain percentage	95.4%
Remuneration	
35. Non-executive board members paid in cash and some form of stock-linked compensation	18.1%
36. Company discloses performance targets for the next fiscal year	31.1%
37. Non-executive board members are paid entirely in some form of stock-linked compensation	0.5%
38. CEO without an employment agreement that provides for guaranteed bonus payments	97.9%
39. Goals used to determine incentive awards are aligned with the company's financial goals	44.7%
40. CEO/Managing Director does not sit on the remuneration committee	94.9%
41. Remuneration committee is wholly composed of independent board members	35.9%
42. No repricing of outstanding executive stock options and no option exchange program	98.9%
43. Expensing of employee stock option grants	35.5%

44. Remuneration committee has a written charter or terms of reference	56.4%
45. Potential dilution from stock options outstanding is below 20%	99.8%
46. Potential dilution from stock options outstanding + not yet granted is below 20%	99.5%
Market for Control	
47. Company has not adopted a shareholder rights plan ("poison pill")	96.3%
48. Company does not have a staggered ("classified") board	51.4%
49. Company cannot issue blank check preferred stock in the event of a hostile tender offer	89.5%
50. Company's shareholder rights plan ("poison pill") has been ratified by a shareholder vote	3.4%
51. Fair price provision in place or price protection under applicable law	69.9%
52. Shareholder rights plan includes a TIDE provision or a three-year sunset provision	1.1%
53. Company does not require a supermajority vote to approve a merger	42.7%
54. No single shareholder or shareholder group with majority of voting power	81.3%
55. Company allows cumulative voting in the election of directors	3.8%
Corporate Behavior	
56. The company has a policy addressing workplace safety	86.0%
57. Company does not have pending criminal litigation against it	96.4%
58. No allegation that the company used sweat shops within the last three years	99.8%
59. Company discloses its environmental performance	52.2%
60. Company discloses its workplace safety record	34.7%
61. No regulatory investigation for a material issue other than for accounting irregularities	91.9%
62. Company discloses its policy regarding corporate level political donations	27.5%
63. Company has not been charged with workplace safety violations within the last two years	98.7%
64. It has not been alleged by a responsible party that the company used child labor	99.7%

The table displays the 64 governance attributes of our sample grouped by the six sub-categories: Board Accountability, Financial Disclosure and Internal Control, Shareholder Rights, Remuneration, Market for Control, and Corporate Behavior. For each governance attribute we report the percentage of firms in our sample that meet the respective criteria associated with this attribute. The sample consists of 6,663 firm-years.

Table 2.3: Summary statistics of corporate governance indices and control variables

Panel A: Corporate governance indices

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
CGI1	6,663	61.47	60.71	11.12	25.00	89.06
CGI2	6,663	53.32	50.77	13.31	16.92	87.69
CGI3	5,627	-0.13	-0.03	1.72	-3.14	3.89

Panel B: Financial data

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Q	6,663	1.59	1.32	0.78	0.54	5.95
LNTA	6,663	8.84	8.57	1.69	4.80	15.14
PGSALES	6,581	0.37	0.25	0.57	-0.57	3.61
RD/SALES	6,647	0.02	0.00	0.06	0.00	2.32
CASH/ASSETS	5,879	0.08	0.05	0.09	0.00	0.83
CAPEX/ASSETS	6,594	0.05	0.04	0.06	0.00	1.64
PPE/SALES	6,541	0.94	0.28	2.30	0.00	14.84
EBIT/SALES	6,604	0.21	0.12	0.30	0.00	1.88
LEVERAGE	6,663	0.59	0.60	0.23	0.00	0.99
ADR	6,663	0.26	0.00	0.44	0.00	1.00
CLOSELY HELD	6,343	0.28	0.24	0.22	0.00	100.00

The table provides summary statistics for the corporate governance indices (Panel A) and the financial data used in the analysis (Panel B). CGI1 denotes the governance index constructed in the same way as Aggarwal et al. (2009), namely by dividing the governance attributes a company fulfills by the number of governance attributes a company reports data for. CGI2 denotes the governance index constructed in the same way as CGI1 but with missing attributes treated as if these attributes were not fulfilled. CGI3 denotes the governance index constructed by means of principal component analysis (PCA). Q denotes Tobin's Q and is computed as the sum of total assets less the book value of equity plus the market value of equity, divided by total assets, LNTA denotes the logarithm of total assets, PGSALES denotes the two-year growth of sales, RD/SALES denotes the ratio of expenditures for research and development to sales, CASH/ASSETS denotes the ratio of cash to total assets, CAPEX/ASSETS denotes the ratio of capital expenditures to assets, PPE/SALES denotes the ratio of property-plants-equipment to sales, EBIT/SALES denotes the ratio of earnings before interest and taxes to sales, LEVERAGE denotes the ratio of total debt to total assets, ADR is a dummy variable which equals 1 if the firm has American Depository Receipts (ADR) and 0 otherwise, and CLOSELY HELD is the percentage of closely held shares.

Table 2.4: Corporate governance indices based on principal component analysis (PCA)

Panel A: Factor loadings for the first five principal components	PC1	PC2	PC3	PC4	PC5
Company has a designated "lead" or senior non-executive board member	-0.2253	0.2489	-0.0012	0.1867	0.1492
No former CEO of the company serves on the board	0.0625	0.1198	**0.4759**	-0.3088	0.1989
Board size is greater than five but less than 16	0.1650	0.2192	0.1526	0.0046	**0.4400**
Company has not had a material earnings restatement in the past three years	-0.1378	-0.1373	0.2565	-0.1126	-0.0109
Company has not received a qualified audit opinion within the last two fiscal years	-0.0090	-0.0184	-0.0936	0.1870	0.0133
Board members are subject to annual election by all shareholders	**0.5902**	0.1230	0.0751	0.1479	0.0572
No single shareholder or shareholder group with majority of voting power	-0.1749	-0.0382	**0.4334**	0.1720	**-0.4310**
All common or ordinary equity shares have one-share, one-vote, with no restrictions	-0.2124	0.3507	-0.1886	-0.1457	0.0031
Company discloses its corporate governance policies or guidelines	-0.0902	**0.4322**	-0.1441	-0.0817	-0.0113
Voting rights are not capped at a certain percentage	-0.0869	-0.1197	0.0199	0.0557	**0.6963**
Company allows cumulative voting in the election of directors	0.0203	-0.0117	0.0640	**-0.6152**	0.0376
Shareholders have a right to convene an EGM	0.1002	0.0003	0.0919	**0.5708**	0.1040
Company does not have a staggered ("classified") board	**0.4702**	-0.1268	-0.0728	-0.0440	-0.0623
Company does not require a supermajority vote to approve a merger	**-0.4474**	0.0376	0.1111	0.1627	0.1131
Audit committee is wholly composed of independent board members	0.0267	**0.4989**	0.0609	0.0693	-0.0108
There have been no related-party transactions in the past three years	0.0254	-0.0154	**0.6183**	0.0438	0.0018
Board is controlled by more than 50% of independent outside directors	0.1619	**0.4991**	0.0961	0.0119	-0.2030

Panel B: Expected correlation with firm value and variance explained					
Expected correlation with firm value (principal components)	?	+	+	?	+
Expected correlation with firm value (equally weighted averages of standardized governance attributes with factor loadings in excess of 0.40 in absolute value)	+	+	+	?	+
Variance explained by principal component	0.1636	0.1260	0.0789	0.0772	0.0668
Variance explained by principal component (cumulative)	0.1636	0.2896	0.3685	0.4457	0.5125

Panel A of the table reports the factor loadings of the 17 governance attributes included in the principal component analysis (PCA) for the first five principal components. The first principal component (PC1) corresponds to CGI3. The second to fourth principal components are used in a robustness test which is reported in Table 2.7 (Column 1). Figures in bold print exhibit factor loadings in excess of 0.40 in absolute terms. To construct a set of alternative PCA-based governance indices, we follow the approach proposed by Larcker et al. (2007) and calculate the equally weighted averages of standardized versions of the governance attributes with factor loadings in excess of 0.40 in absolute terms. Panel B reports the expected sign of the correlation between the PCA-based governance indices and firm value. The expected sign is derived from the signs and magnitudes of the factor loadings of the individual governance attributes in each component. For the governance indices directly based on the first five principal components, we sum all factor loadings over the 17 governance attributes and attribute a positive expectation for the principal components with a value larger than one (the sums of factor loadings for the five components are 0.24, 2.06, 1.96, 0.30, and 1.09, respectively). For the governance indices based on the equally weighted averages of the standardized attributes, we derive the sign of the expected correlation from whether the sum of factor loadings in excess of 0.40 in absolute terms is larger than zero (larger than 0.5), smaller than zero (smaller than -0.5), or close to zero (between -0.5 and 0.5).

Table 2.5: Fixed effects regressions of Tobin's Q on alternative governance indices and control variables

Dependent Variable: Tobin's Q	Standard Specification			Country, Industry and Year FE			Country-Adjusted CGI	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	2.827 ***	3.128 ***	3.155 ***	1.718 ***	1.578 ***	2.057 ***	2.799 ***	3.076 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CGI1	0.005 **			0.006 ***			0.013 ***	
	(0.042)			(0.001)			(0.000)	
CGI2		0.011 ***			0.009 ***			0.021 ***
		(0.000)			(0.000)			(0.000)
CGI3			0.045 ***			0.025 **		
			(0.000)			(0.037)		
LNTA	-0.195 ***	-0.288 ***	-0.198 ***	-0.174 ***	-0.180 ***	-0.172 ***	-0.269 ***	-0.286 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PGSALES	-0.002	0.011	-0.027 *	0.104 ***	0.106 ***	0.090 ***	0.009	0.012
	(0.877)	(0.362)	(0.061)	(0.000)	(0.000)	(0.000)	(0.410)	(0.285)
RD/SALES	-0.044	-0.094	0.125	1.120 ***	1.105 ***	0.990 ***	-0.079	-0.090
	(0.872)	(0.723)	(0.447)	(0.004)	(0.005)	(0.001)	(0.769)	(0.736)
CASH/SALES	0.345 ***	0.334 ***	0.271 ***	1.420 ***	1.412 ***	1.380 ***	0.352 ***	0.340 ***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPEX/ASSETS	0.532 ***	0.446 ***	0.603 ***	0.932 ***	0.922 ***	0.952 ***	0.475 ***	0.447 ***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
PPE/SALES	-0.052 ***	-0.044 ***	-0.049 ***	-0.068 ***	-0.067 ***	-0.067 ***	-0.046 ***	-0.044 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EBIT/SALES	0.218 ***	0.192 ***	0.174 ***	0.485 ***	0.491 ***	0.455 ***	0.196 ***	0.191 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEVERAGE	-0.187 ***	-0.011	-0.096 *	0.117 ***	0.125 ***	0.179 ***	-0.054	-0.015
	(0.001)	(0.898)	(0.081)	(0.002)	(0.001)	(0.000)	(0.442)	(0.848)
ADR	1.036 ***	1.477 ***	1.020 ***	0.161 ***	0.152 ***	0.170 ***	1.416 ***	1.466 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CLOSELY HELD	-0.001 ***	-0.001 ***	-0.001 ***	0.002 ***	0.002 ***	0.001 ***	-0.001 **	-0.001 ***
	(0.001)	(0.010)	(0.000)	(0.000)	(0.000)	(0.005)	(0.011)	(0.009)
R-squared (within)	0.057	0.099	0.059	-	-	-	0.091	0.100
R-squared	-	-	-	0.304	0.307	0.293	-	-
Firms	1,625	1,625	1,497	1,625	1,625	1,497	1,625	1,625
Observations	5,453	5,453	4,630	5,453	5,453	4,630	5,453	5,453

Table 2.5 – continued

The table reports estimates from fixed effects regressions of Tobin's Q on alternative corporate governance indices and control variables. CGI1 denotes the governance index constructed in the same way as Aggarwal et al. (2009), namely by dividing the governance attributes a company fulfills by the number of governance attributes a company reports data for. CGI2 denotes the governance index constructed in the same way as CGI1 but with missing attributes treated as if these attributes were not fulfilled. CGI3 denotes the governance index constructed by means of principal component analysis (PCA). LNTA denotes the logarithm of total assets, PGSALES denotes the two-year growth of sales, RD/SALES denotes the ratio of expenditures for research and development to sales, CASH/ASSETS denotes the ratio of cash to total assets, CAPEX/ASSETS denotes the ratio of capital expenditures to assets, PPE/SALES denotes the ratio of property-plants-equipments to sales, EBIT/SALES denotes the ratio of earnings before interest and taxes to sales, LEVERAGE denotes the ratio of total debt to total assets, ADR is a dummy variable which equals 1 if the firm has American Depository Receipts (ADR) and 0 otherwise, and CLOSELY HELD is the percentage of closely held shares. The regressions reported in Columns 1 to 3 and 7 and 8 use our standard specification with firm fixed effects, the regressions in Columns 4 to 7 use industry, year, and country fixed effects. For the regressions in Columns 7 and 8, we adjust the CGI1 and CGI2 scores in a way proposed by Chhaochharia and Laeven (2009) and subtract the number of governance attributes that every firm in a given country fulfills in a given year. The *p*-values (in parentheses) are based on Driscoll and Kraay (1998) standard errors which are heteroskedasticity-consistent and robust to general forms of cross-sectional and temporal dependence. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Table 2.6: Fixed effects regressions of Tobin's Q on CGI1 by year and country

Dependent Variable: Tobin's Q

Sample restricted to:	2003	2004	2005	2006	2007	Japan	U.K.	Canada	Australia	France
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	1.801 ***	2.095 ***	2.015 ***	2.516 ***	2.174 ***	1.006	2.409 ***	3.672 ***	1.771 ***	7.024 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.172)	(0.000)	(0.000)	(0.000)	(0.000)
CGI1	0.002	0.008 ***	0.012 ***	0.009 ***	0.010 ***	-0.004	0.014 ***	0.008 **	0.027 ***	0.010 ***
	(0.576)	(0.000)	(0.000)	(0.000)	(0.000)	(0.118)	(0.000)	(0.042)	(0.000)	(0.000)
LNTA	-0.098 ***	-0.179 ***	-0.191 ***	-0.200 ***	-0.170 ***	0.148	-0.281 ***	-0.149 *	-0.212 ***	-0.675 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.109)	(0.000)	(0.052)	(0.000)	(0.000)
PGSALES	0.251 ***	0.079 **	0.099 *	0.084 **	0.172 ***	-0.006	0.049 ***	0.011	-0.103 **	-0.024
	(0.004)	(0.043)	(0.072)	(0.022)	(0.000)	(0.907)	(0.000)	(0.595)	(0.017)	(0.408)
RD/SALES	4.578 ***	1.759 **	2.632 ***	0.632	0.633	-2.772 **	0.206 **	-7.480 ***	-10.419	0.533
	(0.000)	(0.040)	(0.004)	(0.291)	(0.167)	(0.045)	(0.028)	(0.001)	(0.354)	(0.348)
CASH/ASSETS	0.362	1.487 ***	0.777 **	1.425 ***	0.902 ***	0.437	-0.241 **		2.076 ***	0.987 ***
	(0.656)	(0.000)	(0.010)	(0.000)	(0.006)	(0.118)	(0.043)		(0.000)	(0.000)
CAPEX/ASSETS	0.286	0.706	0.694	1.938 ***	2.260 ***	1.205 ***	-0.766 **	2.861 ***	0.527 **	0.256
	(0.481)	(0.116)	(0.160)	(0.003)	(0.001)	(0.000)	(0.048)	(0.001)	(0.048)	(0.526)
PPE/SALES	-0.159 ***	-0.068 ***	-0.086 ***	-0.087 ***	-0.078 ***	-0.150 ***	-0.036 ***	-0.222 ***	-0.013 ***	-0.754 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)	(0.000)
EBIT/SALES	1.715 ***	0.490 ***	0.542 ***	0.406 ***	0.322 ***	0.284 ***	0.208 ***	-0.139	-0.197 ***	1.764 ***
	(0.001)	(0.003)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.169)	(0.000)	(0.000)
LEVERAGE	0.009	0.186	0.204	0.072	-0.036	-1.243 ***	0.386 **	-1.641 ***	0.079	0.867
	(0.966)	(0.159)	(0.127)	(0.595)	(0.789)	(0.000)	(0.013)	(0.000)	(0.608)	(0.100)
ADR	0.198 ***	0.164 ***	0.137 ***	0.168 ***	0.195 ***		1.697 ***			
	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)		(0.000)			
CLOSELY HELD	0.001	0.004 ***	0.005 ***	0.002 **	0.003 ***	0.001	-0.004 ***	-0.004 *	0.001	0.006 **
	(0.600)	(0.000)	(0.000)	(0.033)	(0.004)	(0.521)	(0.000)	(0.054)	(0.226)	(0.015)
R-squared	0.308	0.260	0.263	0.256	0.218	-	-	-	-	-
R-squared (within)	-	-	-	-	-	0.113	0.129	0.265	0.188	0.477
Firms	460	1,127	1,149	1,336	1,381	411	369	143	101	95
Observations	460	1,127	1,149	1,336	1,381	1,642	1,195	388	346	307

Table 2.6 – continued

The table reports estimates from regressions of Tobin's Q on CGI1 and control variables for individual years and countries. In Columns 1 to 5, the sample is divided in sub-samples based on calendar years. Column 1 reports the results for 2003, Column 2 for 2004, Column 3 for 2005, Column 4 for 2006, and Column 5 for 2007. Columns 6 to 10 break down the sample by country. Column 6 contains only U.K., Column 7 Canadian, Column 8 Australian, Column 9 French, and Column 10 German firms. CGI1 denotes the governance index constructed in the same way as in Aggarwal et al. (2009), namely by dividing the governance attributes a company fulfills by the number of governance attributes a company reports data for. LNTA denotes the logarithm of total assets, PGSALES denotes the two-year growth of sales, RD/SALES denotes the ratio of expenditures for research and development to sales, CASH/ASSETS denotes the ratio of cash to total assets, CAPEX/ASSETS denotes the ratio of capital expenditures to assets, PPE/SALES denotes the ratio of property-plants-equipments to sales, EBIT/SALES denotes the ratio of earnings before interest and taxes to sales, LEVERAGE denotes the ratio of total debt to total assets, ADR is a dummy variable which equals 1 if the firm has American Depository Receipts (ADR) and 0 otherwise, and CLOSELY HELD is the percentage of closely held shares. The dummy variable whether the firm has American Depository Receipts, ADR, is dropped from the regressions reported in Columns 6,8,9, and 10 as there is no time-series variability in the variable. The regressions in Columns 6 to 10 include firm fixed effects. The p-values (in parentheses) in Columns 1 to 5 are based on White (1980) standard errors which are heteroskedasticity-consistent. The p-values (in parentheses) in Columns 6 to 10 are based on Driscoll and Kraay (1998) standard errors which are heteroskedasticity-consistent and robust to general forms of cross-sectional and temporal dependence. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Table 2.7: Fixed effects regressions of Tobin's Q on alternative PCA-based governance indices

Dependent Variable: Tobin's Q

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	3.177 ***	3.043 ***	3.214 ***	3.230 ***	3.242 ***	3.037 ***	3.211 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CGI_PCA17_1 (= CGI3)	0.037 ***						
	(0.000)						
CGI_PCA17_2	0.042 ***						
	(0.010)						
CGI_PCA17_3	-0.000						
	(0.974)						
CGI_PCA17_4	0.033 ***						
	(0.000)						
CGI_PCA17_5	0.001						
	(0.865)						
CGI_PCA17L_1		0.062 ***	0.066 ***				
		(0.001)	(0.000)				
CGI_PCA17L_2			0.068 ***				
			(0.000)				
CGI_PCA17L_3			0.008				
			(0.668)				
CGI_PCA17L_4			0.051 ***				
			(0.000)				
CGI_PCA17L_5			0.028 ***				
			(0.000)				
CGI_PCA21_1				0.041 ***	0.034 ***		
				(0.000)	(0.000)		
CGI_PCA21_2					-0.042 **		
					(0.040)		
CGI_PCA21_3					0.021		
					(0.102)		
CGI_PCA21_4					-0.012 ***		
					(0.003)		
CGI_PCA21_5					0.011		
					(0.206)		
CGI_PCA21L_1						0.061 ***	0.064 ***
						(0.001)	(0.001)
CGI_PCA21L_2							0.069 ***
							(0.000)
CGI_PCA21L_3							0.008
							(0.670)
CGI_PCA21L_4							0.049 ***
							(0.000)
CGI_PCA21L_5							0.028 ***
							(0.000)
R-squared (within)	0.065	0.053	0.067	0.072	0.076	0.053	0.066
Firms	1,497	1,571	1,499	1,316	1,316	1,571	1,499
Observations	4,630	5,057	4,647	3,828	3,828	5,057	4,647

The table reports estimates from fixed effects regressions of Tobin's Q on alternative corporate governance indices and control variables. To save space, the coefficients on the control variables are not reported in the table. Variables CGI_PCA17_1 to CGI_PCA17_5 denote the first five principal components obtained from principal component analysis using 17 governance attributes. Variables CGI_PCA17L_1 to CGI_PCA17L_5 denote the components obtained by following Larcker et al. (2007) using 17 governance attributes. Variables CGI_PCA21_1 to CGI_PCA21_5 denote the first five principal components obtained from principal component analysis using 21 governance attributes. Variables CGI_PCA21L_1 to CGI_PCA21L_5 denote are the components by following Larcker et al. (2007) using 21 governance attributes. All regressions include firm fixed effects. The *p*-values (in parentheses) are based on Driscoll and Kraay (1998) standard errors which are heteroskedasticity-consistent and robust to general forms of cross-sectional and temporal dependence. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Table 2.8: Fixed effects regressions of Tobin's Q on corporate social responsibility indices, governance indices, and control variables

Dependent variable: Tobin's Q

	Standard specifications			Industry, country, and year FE		Interaction terms	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	3.166 ***	2.420 ***	3.162 ***	1.567 ***	1.626 ***	3.415 ***	3.222 ***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CSRI	0.003 ***			0.002 ***		0.000	
	(0.000)			(0.000)		(0.956)	
CSRI_PCA		0.043 ***			0.038 ***		-0.001
		(0.001)			(0.000)		(0.592)
CSRI_ADJ			0.003 ***				
			(0.000)				
CGI_CONTR	0.007 ***	0.012 ***	0.007 ***	0.007 ***	0.008 ***	0.003 *	0.008 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.053)	(0.000)
CSRI*CGI_CONTR						0.000 ***	
						(0.000)	
CSRI_PCA*CGI_CONTR							0.000 **
							(0.036)
LNTA	-0.285 ***	-0.141 *	-0.287 ***	-0.182 ***	-0.186 ***	-0.293 ***	-0.283 ***
	(0.000)	(0.056)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PGSALES	0.010	0.001	0.013	0.106 ***	0.134 ***	0.015	0.009
	(0.404)	(0.905)	(0.206)	(0.000)	(0.000)	(0.163)	(0.404)
RD/SALES	-0.089	0.381 ***	-0.091	1.105 ***	0.640 ***	-0.100	-0.094
	(0.738)	(0.002)	(0.737)	(0.005)	(0.002)	(0.711)	(0.716)
CASH/ASSETS	0.332 ***	-0.205	0.349 ***	1.413 ***	1.524 ***	0.314 ***	0.306 ***
	(0.000)	(0.217)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPEX/ASSETS	0.438 ***	0.763 ***	0.431 ***	0.914 ***	0.725 **	0.446 ***	0.461 ***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.011)	(0.000)	(0.000)
PPE/SALES	-0.044 ***	-0.040 ***	-0.043 ***	-0.067 ***	-0.073 ***	-0.043 ***	-0.045 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EBIT/SALES	0.191 ***	0.122 *	0.191 ***	0.492 ***	0.447 ***	0.189 ***	0.196 ***
	(0.000)	(0.075)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEVERAGE	-0.005	-0.158	0.010	0.129 ***	-0.032	-0.026	-0.050
	(0.957)	(0.225)	(0.916)	(0.001)	(0.490)	(0.739)	(0.512)
ADR	1.428 ***		1.405 ***	0.152 ***	0.166 ***	1.460 ***	1.515 ***
	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CLOSELY HELD	-0.001 ***	-0.002 ***	-0.001 ***	0.002 ***	0.001 ***	-0.001 ***	-0.001 ***
	(0.009)	(0.000)	(0.008)	(0.000)	(0.005)	(0.006)	(0.005)
R-squared (within)	0.101	0.059	0.102	-	-	0.103	0.095
R-squared	-	-	-	0.307	0.320	-	-
Firms	1,625	1,111	1,625	1,625	1,111	1,625	1,625
Observations	5,453	2,763	5,453	5,453	2,763	5,453	5,453

The table reports estimates from fixed effects regressions of Tobin's Q on alternative CSR indices and control variables. CSRI denotes the CSR index constructed in the same way as CGI2, using the nine CSR attributes and treating missing attributes as if they were not in place. CSRI_PCA denotes the CSR index constructed by means of principal component analysis (PCA), using the nine CSR attributes. CSR_ADJ denotes the adjusted CSRI index. The adjustment is similar to the one proposed by Chhaochharia and Laeven (2009), and subtracts the number of CSR attributes that every firm in a given country fulfills in a given year. CGI_CONTR denotes the governance index constructed of the governance attributes that are not part of the corporate social responsibility (CSR) category. Columns 6 and 7 additionally include interaction terms between CSRI and CGI_CONTR and between CSRI_PCA and CSRI_CONTR, respectively. LNTA denotes the logarithm of total assets, PGSALES denotes the two-year growth of sales, RD/SALES denotes the ratio of expenditures for research and development to sales, CASH/ASSETS denotes the ratio of cash to total assets, CAPEX/ASSETS denotes the ratio of capital expenditures to assets, PPE/SALES denotes the ratio of property-plants-equipments to sales, EBIT/SALES denotes the ratio of earnings before interest and taxes to sales, LEVERAGE denotes the ratio of total debt to total assets, ADR is a dummy variable which equals 1 if the firm has American Depository Receipts (ADR) and 0 otherwise, and CLOSELY HELD is the percentage of closely held shares. The dummy variable whether the firm has American Depository Receipts, ADR, is dropped from the regression reported in Column 2 as there is no time-series variability in the variable. The regressions reported in Columns 1 to 3 and 6 to 7 use firm fixed effects, the regressions reported in Columns 4 and 5 use industry, country, and year fixed effects. The *p*-values (in parentheses) are based on Driscoll and Kraay (1998) standard errors which are heteroskedasticity-consistent and robust to general forms of cross-sectional and temporal dependence. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Table 2.9: Dynamic panel GMM and Heckman selection model estimations

Dependent variable: Tobin's Q

	Dynamic panel GMM estimations					Heckman selection model	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	1.475 ***	0.655	1.470 ***	0.089	4.272 ***	2.593 ***	2.561 ***
	(0.003)	(0.206)	(0.009)	(0.855)	(0.000)	(0.000)	(0.000)
Lagged Tobin's Q	0.842 ***	0.870 ***	0.896 ***	0.874 ***	0.664 ***		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
CGI1	0.007 *						
	(0.083)						
CGI2		0.008 **					
		(0.045)					
CGI3			0.049 **				
			(0.029)				
CSRI				0.393 ***		0.043 *	
				(0.007)		(0.060)	
CSRI_PCA					0.168 **		0.037 **
					(0.037)		(0.013)
CGI_CONTR				0.005 *	0.008 *	0.005 ***	0.009 ***
				(0.081)	(0.084)	(0.000)	(0.000)
LNTA	-0.150 ***	-0.067 *	-0.101 **	-0.046	-0.342 ***	-0.184 ***	-0.184 ***
	(0.001)	(0.084)	(0.042)	(0.222)	(0.000)	(0.000)	(0.000)
PGSALES	0.257 ***	0.224 **	0.201 **	0.243 ***	0.354 ***	0.116 ***	0.149 ***
	(0.005)	(0.011)	(0.035)	(0.004)	(0.009)	(0.000)	(0.000)
RD/SALES	-0.198	0.033	-0.165	0.165	-0.244	1.150 ***	0.684 ***
	(0.429)	(0.883)	(0.536)	(0.448)	(0.421)	(0.007)	(0.001)
CASH/ASSETS	1.271 *	0.684	1.510 **	0.491	-1.286	1.211 ***	1.297 ***
	(0.063)	(0.245)	(0.041)	(0.415)	(0.136)	(0.000)	(0.000)
CAPEX/ASSETS	1.528 **	1.658 **	1.503 **	1.453 **	-0.287	1.171 ***	0.998 ***
	(0.026)	(0.011)	(0.029)	(0.023)	(0.677)	(0.000)	(0.007)
PPE/SALES	0.073 ***	0.072 ***	0.083 ***	0.063 ***	-0.013	-0.077 ***	-0.080 ***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.570)	(0.000)	(0.000)
EBIT/SALES	-0.434 **	-0.499 ***	-0.649 ***	-0.290	-0.319	0.475 ***	0.449 ***
	(0.031)	(0.009)	(0.002)	(0.108)	(0.196)	(0.000)	(0.000)
LEVERAGE	-0.779 **	-0.928 ***	-1.010 ***	-0.784 ***	-1.481 ***	0.097 **	-0.036
	(0.014)	(0.002)	(0.001)	(0.004)	(0.000)	(0.026)	(0.315)
ADR	0.265 *	0.393 ***	0.347 **	0.348 ***	0.271	0.162 ***	0.162 ***
	(0.073)	(0.003)	(0.030)	(0.007)	(0.134)	(0.000)	(0.000)
CLOSELY HELD	-0.005	-0.002	-0.003	0.001	-0.007 *	0.004 ***	0.002 ***
	(0.108)	(0.559)	(0.284)	(0.675)	(0.061)	(0.000)	(0.000)
LAMBDA						-0.165 ***	-0.071 ***
						(0.001)	(0.003)
p-value of AR(1) test	0.002	0.001	0.002	0.000	0.000	-	-
p-value of AR(2) test	0.904	0.716	0.727	0.365	0.739	-	-
R-squared	-	-	-	-	-	0.243	0.248
Firms	1,470	1,470	1,359	1,470	1,022	1,625	1,111
Observations	4,034	4,034	3,644	4,034	2,400	5,453	2,763

Table 2.9 – continued

The first five columns of the table report the results from regressions of Tobin's Q on lagged Q, alternative corporate governance and corporate social responsibility indices, and control variables. The regressions are estimated by using a dynamic panel GMM estimator as proposed by Arellano and Bover (1995) and Blundell and Bond (1998). CGI1 denotes the governance index constructed in the same way as Aggarwal et al. (2009), namely by dividing the governance attributes a company fulfills by the number of governance attributes a company reports data for. CGI2 denotes the governance index constructed in the same way as CGI1 but with missing attributes treated as if these attributes were not fulfilled. CGI3 denotes the governance index constructed by means of principal component analysis (PCA). CSRI denotes the CSR index constructed in the same way as CGI2, using the nine CSR attributes and treating missing attributes as if they are not in place. CSRI_PCA denotes the CSR index constructed by means of principal component analysis (PCA), using the nine CSR attributes. CGI_CONTR denotes the governance index constructed of the governance attributes that are not part of the corporate social responsibility (CSR) category. LNTA denotes the logarithm of total assets, PGSALES denotes the two-year growth of sales, RD/SALES denotes the ratio of expenditures for research and development to sales, CASH/ASSETS denotes the ratio of cash to total assets, CAPEX/ASSETS denotes the ratio of capital expenditures to assets, PPE/SALES denotes the ratio of property-plants-equipments to sales, EBIT/SALES denotes the ratio of earnings before interest and taxes to sales, LEVERAGE denotes the ratio of total debt to total assets, ADR is a dummy variable which equals 1 if the firm has American Depository Receipts (ADR) and 0 otherwise, and CLOSELY HELD is the percentage of closely held shares. All regressions include year fixed effects. Firm fixed effects drop out because the regression is estimated in first differences. AR(1) and AR(2) are tests for first-order and second-order serial correlation in the first differenced residuals with the null hypothesis of no serial correlation. The last two columns of the table report the results from a Heckman (1979) self-selection model. The dependent variable of the second-stage regressions is Tobin's Q and we include the same set of explanatory variables as in the GMM regressions reported in Columns 4 and 5 of the table. CSRI and CSRI_PCA are redefined into dummy variables that equal one for firm-years for which the value of CSRI (CSRI_PCA) is larger than the median value. The dependent variable of the first-stage probit regressions (not reported) are these dummy variable indicating whether a firm's CSRI or CSRI_PCA is above the median value. The explanatory variables are based on Harjoto and Jo (2009) and include CGI_CONTR, LNTA, RD/SALES, EBIT/SALES, LEVERAGE, and industry dummy variables. LAMBDA is the self-selection parameter (or inverse Mill's ratio) from the first-stage probit regressions. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Table 2.10: Individual corporate governance attributes

Panel A: Corporate governance attributes selected for PCA	Coefficient	p-value	Coefficient	p-value
	(1)		(2)	
Company has a designated "lead" or senior non-executive board member	-0.012	0.531	-0.023	0.403
No former CEO of the company serves on the board	0.002	0.799	0.014	0.220
Board size is greater than five but less than 16	0.062 ***	0.000	0.057 ***	0.000
Company has not had a material earnings restatement in the past three years	-0.011	0.697	-0.020	0.474
Company has not received a qualified audit opinion within the last two fiscal years	0.331 ***	0.000	0.341 ***	0.000
Board members are subject to annual election by all shareholders	0.020	0.202	0.010	0.563
No single shareholder or shareholder group with majority of voting power	0.013	0.668	-0.008	0.829
All common or ordinary equity shares have one-share, one-vote, with no restrictions	0.046 ***	0.021	0.044 **	0.048
Company discloses its corporate governance policies or guidelines	0.065 **	0.029	0.057 *	0.080
Voting rights are not capped at a certain percentage	-0.060	0.549	-0.067	0.475
Company allows cumulative voting in the election of directors	0.009	0.654	-0.022	0.130
Shareholders have a right to convene an EGM	0.182 ***	0.000	0.178 ***	0.000
Company does not have a staggered ("classified") board	-0.047	0.127	-0.064 *	0.083
Company does not require a supermajority vote to approve a merger	-0.092 ***	0.000	-0.010 ***	0.000
Audit committee is wholly composed of independent board members	0.073 ***	0.000	0.051 ***	0.000
There have been no related-party transactions in the past three years	0.001	0.984	-0.011	0.367
Board is controlled by more than 50% of independent outside directors	0.046 ***	0.001	0.018	0.189

Panel B: Governance attributes pertaining to corporate social responsibility				
Company has a policy addressing workplace safety	-0.001	0.914	0.005	0.737
Company does not have pending criminal litigation against it	0.026	0.264	0.049 ***	0.002
No allegation that company used sweat shops within the last three years	0.015	0.346	0.032	0.101
Company discloses its environmental performance	0.007	0.503	0.024 **	0.037
Company discloses its workplace safety record	0.025 *	0.074	0.037 ***	0.006
No regulatory investigation for a material issue other than accounting irregularities	0.041 ***	0.001	0.044 ***	0.003
Company discloses its policy regarding corporate level political donations	0.063 ***	0.000	0.063 ***	0.000
Company has not been charged with workplace safety violations	0.064 ***	0.000	0.058 ***	0.000
It has not been alleged that the company uses child labor	-0.018	0.452	-0.014	0.624

Panel A of the table reports the results from fixed effects regressions of Tobin's Q on individual governance attributes and control variables. The 17 attributes correspond to those included in the basic principal component analysis used to construct CGI3. Panel B of the table reports the results from fixed effects regressions of Tobin's Q on individual CSR attributes. Each attribute of GMI's corporate behavior category is included. In Column 1, each attribute is individually included in the regression, in Column 2 all attributes are included jointly. In the regressions using CSR attributes, we additionally include the control variable CGI_CONTR. The p-values (in parentheses) are based on Driscoll and Kraay (1998) standard errors which are heteroskedasticity-consistent and robust to general forms of cross-sectional and temporal dependence. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Table 2.11: Survey of previous research on the valuation effect of corporate governance

Paper	Country/countries	Sample period	Observations / firms	Governance data source	# of governance attributes in index	Estimation approach(es)	Economic effect
Gompers, Ishii, and Metrick (2003)	USA	1990-1999	NA / 1,500	IRRC (RiskMetrics)	24	OLS	An increase in the G-Index by one standard deviation (2.8) leads to a decrease in Q by 0.120[a]
Klapper and Love (2004)	14 Emerging markets	2000	374	Credit Lyonnais Securities Asia (CSLA)	57	OLS	An increase in the gov. index by one standard deviation (14.0) leads to an increase in Q by 0.322 (15% of mean, 23% of median Q)
Durnev and Kim (2005)	24 Developed and emerging countries	2000	494	Credit Lyonnais Securities Asia (CSLA)	57	OLS / 3SLS (system of two simultaneous equations)	An increase in the gov. index by one standard deviation (8.99) leads to an increase in Q by 0.175 (9% relative to mean Q); 3SLS increases the effect to 0.421 (22% of Q)
Brown and Caylor (2006)	USA	2002	1,868	Institutional Shareholder Services (ISS)	51	OLS	An increase in the governance index by one standard deviation (3.45) leads to an increase in Q by 0.11, i.e., 6.6% (9.1%) of mean (median) Q
Aggarwal, Erel, Stulz, and Williamson (2009)	23 developing countries (incl. US)	2005	1,527	Institutional Shareholder Services (ISS)	44	OLS / Instrumental variable	Increasing the gov. index by the average gap to matched U.S. firms increases Q by 0.094, an increase of 6.2% of median Q
Chhaochharia and Laeven (2009)	23 developing countries (incl. US)	2003-2005	6,134 firm-years >2,300 firms	Institutional Shareholder Services (ISS)	17	Panel regression with fixed effects (OLS); GMM (Arellano/Bond)	A one standard deviation increase in the gov. index is associated with a 0.07 increase in Q, which is 4.4% (5.5%) of mean (median) Q; GMM leads to a substantially larger effect[b]
Cremers and Ferrell (2010)	USA	1978-2006	23,296 firm years approx. 1,000 firms	IRRC (RiskMetrics), Handcollected (10-K, 10-Q, proxy)	24	Panel regression with fixed effects (OLS)	An increase in the G-Index by one standard deviation (3) leads to a decrease in Q by about 0.033, a reduction of 2.1% of mean Q[a]

The table provides a survey of seven recent papers on the valuation effect of corporate governance. To be included, in the survey, the studies have to use Tobin's Q as a measure of firm value / perform-ance, use a comprehensive corporate governance index and not individual corporate governance attributes, and include either the U.S. or several non-U.S. countries in the sample. Moreover, the paper has to provide an estimate of the standard deviation of the corporate governance index in order to be able to estimate the economic effect. In general, a higher index value indicates better corporate gov-ernance. [a] indicates that in these papers a lower value of the corporate governance index (G-Index) is associated with more shareholder rights and hence a better corporate governance. [b] indicates that in this paper (Chhaochharia and Laeven, 2009), the economic effect cannot be inferred in the GMM regressions as the sample used is substantially larger than the one used in the other analyses of the paper and the corresponding descriptive statistics of the extended sample are not reported.

Figure 2.1: Empirical distribution of governance scores for CGI1 and CGI2
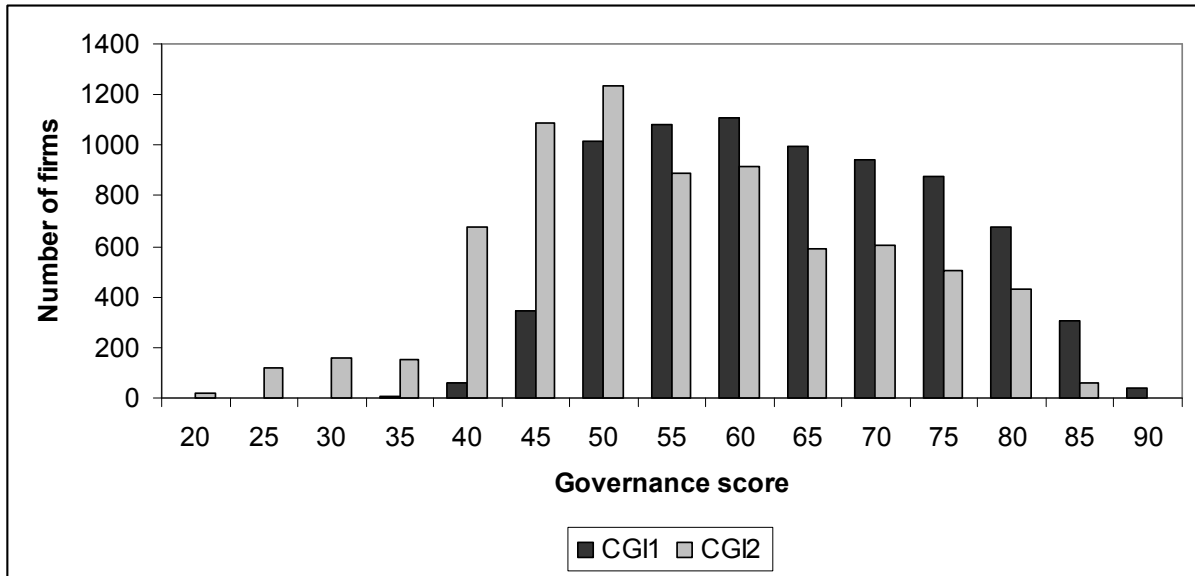
The figure shows the distribution of our two additively constructed corporate governance indices, CGI1 and CGI2. Dark gray represents the scores according to CGI1, light gray represents the scores according to CGI2. CGI1 denotes the governance index constructed in the same way as Aggarwal et al. (2009), namely by dividing the governance attributes a company fulfills by the number of governance attributes a company reports data for. CGI2 denotes the governance index constructed in the same way as CGI1 but with missing attributes treated as if these attributes were not fulfilled.

3 Product Market Competition, Corporate Governance, and Firm Value: Evidence from the EU-Area

3.1 Introduction

This chapter investigates the relation between product market competition, corporate governance, and firm value in a large international sample covering 14 countries from the European Union (EU).[23] Besides providing external validity of previous studies focusing on U.S. firms, this study uses more comprehensive and reliable measures of both product market competition *and* corporate governance.

A large body of literature documents that good corporate governance leads to higher firm valuations by mitigating the conflicts of interest between managers and shareholders (e.g., Yermack, 1996; Gompers et al., 2003 ("GIM"); Cremers and Nair, 2005; Core et al., 2006; Chhaochharia and Grinstein, 2007; Bebchuck et al., 2009). A number of recent studies, however, raise the question whether all firms benefit equally from good corporate governance. In fact, product market competition may act as a substitute for corporate governance as competitive pressure enforces discipline on managers to maximize firm value. Consequently, corporate governance may matter more in less competitive industries than in more competitive industries.

Some recent studies provide empirical support for this hypothesis. Giroud and Mueller (2011, "GM") find the strength of the relation between long-term stock returns, firm value, as well as operating performance and corporate governance to decrease monotonically in the degree of product market competition. In the most competitive industries there is no significant relation between corporate governance and the three alternative measures of company performance. In contrast, this relation is strong, positive, and significant in non-competitive

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industries. This finding is corroborated in Giroud and Mueller (2010) who show that firms in non-competitive industries experience a significant drop in operating performance after the passage of business combination laws while the operating performance of firms in competitive industries remains largely unaffected. By reducing the threat of hostile takeovers, business combination laws weaken corporate governance and increase the opportunity for managerial slack. Hence, competition in the product market seems to act as a substitute for a poor corporate governance and pressure managers towards a maximization of firm value independent of a deterioration in the firms' corporate governance. Chhaochharia et al. (2009) find supporting evidence by investigating the effect of the Sarbanes Oxley law on firm efficiency. They find that firms in less competitive industries experienced significantly larger increases in efficiency upon introduction of Sarbanes Oxley than firms in more competitive industries. They also find that firms in less competitive industries were more likely to be associated with financial restatements, insider trading, and backdating during that period than firms in more competitive industries. All these findings suggest that competition on a firm's product market is associated with a reduction of agency problems. Consistent with this finding, Cremers et al. (2008) show that firms in more competitive industries have more takeover defenses. They argue that competition is a substitute for the market of corporate control with more information available in competitive markets making monitoring less costly. Kadyrzhanova and Rhodes-Kropf (2011) take into account the heterogeneity among take-over provisions and distinguish between delay and non-delay provisions. They show that delay provisions (which allow managers to impose a delay on potential acquirers) have a significant bargaining effect and are positively related to firm value in concentrated industries. In contrast, non-delay provisions have a negative effect on firm value and significantly more so in concentrated industries.

This latter finding is in line with the findings of Giroud and Mueller (2010, 2011), who do not distinguish between delay and non-delay provisions.[24]

All of the existing evidence is focused on the U.S., and evidence from other countries may provide important external validity of the U.S. evidence. Moreover, all studies concentrating on U.S. firms are plagued by similar problems in the measurement of corporate governance and competition. First, corporate governance is measured by GIM's index. This index mainly focuses on anti-takeover provisions, which represent only one dimension of corporate governance. Board characteristics (e.g., Yermack, 1996; Faleye, 2007), CEO ownership and power (e.g., Habib and Ljungqvist, 2005; Adams et al., 2005) and other aspects of corporate governance are neglected. Second, all these studies either measure competition using a Herfindahl-Hirschman index (HHI), which is based on all firms in the Compustat universe (e.g., Giroud and Mueller, 2010, 2011; Cremers et al., 2008; Kadyrzhanova and Rhodes-Kropf, 2011), a HHI from the U.S. Economic Census, which is calculated using the largest 50 companies within each industry, or the so-called "four-firm domestic concentration ratio" from the U.S. Economic Census, which is based on the largest four companies within each industry (e.g., Cremers et al., 2008). Ali et al. (2009), however, argue that competition measures calculated exclusively with Compustat data, and thereby only covering the public firms within an industry, are poor proxies for actual competition. In fact, the correlation between the Compustat-based competition measures and the HHI obtained from the U.S. Census, which is based on the 50 largest firms within an industry regardless of whether they are listed or unlisted, is only 13 percent. However, even this HHI from the U.S. Census is affected with a number of problems. First, it only covers manufacturing firms. Given the increasing impor-

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[24] A related literature investigates the relationship between product market competition and managerial incentive schemes. Cuñat and Guadalupe (2005) and Baggs and De Bettignies (2007) both find that a higher level of product market competition increases the performance pay sensitivity of compensation schemes in U.K. and Canadian firms, respectively. Beiner et al. (2011) account for a possible non-linearity in this relationship and find that managerial incentive schemes are a convex function of product market competition in a sample of Swiss firms.

tance of other industries for the U.S. economy (and developed countries' economies world-wide), we believe that it is important to include non-manufacturing industries in the analysis. Moreover, the HHIs from the U.S. Census are updated only once in five years. Product market competition, however, is likely to change faster than in five-year intervals, in particular for young and growing industries.[25]

In this study, we investigate the relation between product market competition, corporate governance, and firm value in a large international sample covering 14 EU countries. We thereby use more comprehensive and reliable measures of product market competition *and* corporate governance than used in previous U.S.-based research.[26] We measure competition based on a HHI over all listed firms contained in Thomson Financial's Worldscope database *and* all non-listed firms contained in Bureau van Dijk's Amadeus database, which provides extensive coverage of non-listed firms throughout Europe. This HHI improves upon that from the U.S. Census in that it can be calculated for each year, covers all industries, and is not restricted to the 50 largest companies within each industry. Moreover, we combine the product markets of all 14 EU countries to account for the fact that the markets in these countries are strongly interrelated and exports / imports to and from other EU countries make up a large part of the respective product markets.

Our measure of corporate governance is based on 64 different governance attributes obtained from Governance Metrics International (GMI). GMI classifies these 64 attributes into six categories, namely board accountability, financial disclosure and internal control, shareholder rights, remuneration, market for control, and corporate behavior. To condense the information contained in these 64 attributes, we follow prior literature and construct an additive

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[25] As the U.S. Census' two last updates took place in 2002 and 2007, competition would remain unchanged over the whole sample period in our study.

[26] Even though our measures are more comprehensive than the ones used in earlier research, one important caveat remains. Our measures of governance and competition are endogenous so that, strictly speaking, our results cannot be interpreted in a casual sense.

corporate governance index (e.g., GIM; Aggarwal et al., 2009). Specifically, we first code a value of one to each governance attribute that a firm has in place and zero otherwise and then calculate the percentage of attributes a company has adopted (i.e., attributes which have been assigned a value of one). In a robustness check, we use an alternative version of this index that excludes attributes that are in place at more than 90 or less than 10 percent of the sample firms. We thereby attempt to account for the fact that certain governance attributes are adopted by a very large percentage of sample firms and other attributes by almost none. These corporate governance attributes naturally will have a very low variance and potentially weaken the effect of our corporate governance indices.

We use a number of alternative approaches to investigate whether the valuation effect of corporate governance depends on the competitiveness of its product markets. First, we follow GM and investigate whether the effect of corporate governance on firm value is different across the three terciles of the empirical distribution of HHI, our measure for product market competition. Consistent with GM, we find the effect of corporate governance to be significant only in the highest tercile of the HHI distribution. Hence, consistent with the hypothesis that product market competition acts as a substitute for corporate governance, corporate governance significantly increases firm value in non-competitive industries only. We check the robustness of this result by using the median, quartiles, or quintiles to classify our sample observations into more and less competitive firm-years. We also construct the HHIs based on the companies' total assets instead of sales, use the yearly distribution of the HHIs, instead of pooling all observations, to classify firm-years into competitive and non-competitive, and use only the listed companies covered by Worldscope to construct the HHIs, and find the results to remain qualitatively unchanged. We also use the approach of Kadyrzhanova and Rhodes-Kropf (2011) and include an interaction term between corporate governance and competition in our Q-regressions or estimate regressions of Tobin's Q on the corporate governance index

and control variables for sub-samples of firms in competitive and non-competitive industries. Again, our results indicate that corporate governance increases company value in non-competitive industries only where the disciplining effect of the product market is presumably weak.

Besides contributing to the literature by providing evidence consistent with papers using U.S. data, we also provide new and original evidence on the mechanisms through which corporate governance affects firm value in concentrated industries. We find three main channels through which firm value is positively influenced by corporate governance in non-competitive industries. The first channel is an investment channel. We first show that corporate governance is positively related to capital expenditures. When differentiating between different levels of competition, the positive effect of governance on capital expenditures only prevails for companies that are operating in relatively less competitive industries whereas there is no effect for companies operating in the most competitive industries. Hence, corporate governance seems to act as a substitute for the absent pressure from competition on the product markets. The second channel we document is an acquisition channel. We show that well governed companies operating in concentrated industries spend significantly less money on acquisitions than poorly-governed companies in concentrated industries. In contrast, governance is not significantly related to acquisition spending in competitive industries. Again, governance seems to substitute for the absence of competition on the product markets. The third and final channel we document is a diversification channel. We provide evidence that good corporate governance reduces the likelihood that firms operating in non-competitive industries engage in value-destroying diversification.

The remainder of the chapter is organized as follows. Section 3.2 describes the data and the construction of the variables used in the study. Section 3.3 presents the results from the empirical analysis. Section 3.4 concludes.

3.2 Data and variables

In this section, we first describe the corporate governance data used in this study and how we condense this data into the governance index employed in the empirical analysis. We also describe our measure of product market competition and the financial variables used in the study.

3.2.1 Firm-level data on corporate governance attributes

We use data on firm-level corporate governance attributes provided by Governance Metrics International (GMI), which started providing governance data in 2003. GMI constructs a governance rating for firms they cover using a proprietary scoring algorithm. To construct these ratings (which we do not use), GMI assembles information on individual governance attributes. We use these individual governance attributes for the construction of our own governance index. The starting point of our sample are all firm-year observations of companies which are located in the European Union (EU) in GMI's database over the time period from 2003 to 2007. After merging this data with financial data from Thomson Financial's Worldscope database, our sample includes 3,102 firm-year observations with complete data. The 14 EU countries covered in our study are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, and the UK.

We use a sample of 64 governance attributes that have been gathered by GMI. For each of these attributes, GMI assesses if a firm attains a minimum level of implementation and accordingly codes each attribute with a one if it is in place (indicating good corporate

governance) and a zero otherwise. The 64 attributes we consider are sub-categorized by GMI into six categories, namely 1) board accountability, 2) financial disclosure and internal control, 3) shareholder rights, 4) remuneration, 5) market for control, and 6) corporate behavior. Table 3.1 provides an overview of the 64 governance attributes and shows the percentage of firms meeting these criteria according to GMI's thresholds. A comparison of Table 3.1 with corresponding results from studies using the Institutional Shareholder Services (ISS) database such as, for example, Aggarwal et al. (2009), shows that the level of implementation of governance attributes is similar for the governance attributes provided by both data providers. Using these 64 governance attributes, we construct our corporate governance index, denoted CGI, by simply calculating the percentage of attributes a company has adopted (i.e., attributes which have been assigned a value of one). If a company satisfies all 64 (32 out of the 64) attributes, CGI for this company would be equal to 100% (50%). If the GMI database only provides information on 50 out of the 64 attributes on a particular company and all 50 of them are in place, this company's CGI equals 100%. The additive nature of index construction is a common feature in the literature (see, e.g., GIM; Drobetz et al., 2004; Bebchuck and Cohen, 2005; Aggarwal et al., 2009; Bebchuk et al., 2009).

3.2.2 Measure of product market competition

We use the Herfindahl-Hirschman index ("HHI") as a measure for product market competition. For each year, we calculate this index by summing up the squared market shares of all firms in a given industry and divide it by the square of the sum of all market shares. To compute the HHI, we use all firms that are listed in a country and for which sales data is available on Worldscope. In addition, we include non-listed firms by merging the Worldscope data with data from Bureau van Dijk's Amadeus database, which provides extensive

coverage of non-listed firms across Europe.[27] We exclude firm-years where sales are missing or negative. We classify industries according to the first two digits of a firm's four-digit SIC-code. In line with the close trade relationships that EU member countries have among each other, we treat the European Union as one product market (as opposed to treating each of the 14 countries in our sample as isolated and separate markets). We believe that this is the most reasonable way to define the relevant product market for our sample firms. Given that the firms included in the GMI database are the largest firms of each country, it is more reasonable to assume that they are active across the Europe Union instead of only in their country of origin. However, in a robustness check, we will use country-wide product markets as well.

3.2.3   Financial data

We obtain the financial data for the companies included in our sample from Worldscope. We use Tobin's Q as a measure of firm value. We compute Tobin's Q as the sum of total assets less the book value of equity plus the market value of equity, divided by total assets (e.g., see Agrawal and Knoeber, 1996; Loderer and Peyer, 2002). In the empirical analysis in Section 3.3, we include several control variables. We control for firm size by using the logarithm of total assets. In accordance with similar studies for the U.S., we also control for firm age. Since Worldscope has only very sparse coverage of firm age, we construct a proxy for firm age by calculating the number of months since a company's stock started trading. In a robustness test, we additionally include the percentage of closely held shares, defined as the percentage of a company's shares owned by large blockholders with equity stakes in excess of 5% of the company's equity, which we also obtain from Worldscope. In the analysis investigating potential channels through which firm value may be affected by corporate govern-

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[27] For our 14 sample countries the number of non-listed firms covered are 9,065 (Austria), 15,345 (Belgium), 8,208 (Denmark), 5,587 (Finland), 49,689 (France), 84,624 (Germany), 3,700 (Greece), 8,338 (Ireland), 49,093 (Italy), 31,354 (Netherlands), 7,321 (Portugal), 39,055 (Spain), 14,542 (Sweden), and 81,897 (United Kingdom).

ance in non-competitive industries at the end of Section 3.3, we additionally use data on capital expenditures, acquisition spending, and the different product market segments in which a company is active. We obtain this data from Worldscope as well.

Table 3.2 provides summary statistics of the main variables we use in the chapter, Tobin's Q, CGI, and HHI. All our results are based on the data as we obtained it from Worldscope. However, winsorizing the data, e.g., at the 1st and 99th level, does not change any of our results. In unreported tests, we also investigate the correlation between CGI and HHI. The correlation between HHI and CGI is 0.05 for the whole sample and remarkably stable over the years (0.04 or 0.05 in every year other than 2004) and with the exception of 2004, none of these correlations are significantly different from zero. In 2004, the correlation is borderline significant and has a value of 0.07. We interpret this as a statistical artifact. This non-systematic relationship between HHI and CGI can also be seen if we build sub-samples: when we split the sample according to whether an observation is above or below the median CGI (HHI) and compare the respective HHI (CGI) we find no significant differences.

3.3   Empirical analysis

We investigate the relationship between corporate governance and firm value across industries with different degrees of product market competition based on a number of alternative empirical setups. Our main approach is similar to the one used by GM. They build terciles of the empirical distribution of all HHIs and assign a dummy variable to each firm-year observation according to whether a firm is in the tercile with the lowest HHI, the medium HHI, or the highest HHI. Based on the results in Petersen (2009), we use pooled fixed effects regressions with standard errors that are clustered at the country level. To control for unob-

servable heterogeneity that is constant over industry, countries, and years, we use industry, country, and year fixed effects.[28] We thus estimate the following regression specification:

$$Q_{it} = \alpha_j + \alpha_t + \alpha_c + \boldsymbol{\beta'}(CGI_{it} \times \boldsymbol{I}_{it}) + \boldsymbol{\gamma' X}_{it} + \varepsilon_{it} \tag{1}$$

where Q_{it} is Tobin's Q of firm i in year t, $\alpha_j, \alpha_t,$ and α_c are industry-, year-, and country-fixed effects, CGI_{it} is the governance index, $\boldsymbol{I}_{it}$ is a (3x1) vector of HHI dummies and $\boldsymbol{X}_{it}$ is the set of control variables. The elements of $\boldsymbol{X}$ include the logarithm of total assets and the logarithm of firm age. Following GM, we also include the HHI dummies to control for direct effects of competition. Moreover, we interact each control variable with the HHI dummies to control for different effects that the control variables can have in different HHI terciles (for space reasons we do not report the respective coefficients).

We first investigate the average effect of corporate governance on firm value across all industries and hence exclude vector $\boldsymbol{I}_{it}$ and its interaction with CGI_{it} as well as its interaction with $\boldsymbol{X}_{it}$ from the regression equation. The results are reported in Column 1 of Table 3.3. As expected, the coefficient on CGI, our governance index, is positive, indicating an overall positive effect of better governance on firm value. The coefficient, however, is statistically (borderline) insignificant. In Column 2, we allow the effect of governance on firm value to vary in the competitiveness of a company's industry by including interaction terms between the HHI tercile dummy variables and the governance index. The results show that the effect of governance is positive across all three terciles but significant only in the highest tercile of the HHI distribution. Hence, consistent with the hypothesis that competitive pressure en- forces discipline on managers to maximize firm value and consequently product market com-

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[28] As Coles et al. (2007), GIM, and GM point out, slowly changing explanatory variables, such as our corporate governance index, may render firm fixed effects techniques ineffective. In our setting, firm fixed effects might be especially problematic given that the sample period covers five years only.

petition acts as a substitute for corporate governance, this result shows that corporate governance significantly increases firm value in non-competitive industries only.

One possible concern with our analysis so far is that our classification of industry competitiveness based on GM is ad-hoc and hence that our results could be driven by the way we have divided industries into terciles. In Columns 3 and 4, we address this concern by considering alternative approaches to differentiate between competitive and non-competitive industries. In Column 3, we construct only two sub-samples of industries based on whether the HHI is above or below the median HHI. Again we find the effect of governance on firm value to be much stronger and (borderline) significant in non-competitive industries as compared to competitive industries where it is insignificant. Even if we further break down the classification scheme and build quartiles instead of terciles from the empirical HHI distribution, the result that governance is significantly related to firm value only in firms operating in non-competitive industries (whose HHI is in the top quartile of the empirical HHI distribution) holds (Column 4).

In untabulated robustness tests, we have applied further ways to divide our sample into competitive and non-competitive firm-years. For example, if we build HHI quintiles, the positive and significant effect of governance is divided among the top two quintiles. Hence, our results do not seem to be sensitive with respect to how we classify competitive and non-competitive industries. As a further robustness test, we alternatively calculate our HHI-based measure of competition using the firms' total assets instead of sales. The results are reported in Columns 5 to 7 of Table 3.3. Consistent with the results in Columns 2 to 4, we find the relation between corporate governance and firm value to be stronger (and significant) in non-competitive industries (with the exception of Column 6 where we use the median-based classification).

In Table 3.4, we perform a number of further robustness tests. First, we follow Kadyrzhanova and Rhodes-Kropf (2011) and perform regressions of Tobin's Q on our governance index, the HHI, a term interacting the governance index and the HHI, and control variables. For our hypothesis that governance matters more in non-competitive industries to be validated, we would expect a positive coefficient on the interaction term. The results in Column 1 of Table 3.4 confirm our hypothesis and show a positive and significant coefficient on the interaction term between CGI and the HHI. If we compute the HHI based on the firms' assets, the results remain basically unchanged (Column 2). Further, we perform panel regressions for sub-samples of firm-years in competitive and non-competitive industries. The results for the high-competition sub-sample are reported in Columns 3 and 5 and the results for the low-competition sub-sample in Columns 4 and 6, respectively. In Columns 3 and 4, the HHI is based on sales and in Columns 5 and 6 on total assets. Again, the results confirm our main finding from Table 3.3. The valuation effect of corporate governance is smaller for firms operating in competitive industries than for firms in non-competitive industries, even though we note that for the HHI based on sales, the valuation effect of corporate governance is significant in both sub-samples (but somewhat larger for non-competitive firms).

We perform five further robustness checks the results of which we do not report in tables to save space. First, we use the yearly empirical distribution of the HHIs to classify firm-years into competitive and non-competitive industries instead of pooling all firm-year observations. The previous results remain virtually unchanged. Second, we use different data to compute the HHIs. Instead of using the whole universe of listed and unlisted companies, we compute the HHIs only based on listed companies as often done in prior research (e.g., Giroud and Mueller, 2010, 2011). Again, our previous results remain qualitatively and quantitatively unchanged. Third, we construct an alternative version of the governance index and

exclude attributes that are in place at more than 90 or less than 10 percent of the sample firms. We thereby attempt to account for the fact that certain governance attributes are adopted by a very large percentage of sample firms and other attributes by almost none (see Table 3.1). These corporate governance attributes naturally will have a very low variance and potentially weaken the effect of our corporate governance indices. However, all of our results remain qualitatively unchanged when we replace CGI by this alternative governance index. Fourth, we include the percentage of closely held shares as an additional control variable. For European firms, where a controlling shareholder is much more common than in the U.S., the positive effects of governance could be influenced by the existence of a large and controlling shareholder. However, the inclusion of this additional control variable, which is usually positive but insignificant in most specifications, does not qualitatively change any of our results. Moreover, we additionally interact the percentage of closely held shares with our competition measure to check whether the effect is different across different levels of competition. However, the number of closely held shares is consistently insignificant across different levels of product market competition. Fifth, we include a set of country dummies interacted with time dummies in our regressions. We do this to account for the fact that our index, in contrast to GIM's index, has no law component. One concern could thus be that the 14 European countries may differ in how their governance regimes have evolved over time. To filter out the effect of governance legislation in these countries, we additionally include country-year-interaction terms. Our results, however, remain virtually unchanged and, if anything, become somewhat stronger.

The results in this section so far suggest that for companies operating in relatively less competitive markets, agency costs arise from weak corporate governance. We now seek to understand the mechanisms through which corporate governance affects firm value in non-competitive industries. Prior literature provides some guidance with regards to potential chan-

nels, e.g., inefficient investment (GIM), value-destroying acquisitions (Masulis et al., 2007), cost management (Bertrand and Mullainathan, 2003), or cash management (Dittmar and Mahrt-Smith, 2007). To address these questions, we use the same empirical specification as in Equation 1 but use a different dependent variable, depending on which mechanism we test.[29] The results presented in Table 3.5 show that we are able to identify three channels through which Tobin's Q may be affected by corporate governance in relatively less competitive industries.

In Columns 1 and 2 of Table 3.5, the dependent variable is capital expenditures divided by total assets. In Column 1, the positive coefficient on CGI indicates that across all levels of product market competition, corporate governance has a positive effect on capital expenditures. While this might be surprising according to the inefficient investment arguments put forward by GIM, recent evidence using international (e.g., Aggarwal et al., 2009) or U.S. samples (e.g., Bebchuk and Cohen, 2005; Hoechle et al., 2010) shows that capital expenditures have, in fact, a positive effect on firm value when capital expenditures are included in standard firm-value regressions. When differentiating between different levels of competition, the results in Column 2 of Table 3.5 reveal that the positive effect of governance on capital expenditures can only be observed in the top two terciles of product market competition and hence for companies that are operating in relatively less competitive industries whereas there is no effect for companies operating in the most competitive industries. In Columns 3 and 4 of Table 3.5, the dependent variable is the sum of the value of all acquisitions made by a firm in a given year divided by the firm's total assets in that given year. In Column 3, the negative coefficient on the CGI is further evidence of the well-known result that the negative returns to acquirer stocks after they announce a bid for another firm are correlated

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[29] All of our results continue to hold if we use the alternative specifications we have used for the firm-value analysis in Table 4, e.g., the interaction term between competition and governance or the sub-sample analysis.

with agency problems such as low managerial ownership (Lewellen et al., 1985) or high free cash flow (Lang et al., 1991). Additionally, long-run evidence indicates negative abnormal performance by firms who acquire other firms (see, e.g., Loughran and Vijh, 1997; Rau and Vermaelen, 1998). In Column 4, however, we see that the effect of governance on acquisition spending is concentrated on firms in non-competitive industries only. Finally, in Columns 5 and 6 of Table 3.5, the dependent variable is a dummy variable that is equal to 1 if a company is diversified and 0 if not. We define a company as being diversified if, in a given year, the company has sales in two product market segments with different SIC codes. As can be seen in Column 5, governance has a slightly positive (but non-significant) effect on diversification. When we distinguish between firms operating in competitive and firms operating in non-competitive industries in Column 6, it becomes evident that governance has a negative effect on (value-destroying) diversification in non-competitive industries, indicating that for firms operating in these industries, having better governance leads them to diversify less, which will also contribute to the firm-value results we found above. We have to caution though that none of the individual coefficients on the interaction terms between governance and competition are significant in the diversification-regressions. Summarizing our results, we find that a combination of three mechanisms (increased capital expenditures, less spending on acquisitions, and smaller likelihood to diversify) is the likely driver of our earlier results. [30]

Unreported robustness tests confirm our results above. Whether we winsorize the capital expenditures or the acquisitions variable, whether we define being diversified on the 2-digit SIC-code, or whether we use a dummy variable that is equal to 1 if a company has an acquisition in a given year to define whether a company has done acquisitions and estimate the regressions with probit regressions all have no influence on our results.

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[30] Our analyses for the other mechanisms we tested, namely labor productivity, cost efficiency, real wages, selling, general, and administrative expenses, research and development expenses, cash holdings, and payout yielded no systematic patterns across HHI terciles. Therefore, these results are not reported in a table.

3.4   Conclusions

In this chapter, we present new evidence on the influence of product market competition on the valuation effect of corporate governance. Recent U.S. evidence shows that firms in less competitive industries benefit more from good corporate governance than firms in more competitive industries and, hence, a competitive product market acts as a substitute for an efficient corporate governance structure (e.g., Giroud and Mueller, 2010, 2011; Kadyrzhanova and Rhodes-Kropf, 2011). However, all of these studies focusing on U.S. firms are plagued by similar problems in the measurement of corporate governance and competition. First, they measure corporate governance by GIM's index which strongly focuses on anti-takeover provisions. Second, to measure product market competition, all those studies either use a HHI based on listed companies (included in the Compustat universe) only, a HHI from the U.S. Economic Census, which is calculated using the largest 50 companies within each industry, or a concentration measure from the U.S. Economic Census, which is based on the largest four companies within each industry.

In this study, we provide external validity of prior U.S. findings by investigating the relation between product market competition, corporate governance, and firm value in a large international sample covering 14 EU countries. We use more comprehensive and reliable measures of product market competition *and* corporate governance than used in previous U.S.-based research. We measure competition based on a HHI over all listed firms contained in Thomson Financial's Worldscope database *and* all non-listed firms contained in Bureau van Dijk's Amadeus database which provides extensive coverage of non-listed firms throughout Europe. To construct our corporate governance index, we use a large set of 64 individual corporate governance variables related to board accountability, financial disclosure and internal control, shareholder rights, remuneration, market for control, and corporate behavior.

Our results suggest that corporate governance is significantly positively related to firm value in non-competitive industries only. Hence, our findings are consistent with the hypothesis that product market competition acts as a substitute for corporate governance as competitive pressure enforces discipline on managers to maximize firm value. We find that a combination of increased capital expenditures, less resources spent on acquisitions, and a smaller likelihood to engage in diversification are the likely mechanisms through which corporate governance may positively affect firm value in non-competitive industries. All results are robust to a large number of robustness checks including alternative ways to classify observations into competitive and non-competitive firm-years, an alternative corporate governance index, and estimating alternative regressions specifications.

One question that might arise from the results we have presented in this chapter is why firms in non-competitive industries ever choose low levels of corporate governance. One possible answer could be that for a manager who wants to pursue his own interests, such as for example managerial empire building, a relatively weak corporate governance and low degree of product market competition is the most preferable setup. Hence, there is a lower valuation associated with these companies as shareholders take the higher agency costs resulting from such a firm-structure into account. We provide some evidence pointing to this direction in Table 3.5 where we show that poorly-governed firms in non-competitive industries are more likely to pursue diversification strategies and to make acquisitions. For managers it might thus very well be beneficial to have a poor corporate governance also in a non-competitive environment and, in turn, their ability to maintain a poor firm-level corporate governance is again related to the corporate governance that is in place already. Hence, poorly governed firms might remain poorly governed firms in a non-competitive environment at least as long as the expropriation of private benefits exceeds the benefits accruing to man-

agers from increases in the company's market value or external control mechanisms exert pressure towards a stronger corporate governance.

3.5   Appendix

Table 3.1: List of corporate governance attributes and the percentage of firms meeting the requirements for these attributes

Individual governance attribute	% of firms meeting attributes
Board Accountability	
1. Board members are subject to annual election by all shareholders	8.0%
2. Non-executive board members have a formal session without executives once a year	68.9%
3. Board performance is periodically evaluated	83.5%
4. Company discloses a code of ethics for senior executives	40.5%
5. Company discloses its corporate governance policies or guidelines	80.1%
6. Board or a committee is responsible for CEO succession planning	87.7%
7. Company has not failed to adopt the recommendations of a shareholder proposal	99.8%
8. All executive board members own shares after excluding options held	69.4%
9. All non-executive board members own shares after excluding options held	44.5%
10. Company has a separated chairman and CEO	89.2%
11. All members attended at least 75% of the board meetings	83.2%
12. Company has a designated "lead" or senior non-executive board member	43.7%
13. There have been no related-party transactions in the past three years	51.6%
14. The governance/nomination committee is composed of independent board members	23.2%
15. No former CEO of the company serves on the board	74.5%
16. Nr. of shares held by officers and directors has not decreased by 10% or more	86.0%
17. Nr. of shares held by officers and directors has increased by 10% or more	29.0%
18. Governance/nomination committee has a written charter or terms of reference	66.8%
19. Board size is greater than five but less than 16	79.8%
20. Board is controlled by more than 50% of independent outside directors	48.7%
Financial Disclosure and Internal Control	
21. Company has not had a material earnings restatement in the past three years	98.6%
22. Audit committee has a written charter or terms of reference	84.8%
23. Company has not received a qualified audit opinion within the last two fiscal years	99.1%
24. Company is not currently under investigation for accounting irregularities	98.7%
25. Audit committee is wholly composed of independent board members	55.0%
26. Someone other than senior management with sole authority to hire outside auditor	74.6%
27. Audit committee with sole authority to approve non-audit services from outside auditor	49.3%
28. Company did not pay its auditor less for audit related services than for other services	77.9%
Shareholder Rights	
29. Vote results for the last shareholder meeting are disclosed within 14 calendar days	70.1%
30. All common or ordinary equity shares have one-share, one-vote, with no restrictions	85.0%
31. The company provides confidential voting with no or with reasonable exceptions	76.4%
32. Shareholders have a right to convene an EGM with 10% or less of the shares requesting one	85.0%
33. Shareowners have a right to act in concert through written communication	22.7%
34. Voting rights are not capped at a certain percentage	94.7%
Remuneration	
35. Non-executive board members paid in cash and some form of stock-linked compensation	7.4%
36. Company discloses performance targets for the next fiscal year	50.7%
37. Non-executive board members are paid entirely in some form of stock-linked compensation	0.2%
38. CEO without an employment agreement that provides for guaranteed bonus payments	96.0%
39. Goals used to determine incentive awards are aligned with the company's financial goals	73.2%
40. CEO/Managing Director does not sit on the remuneration committee	96.6%

41. Remuneration committee is wholly composed of independent board members	48.6%
42. No repricing of outstanding executive stock options and no option exchange program	97.5%
43. Expensing of employee stock option grants	39.0%
44. Remuneration committee has a written charter or terms of reference	74.6%
45. Potential Dilution from Stock Options Outstanding is below 20%	77.4%
46. Potential Dilution from Stock Options Outstanding + not yet granted is below 20%	48.1%
Market for Control	
47. Company has not adopted a shareholder rights plan ("poison pill")	98.7%
48. Company does not have a staggered ("classified") board	39.4%
49. Company cannot issue blank check preferred stock in the event of a hostile tender offer	82.1%
50. Company's shareholder rights plan ("poison pill") has been ratified by a shareholder vote	0.8%
51. Fair price provision in place or price protection under applicable law	82.4%
52. Shareholder rights plan includes a TIDE provision or a three-year sunset provision	0.1%
53. Company does not require a supermajority vote to approve a merger	63.1%
54. No single shareholder or shareholder group whit majority of voting power	82.4%
55. Company allows cumulative voting in the election of directors	2.7%
Corporate Behavior	
56. The company have a policy addressing workplace safety	90.0%
57. Company does not have pending criminal litigation against it	96.9%
58. No allegation that the company used sweat shops within the last three years	99.7%
59. Company discloses its environmental performance	54.2%
60. Company discloses its workplace safety record	37.6%
61. No regulatory investigation for a material issue other than for accounting irregularities	90.6%
62. Company discloses its policy regarding corporate level political donations	30.2%
63. Company has not been charged with workplace safety violations within the last two years	98.5%
64. It has not been alleged by a responsible party that the company used child labor	99.9%

The table reports the 64 governance attributes included in our sample grouped by GMI's six sub-categories: Board Accountability, Financial Disclosure and Internal Control, Shareholder Rights, Remuneration, Market for Control, and Corporate Behavior. For each governance attribute, we report the percentage of firms in the sample that meet the respective criteria associated with this attribute. The sample consists of 3,102 firm-years.

Table 3.2: Descriptive statistics of main variables

	Mean	Median	Max	Min	Std.Dev	Obs.
Q	1.73	1.39	13.68	0.56	1.12	3,102
CGI	64.09	64.71	88.89	25.00	10.84	3,102
HHI	0.024	0.014	0.401	0.002	0.03	3,102

The table reports descriptive statistics for the main variables used in the chapter. Q denotes Tobin's Q and is computed as the sum of total assets less the book value of equity plus the market value of equity, divided by total assets, CGI denotes the governance index which is constructed by dividing the governance attributes a company fulfills by the number of total governance attributes. HHI denotes the Herfindahl-Hirschman-Index which is constructed by summing up the squared market shares of all firms in a given industry and dividing it by the square of the sum of all market shares using listed and unlisted firms of all countries.

Table 3.3: Corporate governance, competition, and firm value

Dependent variable: Tobin's Q

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CONSTANT	4.173 ***	4.694 ***	4.231 ***	4.104 ***	4.370 ***	4.325 ***	4.444 ***
	(15.092)	(12.134)	(17.177)	(12.720)	(11.092)	(22.849)	(12.126)
CGI	0.004						
	(1.544)						
LOWTER x CGI		0.004			0.003		
		(1.329)			(1.453)		
MEDTER x CGI		0.001			0.001		
		(0.303)			(0.316)		
HIGHTER x CGI		0.007 ***			0.007 **		
		(3.029)			(2.035)		
LOWMED x CGI			0.002			0.004	
			(0.682)			(1.534)	
HIGHMED x CGI			0.004 *			0.004	
			(1.959)			(1.497)	
FIRSTQUART x CGI				0.003			0.005
				(1.054)			(1.586)
SECONDQUART x CGI				-0.001			0.003
				(-0.306)			(1.291)
THIRDQUART x CGI				0.001			0.001
				(0.332)			(0.580)
FOURTHQUART x CGI				0.010 ***			0.008 *
				(3.403)			(1.942)
LNTA	-0.326 ***	-0.335 ***	-0.365 ***	-0.378 ***	-0.306 ***	-0.330 ***	-0.351 ***
	(-11.583)	(-13.533)	(-12.478)	(-11.631)	(-15.012)	(-11.950)	(-11.004)
LNAGE	-0.144 **	-0.084	-0.233 ***	-0.086	-0.138 **	-0.099	-0.088
	(-2.525)	(-1.119)	(-3.951)	(-1.245)	(-2.264)	(-1.101)	(-1.038)
Observations	3,102	3,102	3,102	3,102	3,102	3,102	3,102
Firms	856	856	856	856	856	856	856
R-squared	0.13	0.13	0.14	0.15	0.14	0.13	0.14

The table reports the results from panel regressions of Tobin's Q on HHI dummies, the governance index, two control variables, and interaction terms between the HHI dummies and the governance index and between the HHI dummies and the control variables. All regressions include year-, industry-, and country-fixed effects. The governance index is built additively from the 64 governance attributes described in Table 3.1. The HHI dummies indicate whether the HHI is in the highest, middle, or lowest tercile of its empirical distribution (Column 2 and 5), whether the HHI is above or below the median HHI (Columns 3 and 6), or whether the HHI is in the first, second, third, or fourth quartile (Columns 4 and 7). In Columns 2 to 4, the HHIs are based on the distribution of company sales and in Columns 5 to 7, the HHIs are based on the distribution of company total assets within the respective industry. In Columns 2 to 7, the intercept, the governance index, and the control variables are interacted with the HHI dummies. For space reasons only the interaction terms between the governance index and the HHI dummies are reported. All industries are defined by 2-digit-SIC codes. The control variables are firm size, proxied by the logarithm of total assets (LNTA), and the log of a firm's age, proxied by the time since the beginning of trading (LNAGE). The sample period is from 2003 to 2007. t-statistics are in parentheses and allow for clustering at the country level. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Table 3.4: Corporate governance, competition, and firm value – Alternative specifications and sub-sample analysis

Dependent variable: Tobin's Q	Full sample		High competition	Low competition	High competition	Low competition
	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	4.079 ***	4.538 ***	4.138 ***	5.732 ***	4.501 ***	4.067 ***
	(16.680)	(16.423)	(9.898)	(16.186)	(13.331)	(13.431)
CGI	0.002	0.002	0.003 *	0.004 *	0.004	0.005 **
	(1.118)	(0.925)	(1.653)	(1.865)	(0.938)	(2.491)
CGI x HHI	0.058 **	0.053 ***				
	(2.078)	(4.132)				
HHI	-4.416 **	-2.980 ***				
	(-2.393)	(-3.255)				
LNTA	-0.324 ***	-0.323 ***	-0.301 ***	-0.421 ***	-0.363 ***	-0.324 ***
	(-11.539)	(-11.431)	(-3.920)	(-9.241)	(-6.198)	(-11.258)
LNAGE	-0.014 **	-0.014 **	-0.005	-0.017 ***	-0.001	-0.019 ***
	(-2.537)	(-2.504)	(-0.973)	(-3.166)	(-0.169)	(-3.832)
Observations	3,102	3,102	1,535	1,567	1,526	1,576
Firms	856	856	502	535	465	516
R-squared	0.13	0.14	0.17	0.14	0.17	0.14

The table reports the results from panel regressions of Tobin's Q on the governance index, two control variables, and year-, industry-, and country-fixed effects. Columns 1 and 2 additionally include the HHI and an interaction term between the governance index and HHI. The governance index is built additively from the 64 governance attributes described in Table 3.1. In Columns 1, 5, and 6, the HHIs are based on the distribution of company sales, in Columns 2, 3, and 4, the HHIs are based on the distribution of company total assets within the respective industry. In Columns 3 to 6, the sample is split into sub-samples according to whether a company's HHI is below (= high competition) or above (= low competition) the median HHI. All industries are defined by 2-digit-SIC codes. The control variables are firm size, proxied by the logarithm of total assets (LNTA), and the log of a firm's age, proxied by the time since the beginning of trading (LNAGE). The sample period is from 2003 to 2007. *t*-statistics are in parentheses and allow for clustering at the country level. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Table 3.5: Capital expenditures, acquisitions, and diversification

Dependent Variable:	Capital Expenditures				Acquisitions				Diversification			
	(1)		(2)		(3)		(4)		(5)		(6)	
CONSTANT	11.109	***	13.202	***	2.813	*	6.064	***	-0.814	**	-0.922	**
	(13.873)		(8.042)		(1.830)		(3.125)		(-2.443)		(-2.047)	
CGI	0.026	*			-0.280	***			0.003			
	(1.732)				(-2.734)				(0.795)			
LOWTER x CGI			0.006				-0.031				0.007	
			(0.247)				(-1.596)				(1.389)	
MEDTER x CGI			0.031	**			-0.014				0.008	
			(2.171)				(-1.300)				(1.487)	
HIGHTER x CGI			0.039	**			-0.041	**			-0.008	
			(2.049)				(-2.530)				(-1.340)	
LNTA	-0.457	***	-0.289	***	0.139	***	-0.133		0.149	***	0.153	***
	(-5.612)		(-3.469)		(3.059)		(-1.515)		(7.937)		(4.386)	
LNAGE	-0.188		-0.044		-0.499	***	-0.287		0.229	***	0.107	*
	(-1.237)		(-0.092)		(-2.646)		(-0.845)		(6.070)		(1.660)	
Observations	3,057		3,057		2,698		2,698		2,871		2,871	
Firms	852		852		794		794		810		810	
R-squared	0.18		0.19		0.08		0.08		0.13		0.13	

This table reports the coefficients from panel regressions of either capital expenditures, acquisitions, or a dummy whether a company is diversified on year, country, and industry fixed effects, CGI, and control variables. The control variables are the same as in Table 3.3. In Columns 2, 4, and 6, CGI is interacted with HHI dummies, and HHI dummies are included as additional control variables (not reported). In Columns 1 and 2, the dependent variable is capital expenditures divided by total assets. In Columns 3 and 4, the dependent variable is the sum of the value of all acquisitions made by a firm in a given year divided by the firm's total assets in that year. In Columns 5 and 6, the dependent variable is a dummy variable which equals one if a company is diversified in a given year and zero if it is not. Columns 5 and 6 are based on probit regressions. In Columns 5 and 6, the R-squared is McFadden's pseudo R-squared. Columns 1, 3, and 5 report the coefficients on CGI, and Columns 2, 4, and 6 report the coefficients on interaction terms between CGI and HHI dummies. All coefficients in Columns 1 to 4 are multiplied by 100. The sample period is from 2003 to 2007. t-statistics are in parentheses and allow for clustering at the country level. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

4 Cash Holdings and Corporate Governance Around The World

4.1 Introduction

Holding liquid assets such as cash can be a double-edged sword for a firm. On the one hand, it provides flexibility to firms allowing them to avoid costs from underinvestment in positive-NPV projects due to lack of resources. On the other hand, cash holdings are prone to be invested in negative-NPV projects by managers or directors aiming to extract private benefits, an argument developed by Jensen (1986) and Stulz (1990).

Existing evidence on country-level governance suggests that firms in countries where shareholder rights are relatively less protected hold more cash than firms in countries with good shareholder protection (Dittmar et al., 2003). Moreover, Pinkowitz et al. (2006) show that the relation between cash holdings and firm value is weaker in countries with low shareholder protection. As to what concerns firm-level governance, there is a wide range of empirical research on the value of cash holdings when the underinvestment problem is prevalent (e.g., Mikkelson and Partch, 2003; Almeida et al., 2004). However, the existing studies on both U.S. and international firms have failed to provide evidence that poor firm-level governance is linked to higher cash holdings or that the combination of high cash holdings and poor firm-level governance has a negative effect on firm value. Harford (1999) and Opler et al. (1999), for example, find no significant relationship between cash holdings and firm-level corporate governance. More recent U.S. evidence by Harford et al. (2008) suggests that firms with poor governance do not hold more but actually less cash, but that among a set of firms with high cash holdings, firms with poor governance spend their cash more quickly. Kalcheva and Lins (2007) investigate these issues in an international context. Across all countries of their international sample, they find no significant relationship between firm-level

governance and cash holdings, or between firm-level governance, cash holdings, and firm value. The benefit of using an international sample stems from the possibility to introduce an additional dimension of corporate governance, namely country-level governance. The findings presented by Kalcheva and Lins (2007) suggest that once differences in country-level governance are taken into account, firm values are indeed lower when poor firm-level governance is combined with high cash holdings. One potential problem in this study is that firm-level governance has to be restricted to management and family control rights due to data availability. These variables, however, reflect only one specific aspect of corporate governance. Moreover, the relation between this variable and firm value has been shown to be nonlinear (e.g., McConnell and Servaes, 1990) or insignificant when accounting for the endogeneity of manager ownership (e.g., Loderer and Martin, 1997).

In this chapter, we improve on the measures of firm-level corporate governance used in earlier international studies investigating the relationship between cash holdings and corporate governance, and the effect of these two variables – and their interaction – on firm value. In a cross-section of between 1,655 and 1,875 firms from 46 countries, we use 64 governance attributes provided by Governance Metrics International (GMI) for the year 2007 to construct eight different measures of firm-level corporate governance. We find results which are in stark contrast to prior studies including the international results obtained by Kalcheva and Lins (2007).[31] Our three main findings are the following: First, we document a strong negative relationship between firm-level corporate governance and cash holdings. Consistent with the free cash flow hypothesis, firms with relatively poor governance hold significantly more cash than their better governed peers. This finding is novel and in contrast to the exist-

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[31] Unfortunately, it is not possible to pin down these differences in results to either the corporate governance variables used or the sample year as our corporate governance data is not available for 1996, the sample year used in Kalcheva and Lins (2007), and generally not before 2003 (when coverage was still very sparse). On the other hand, the measures of manager and family control used in Kalcheva and Lins (2007) are not available for 2007, our sample year.

ing U.S. evidence, which shows a positive relationship between firm-level governance and cash holdings (e.g., Harford et al., 2008), and the existing international evidence, which fails to document any significant relationship between cash holdings and firm-level corporate governance (e.g., Kalcheva and Lins, 2007). We further present evidence that this relationship is somewhat dampened for firms in countries with weak shareholder rights protection. Second, we document that in general higher cash holdings have a positive effect on firm value. We further show, however, that this positive effect is not prevalent in all firms but is restricted to firms with comparatively high firm-level corporate governance. In other words, to benefit from cash holdings, firms have to have a good corporate governance in place. The flipside of this explanation, of course, is that firms with poor firm-level governance do not benefit from holding more liquid assets because such firms are not successful in impeding managers from extracting private benefits from cash holdings. This finding also holds when we control for country-level corporate governance. Third, we investigate whether the value of cash holdings depends on the firms' payout policy as a payout of excess cash reduces the possibility for managers to waste cash for negative-NPV projects. Our results show that interaction terms between cash holdings and the payout ratio and between cash holdings and corporate governance are positive and significant. Hence, our results indicate that the value of cash is not only positively related to the companies' corporate governance but also to their dividend payments. In other words, cash is only valuable to a firm if either a sound corporate governance structure or a payout of excess cash (or both) reduce the possibility for managers to waste cash on negative-NPV projects. Moreover, by looking at sub-samples of poorly and well governed firms separately, we show that firms with poor corporate governance can still profit from cash holdings if they maintain relatively high dividend payout ratios.

The remainder of this chapter is organized as follows. Section 4.2 describes the data and construction of variables used in this study. Section 4.3 presents the results from the empirical analysis. Section 4.4 concludes.

4.2 Data and variables

4.2.1 Corporate governance data

We use data on firm-level corporate governance attributes provided by Governance Metrics International (GMI), which started providing governance data in 2003. GMI constructs a governance rating for all firms covered in their database using a proprietary scoring algorithm. To construct these ratings (which we do not use), GMI assembles information on individual governance attributes. We use 64 such individual governance attributes for the construction of our measures of firm-level corporate governance. The starting point for our sample are all firm-year observations in 2007. The reason for our focus on 2007 is that GMI broadened its coverage in 2007 considerably, and the number of countries covered by GMI nearly doubled in 2007. Since our purpose is to investigate firm-level as well as country-level governance, a sample covering more countries leads to a higher variance in country-level governance and hence is better suited for our analysis. Our cross-section consists of 1,875 observations from 46 different countries.

For each of the 64 governance attributes gathered, GMI assesses if a firm attains a minimum level of implementation. The 64 attributes we consider are sub-categorized by GMI into six categories, namely 1) board accountability, 2) financial disclosure and internal control, 3) shareholder rights, 4) remuneration, 5) market for control, and 6) corporate behavior. We code a value of one to each governance attribute that a firm has in place and zero otherwise. Table 4.1 provides an overview of the 64 governance attributes and shows the percentage of firms meeting these criteria according to GMI's thresholds. A comparison of Table 4.1

with corresponding results from studies using other databases of international firm-level corporate governance such as ISS (e.g., Aggarwal et al., 2009) shows that the level of implementation of governance attributes is similar for the governance attributes provided by both data providers. Using these 64 governance attributes, we construct eight different firm-level corporate governance measures (governance indices). We compute the first governance index (CGIALL1) as the percentage of all 64 governance attributes a firm has in place relative to the number of governance attributes GMI provides information on. For the second index, CGICORE1, we exclude all attributes from the corporate behavior category and calculate the index as the percentage of the remaining 55 governance attributes a firm has in place relative to the number of governance attributes GMI provides information on. The reason for this omission is that it is arguable whether these variables really form a part of what is traditionally referred to as corporate governance.[32] The third index, CGIRED1, is built from a subsample of governance attributes, where we focus on 17 governance variables that have been used in prior studies and which can be considered "typical" firm-level corporate governance measures. The governance variables considered in CGIRED1 are governance attributes 8 to 15, 19 and 20 from the board accountability category, attribute 25 from the financial disclosure and internal control category, attribute 30 from the shareholder rights category, attributes 35 and 40 from the remuneration category, and attributes 47, 52, and 53 from the market for control category. The fourth index, CGICL1, considers an even smaller number of governance variables for potential comparability with Chhaochharia and Laeven (2009) who also use an international sample of firm-level corporate governance measures to build an index consisting of 17 attributes only. Hence, CGICL1 uses the 11 attributes that we have in common with Chhaochharia and Laeven (2009). These are the governance attributes 10, 20, 25,

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[32] The corporate governance attributes summarized in the corporate behavior category are not covered by the other well-known governance rating agencies such as for example ISS. Hence, these attributes are not included in other international corporate governance studies (e.g., Aggarwal et al., 2009; Chhaochharia and Laeven, 2009).

30, 32, 33, 40, 46, 47, 52, and 54. The second set of four governance indices is computed similarly, the only difference being that these indices measure the percentage of governance attributes a company has in place relative to all 64 attributes included in the first index (or the 55, 17, and 11 attributes in the second, third, and fourth index, respectively). For this second set of governance indices, we thus treat governance attributes on which we have no information as if these attributes were not in place. If the probability that a firm discloses information on a specific governance attribute is positively correlated with the probability that an attribute is adopted, we would expect a stronger valuation effect of this second set of governance indices as compared to the first set. The four measures of this second set are denoted by CGI-ALL2, CGICORE2, CGIRED2, and CGICL2. The additive nature of index construction that we use is a common feature in the literature (see, e.g., Gompers et al., 2003; Bebchuck and Cohen, 2005; Aggarwal et al., 2009; Bebchuk et al., 2009).

As a measure of country-level governance, we use the anti-director index of La Porta et al. (1998) in its revised form as proposed by Djankov et al. (2006). In robustness tests, we also use a revised version of the original anti-director index as proposed by Spamann (2010), and the country-level indicators of Kaufman et al. (2008).

4.2.2 Financial data

We obtain the financial data for the companies included in our sample from Worldscope. Following the literature on cash holdings (e.g., Dittmar et al., 2003; Kalcheva and Lins, 2007), our measure of cash is defined as the ratio of cash and short-term investments to net assets, where net assets are defined as total assets minus cash and short-term investments. We use Tobin's Q as the measure for firm value and compute it as total assets less the book value of equity plus the market value of equity, divided by total assets. We control for several variables which have been shown to explain variation in cash and firm value. To control for firm

size, we use the natural logarithm of total assets. To control for leverage, we use the ratio of total liabilities to total assets. To control for a firm's potential investment opportunities, we use the ratio of capital expenditures to assets. To control for profitability, we employ the ratio of cash flow to net assets, where cash flow is defined as earnings before interest, taxes and depreciation minus interest payment minus dividend payments. Furthermore, we include industry dummies, as defined by Campbell (1996). In the regressions where cash is the dependent variable, we use two further control variables. To control for additional liquid assets, we use the ratio of non-cash net working capital to net assets, and to control for current and future performance, we use the year-before to year-end sales growth. To mitigate the effect of outliers, we winsorize all financial variables at the 1st and 99th percentile, and to mitigate the effect of the skewed distribution of our cash variable, we follow the literature and use its logarithm in our empirical analyses. Table 4.2 provides an overview of the financial variables used in this chapter on a country-level. The third column displays summary statistics for the variable of main interest, our cash variable. The overall mean of this variable is 0.17, with values ranging from a low of 0.03 for Colombia to a high of 0.31 for Taiwan. We note that the overall mean of 0.17 is considerably larger than the 0.12 by Kalcheva and Lins (2007) for their cross-section of firms from 1996. The summary statistics for the other control variables are largely in line with those of other studies.[33]

4.3   Empirical analysis

4.3.1   Cash holdings

In this sub-section, we perform regression analyses in which the level of cash is estimated as a function of several different measures of firm-level corporate governance, a measure of country-level shareholder protection, and control variables. Throughout all empirical

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[33] Another commonality of our sample with other recent international samples is the large fraction of U.K. and Japanese firms in our sample. In unreported robustness tests, we find our results to be robust to the exclusion of either of these two countries and also of both countries simultaneously.

analyses in the chapter, we use White (1980) standard errors that are robust to heteroskedasticity.[34] Tables 4.3 and 4.4 report the results of these regression analyses where the log of our cash variable is the dependent variable. In Table 4.3, we test for the impact of firm-level corporate governance on firm cash holdings. In Columns 1 to 4, we use the four governance indices ignoring missing governance attributes and in Columns 5 to 8, we use the four governance indices that treat missing governance attributes as if they were not in place. The results presented in Table 4.3 show that regardless of which measure of firm-level corporate governance we use, its coefficient is always negative and statistically significant at the 1% level. Because we control for factors that are closely linked to the liquidity needs of a firm such as growth opportunities or profitability, the negative relationship between firm-level corporate governance and cash holdings indicates that the management of poorly governed companies is more likely to hoard cash, possibly to extract private benefits from these liquid assets. On the other hand, country-level corporate governance does not seem to be significantly related to cash holdings as indicated by the insignificant coefficients on CGOV.

In Table 4.4, we investigate whether the negative relationship between firm-level corporate governance and cash holdings depends on country-level governance. To do this, we add an interaction term between the anti-director index of La Porta et al. (1998) in its revised form (CGOV) as proposed by Djankov et al. (2006) and the firm-level governance measures. For every measure of firm-level corporate governance, the coefficient on the standalone firm-level governance measures is again negative and significant, confirming that our findings in Table 4.3, that poorly governed companies hold more cash, is also valid if we account for a possible interaction effect between firm- and country-level governance. In each column, the coefficient on the interaction term between firm-level- and country-level governance is posi-

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[34] Our results remain unchanged if we use different types of standard errors, such as for example standard errors that are clustered at the country-level.

tive but mostly insignificant (with the exception of Columns 1 to 3). A positive coefficient on the interaction term indicates that companies with comparatively good governance (high CGI score), which are based in a country with comparatively good country-level governance (high CGOV score), will hold more cash. The coefficient on country-level governance is always negative but insignificant with two exceptions (Columns 1 and 3). Hence, there is only very weak evidence that good country-level corporate governance is also associated with lower cash holdings.

Summarizing, our results on the determinants of firms' cash holdings presented in Table 4.3 provide strong evidence that higher cash holdings and firm-level corporate governance are negatively related, regardless of the variables we use to measure firm-level governance. The results reported in Table 4.4 provide some evidence that this negative relation is slightly weakened when country-level shareholder protection is weak.

4.3.2 Firm value

Before we investigate the interrelation between cash holdings and corporate governance and their effect on firm value, we assess the standalone impact of cash and firm-level governance on firm value. In Table 4.5, we estimate models that include our eight different governance measures, cash, and a set of four control variables. The results show that firms with better firm-level corporate governance also have higher firm values, a finding that has been documented extensively in the literature for the U.S. market (e.g., Gompers et al., 2003) and for international samples (e.g., Chhaoccharia and Laeven, 2009). The coefficient on cash is positive and significant at the 1% level in all specifications, a finding that is again in line with earlier research (e.g., Kalcheva and Lins, 2007). The coefficient on CGOV is negative in all columns and borderline significant in four out of the eight specifications. This finding is surprising because a negative relationship between country-level governance and firm value

is at odds with findings in earlier literature such as La Porta et al. (2002). However, we caution that much of the literature documenting a positive relationship between firm value and country-level governance, such as La Porta et al. (2002) or Kalcheva and Lins (2007), work with relatively old samples. For example, both La Porta et al. (2002) and Kalcheva and Lins (2007) use a cross-section of observations from 1996. It is without a doubt that international capital markets have developed and converged tremendously in the time between 1996 and 2007, the year our sample is based on. We thus refrain from drawing too strong conclusions from the negative coefficient on country-level governance.[35,36]

In Table 4.6, we investigate whether controlling for country-level shareholder protection, higher levels of cash have a more beneficial effect on firm value if corporate governance is better, i.e., the possibilities for management to extract private benefits from cash holdings are reduced. We do this by including an interaction term between cash holdings and our governance indices in our analysis. In each column of Table 4.6, this interaction term between cash holdings and firm-level corporate governance is positive and statistically significant at least at the 5% level with one exception (in Column 5 significant at the 10% level). The coefficient on the standalone firm-level governance is not changed by the inclusion of the additional interaction term and remains significantly positive in every model. This finding suggests that to capture the benefits of having more cash available, a company needs to have a well-functioning corporate governance in place to curb managers' possibilities to make ill use of the liquid assets at their disposal. The flipside of this explanation is that firms with comparatively poor corporate governance experience negative effects of cash holdings on firm

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[35] The finding of a negative influence of country-level corporate governance on firm value is robust to the use of different measures for country governance. Using the original measure proposed by La Porta et al. (1998), the corrected index proposed by Spamann (2010), or the measure proposed by Kaufman et al. (2008) does not alter this result.

[36] In unreported robustness tests, we also tested whether the valuation effect of CGOV (or the alternative country-level measures of corporate governance) is captured by our measures of firm-level corporate governance. This does not seem to be the case: When we exclude firm-level corporate governance from the regressions specifications in Table 5, the coefficient on CGOV remains negative and mostly insignificant in all specifications.

value, precisely because the lack of shareholder protection and/or management oversight enables the misuse of cash for negative present value projects. We also note that the standalone coefficient on cash turns insignificant in all models of Table 4.6, providing evidence that the positive effect of cash holdings across all companies documented in Table 4.5 vanishes once we account for the interaction of cash with governance. In other words, to benefit from higher cash holdings, firms have to have comparatively better corporate governance in place.

In unreported results, we also examine the effect that country-level corporate governance has on the findings reported in Table 4.6. Previous research, such as Kalcheva and Lins (2007), documents that for cash to have a positive impact on firm value, not only firm-level governance but country-level governance has to be high as well. When we follow Kalcheva and Lins (2007) and include an additional term that interacts firm-level governance, cash holdings, and country-level governance, we find this coefficient to be insignificant regardless of which measure for firm-level governance we use. This is not entirely surprising, keeping in mind the negative effect of country-level governance on firm value we documented in Tables 4.5 and 4.6. Our findings thus point into the direction that firm-level governance is the driving force in determining the positive effect of cash holdings on firm value with country-level governance playing a minor role.

4.3.3   Total dividend payment

One could hypothesize that among companies with poor firm-level corporate governance, those that pay out cash to shareholders are more highly valued than those that stock cash (e.g., see La Porta et al., 2000b). Hence, we extend the analysis of Section 4.3.2 by accounting for firms' payout to shareholders. To our knowledge, the only study attempting to relate the valuation effect of cash holdings not only to corporate governance but also to the firms' payout policy is Kalcheva and Lins (2007). Most importantly, their results show that

when country governance is weak, firm value is higher when companies pay dividends. However, the results on firm-level corporate governance, which is measured by managerial ownership only, are less clear. Most specifications suggest that paying a dividend is more valuable to shareholders of companies with a high managerial ownership.

We follow a two-step approach to investigate whether a higher payout ratio is more valuable to shareholders of poorly governed firms. In the first step, we estimate similar regressions as in Table 4.6 and include two new variables. The first variable, PAYOUT, is defined as a firm's total dividend payments divided by its total assets. In addition, we include an interaction term between PAYOUT and CASH to investigate whether the valuation effect of cash depends on the firm's payout policy. The results are reported in Columns 1 and 2 of Table 4.7 for the two alternative corporate governance indices CGIALL1 (Column 1) and CGIALL2 (Column 2), respectively. Our results show that the coefficients on CGIALL1 and CGIALL2 are both positive and significant, the coefficient on CASH is negative and significant, and the interaction term between corporate governance and CASH is positive and significant in both columns indicating that only well governed firms benefit from cash holdings. The coefficient on PAYOUT is positive and significant in both columns indicating that higher dividend payments are positively associated with firm value. Most importantly, the coefficients on the interaction term between CASH and PAYOUT are positive and significant in both columns as well. Hence, our results indicate that the value of cash is not only positively related to the companies' corporate governance but also to their dividend payments.

In the second step, we build sub-samples based on whether a company's corporate governance score is in the bottom or top quartile.[37] For these sub-samples, we then estimate separate regressions which also include PAYOUT and an interaction term between PAYOUT

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[37] We also used other quantiles to classify our sample firms into well and poorly governed firms, such as for example medians or terciles, and found the results to remain qualitatively similar.

and CASH in addition to the control and governance variables included in the regressions reported in Table 4.6. We expect that the value of cash is higher in well governed firms and that in poorly governed firms the value of cash is higher in firms paying more dividends. The results are reported in Columns 3 to 6 of Table 4.7. The regressions in Columns 3 and 5 include all firms with a CGIALL1 and a CGIALL2 score in the bottom quartile, respectively. Columns 4 and 6 include all firms with a CGIALL1 and a CGIALL2 score in the top quartile, respectively. The results show that, in accordance with the results in Table 4.6, the coefficient on CASH is positive and highly significant at the 1% level in Columns 4 and 6 and borderline significant or insignificant in Columns 3 and 5. Hence, the positive effect of cash holdings on firm value is restricted to high-governance firms while poorly governed firms seem not to be able to benefit from the flexibility that holding more cash offers, possibly due to increased agency conflicts. Most importantly, the interaction term between CASH and PAYOUT is positive and significant in poorly governed firms only (i.e., Columns 3 and 5). Hence, consistent with Columns 1 and 2, these results show that in poorly governed firms the valuation effect of cash holdings depends on the firms' payout policy. Poorly governed firms profit from cash holdings only when they maintain relatively high dividend payout ratios.

In unreported results, we alternatively use a broader definition of a company's payout to shareholders. We define this payout variable as the amount of dividends paid plus the amount of money used for stock repurchases minus the proceeds from stock issuance, all scaled by the company's total assets. Interestingly, when we use this broader measure of payout, the positive effect of payout on firm value for badly governed firms disappears. We interpret this as evidence that the positive effect of paying out liquid assets can only be achieved if the firm credibly signals its intention to continue to pay out cash by means of increasing dividend payments as compared to doing stock repurchase programs which usually do not convey a credible signal for future payouts (e.g., Jagannathan et al., 2000).

For brevity's sake, we present the results in this sub-section only for the two first corporate governance indices, CGIALL1 and CGIALL2. However, all results continue to hold if we include the other six governance measures employed in the study.

4.4 Conclusions

In this chapter, we provide new and complementing international evidence on the interrelation between cash holdings, corporate governance, and firm value. We present three new main findings. First, firms with poor firm-level governance hold significantly more cash than firms with better firm-level governance. This result is in line with Jensen's (1986) free cash flow hypothesis. Second, we document a positive effect of cash holdings on firm value and show that this beneficial effect of cash holdings is not evenly distributed across all firms. Specifically, a firm needs to have comparatively good firm-level corporate governance to be able to benefit from increased cash holdings. If a firm has weak firm-level governance, increased cash holdings might be exploited by management and invested in negative-NPV projects. Third, we show that a payout of cash by means of dividend payments reduces the possibility for managers to waste cash for negative-NPV projects and hence also positively affects the valuation effect of cash holdings. Moreover, we show that poorly governed firms can still profit form cash holdings if they maintain relatively high dividend payout ratios. For all three of our main findings, we find the impact of country-level governance to be limited, i.e., the results do not substantially change if we additionally include country-level governance into our analyses. This indicates that, at least for our sample and for our governance data, firm-level governance dominates the effects of country-level governance.

4.5   Appendix

Table 4.1: List of corporate governance attributes and the percentage of firms meeting the requirements for these attributes

Individual governance attribute	% of firms meeting attributes
Board Accountability	
1. Board members are subject to annual election by all shareholders	24.9%
2. Non-executive board members have a formal session without executives once a year	57.0%
3. Board performance is periodically evaluated	76.4%
4. Company discloses a code of ethics for senior executives	51.8%
5. Company discloses its corporate governance policies or guidelines	62.2%
6. Board or a committee is responsible for CEO succession planning	87.4%
7. Company has not failed to adopt the recommendations of a shareholder proposal	99.1%
8. All executive board members own shares after excluding options held	70.0%
9. All non-executive board members own shares after excluding options held	35.2%
10. Company has a separated chairman and CEO	83.7%
11. All members attended at least 75% of the board meetings	80.0%
12. Company has a designated "lead" or senior non-executive board member	26.7%
13. There have been no related-party transactions in the past three years	50.0%
14. The governance/nomination committee is composed of independent board members	21.4%
15. No former CEO of the company serves on the board	74.6%
16. Nr. of shares held by officers and directors has not decreased by 10% or more	82.7%
17. Nr. of shares held by officers and directors has increased by 10% or more	23.5%
18. Governance/nomination committee has a written charter or terms of reference	46.4%
19. Board size is greater than five but less than 16	84.6%
20. Board is controlled by more than 50% of independent outside directors	40.3%
Financial Disclosure and Internal Control	
21. Company has not had a material earnings restatement in the past three years	99.0%
22. Audit committee has a written charter or terms of reference	61.7%
23. Company has not received a qualified audit opinion within the last two fiscal years	99.7%
24. Company is not currently under investigation for accounting irregularities	99.2%
25. Audit committee is wholly composed of independent board members	42.9%
26. Someone other than senior management with sole authority to hire outside auditor	89.4%
27. Audit committee with sole authority to approve non-audit services from outside auditor	46.4%
28. Company did not pay its auditor less for audit related services than for other services	89.8%
Shareholder Rights	
29. Vote results for the last shareholder meeting are disclosed within 14 calendar days	78.5%
30. All common or ordinary equity shares have one-share, one-vote, with no restrictions	71.1%
31. The company provides confidential voting with no or with reasonable exceptions	44.1%
32. Shareholders have a right to convene an EGM with 10% or less of the shares requesting one	90.4%
33. Shareowners have a right to act in concert through written communication	10.8%
34. Voting rights are not capped at a certain percentage	96.8%
Remuneration	
35. Non-executive board members paid in cash and some form of stock-linked compensation	17.3%
36. Company discloses performance targets for the next fiscal year	23.2%
37. Non-executive board members are paid entirely in some form of stock-linked compensation	0.6%
38. CEO without an employment agreement that provides for guaranteed bonus payments	98.8%
39. CEO/Managing Director does not sit on the remuneration committee	95.3%
40. Remuneration committee is wholly composed of independent board members	32.7%
41. No repricing of outstanding executive stock options and no option exchange program	99.2%

42. Expensing of employee stock option grants	64.2%
43. Remuneration committee has a written charter or terms of reference	51.9%
44. Potential Dilution from Stock Options Outstanding is below 20%	59.9%
45. Potential Dilution from Stock Options Outstanding + not yet granted is below 20%	45.6%
Market for Control	
46. Company has not adopted a shareholder rights plan ("poison pill")	95.2%
47. Company does not have a staggered ("classified") board	51.1%
48. Company cannot issue blank check preferred stock in the event of a hostile tender offer	92.3%
49. Company's shareholder rights plan ("poison pill") has been ratified by a shareholder vote	3.2%
50. Fair price provision in place or price protection under applicable law	79.8%
51. Shareholder rights plan includes a TIDE provision or a three-year sunset provision	2.1%
52. Company does not require a supermajority vote to approve a merger	29.0%
53. No single shareholder or shareholder group whit majority of voting power	78.9%
54. Company allows cumulative voting in the election of directors	9.5%
Corporate Behavior	
55. The company has a policy addressing workplace safety	84.2%
56. Company does not have pending criminal litigation against it	96.6%
57. No allegation that the company used sweat shops within the last three years	99.8%
58. Company discloses its environmental performance	53.3%
59. Company discloses its workplace safety record	36.9%
60. No regulatory investigation for a material issue other than for accounting irregularities	94.0%
61. Company discloses its policy regarding corporate level political donations	29.4%
62. Company has not been charged with workplace safety violations within the last two years	99.7%
63. It has not been alleged by a responsible party that the company used child labor	99.9%
64. Does the company disclose its environmental policy	73.1%

The table reports the 64 individual governance attributes provided by Governance Metrics International grouped by the six sub-categories: Board Accountability, Financial Disclosure and Internal Control, Shareholder Rights, Remuneration, Market for Control, and Corporate Behavior. For each governance attribute, we report the percentage of firms in the sample that meet the respective criteria associated with this attribute. The sample consists of 1,855 observations.

Table 4.2: Summary statistics by country

Country	# Firms	CASH	Q	LNTA	LEV	CAPEX	CF	NWC	SALESGR	DIV	PAYOUT
Argentina	3	0.10	1.53	8.21	0.49	0.10	0.19	-0.06	0.18	0.33	0.01
Australia	86	0.12	2.05	8.40	0.54	0.06	0.08	-0.01	0.28	0.98	0.04
Austria	13	0.19	1.68	8.59	0.55	0.08	0.14	-0.05	0.21	0.69	0.02
Belgium	20	0.09	1.59	8.65	0.51	0.06	0.10	0.02	0.12	0.95	0.04
Brazil	38	0.23	2.05	8.78	0.56	0.08	0.15	-0.06	0.38	0.97	0.04
Canada	104	0.12	1.95	8.43	0.50	0.09	0.10	-0.01	0.30	0.72	0.03
Chile	13	0.05	1.87	8.56	0.48	0.10	0.10	0.03	0.34	0.92	0.04
China	31	0.19	2.31	8.93	0.49	0.10	0.12	-0.11	0.39	0.90	0.02
Colombia	2	0.03	1.34	8.31	0.27	0.02	0.06	0.01	0.27	1.00	0.01
Denmark	17	0.10	2.83	8.02	0.59	0.06	0.15	0.03	0.28	0.82	0.03
Egypt	3	0.07	2.17	8.87	0.59	0.15	0.13	-0.01	0.09	1.00	0.07
Finland	23	0.08	1.91	8.47	0.55	0.05	0.07	0.09	0.19	1.00	0.06
France	90	0.14	1.64	9.43	0.62	0.05	0.08	-0.07	0.19	0.93	0.02
Germany	83	0.15	1.85	8.87	0.61	0.06	0.09	0.02	0.20	0.85	0.03
Greece	16	0.25	2.28	8.19	0.57	0.05	0.12	-0.07	0.32	0.88	0.05
Hong Kong	58	0.23	2.10	8.62	0.38	0.05	0.09	-0.03	0.16	0.97	0.05
Hungary	2	0.08	1.53	9.16	0.55	0.08	0.14	-0.02	0.05	1.00	0.08
India	33	0.19	3.16	8.03	0.47	0.09	0.17	0.10	0.40	0.97	0.04
Indonesia	7	0.13	3.37	8.02	0.52	0.09	0.17	-0.07	0.16	1.00	0.07
Ireland	13	0.28	2.53	7.72	0.64	0.05	0.11	-0.03	0.25	0.69	0.02
Israel	7	0.19	2.26	8.43	0.49	0.04	0.13	0.02	0.28	0.71	0.05
Italy	30	0.09	1.46	9.37	0.64	0.05	0.09	-0.04	0.23	0.87	0.02
Japan	399	0.18	1.50	8.65	0.53	0.05	0.08	0.02	0.11	0.97	0.01
Malaysia	10	0.22	2.27	8.51	0.46	0.06	0.11	-0.03	0.24	1.00	0.05
Mexico	18	0.15	1.90	8.73	0.47	0.05	0.14	0.09	0.13	0.78	0.04
Morocco	1	0.11	3.97	8.48	0.50	0.15	0.11	-0.21	0.32	1.00	0.02
Netherlands	28	0.17	1.83	8.88	0.55	0.05	0.11	-0.02	0.19	0.86	0.03
New Zealand	11	0.04	2.07	7.16	0.46	0.05	0.08	0.03	0.33	0.91	0.05
Norway	21	0.16	2.15	8.30	0.56	0.09	0.14	-0.03	0.30	0.67	0.04
Pakistan	1	0.21	3.99	7.72	0.22	0.12	0.12	0.35	0.04	1.00	0.03
Peru	1	0.26	3.11	7.52	0.14	0.03	0.19	0.01	0.39	1.00	0.04
Philippines	3	0.21	2.56	8.22	0.43	0.06	0.15	-0.10	0.26	1.00	0.05
Poland	6	0.11	1.88	8.69	0.40	0.09	0.15	0.00	0.34	0.83	0.06
Portugal	7	0.08	1.53	9.13	0.72	0.10	0.10	-0.13	0.23	1.00	0.03
Russia	15	0.14	2.41	9.59	0.32	0.10	0.17	0.01	0.25	0.87	0.02
Singapore	51	0.17	1.82	8.02	0.48	0.05	0.10	-0.02	0.26	0.90	0.04
South Africa	31	0.17	2.41	8.01	0.56	0.06	0.13	-0.02	0.26	0.94	0.06
South Korea	61	0.30	1.62	8.83	0.54	0.06	0.13	-0.08	0.14	0.90	0.01
Spain	33	0.12	2.11	9.35	0.65	0.05	0.11	-0.05	0.30	0.91	0.03
Sweden	46	0.11	1.87	8.44	0.58	0.04	0.10	0.04	0.18	0.86	0.04
Switzerland	38	0.27	2.39	8.53	0.48	0.04	0.12	0.05	0.29	0.89	0.03
Taiwan	52	0.31	1.75	8.25	0.42	0.07	0.11	-0.01	0.17	0.92	0.05
Thailand	5	0.09	2.18	8.83	0.44	0.09	0.11	0.01	0.21	1.00	0.07
Turkey	8	0.28	1.62	9.22	0.51	0.06	0.16	-0.13	0.32	0.75	0.02
UK	316	0.16	1.92	7.90	0.56	0.05	0.08	-0.05	0.16	0.91	0.03
Venezuela	1	0.12	0.82	8.23	0.52	0.15	0.18	-0.20	0.91	1.00	0.01
Overall Mean	40	0.17	1.86	8.50	0.53	0.06	0.10	-0.01	0.21	0.91	0.03

This table reports mean values for a cross-section of 1,855 observations for which data are available from Governance Metrics International (GMI) and Worldscope. The sample size is 1,655 for NWC and SALESGR and 1,848 for PAYOUT. CASH is the ratio of cash and equivalents to net assets. Net assets are total assets minus cash and short-term investments. Q is the market value of equity plus total assets less book value of equity, divided by total assets. LNTA is the log of total assets. LEV is total liabilities divided by total assets. CAPEX is the ratio of capital expenditures to total assets. CF is the ratio of cash flows to net assets, where cash flows are operating income plus depreciation and amortization minus interest minus taxes minus dividends. NWC is the ratio of net working capital to net assets, where net working capital is current assets minus current liabilities minus cash and short-term investments. SALESGR is a firm's 1-year sales growth. DIV is the percentage of firms in a country that paid dividends. PAYOUT is the ratio of total dividend payments to total assets.

Table 4.3: Cash holdings and firm-level corporate governance

Dependent Variable: CASH

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CONSTANT	0.273	0.242	0.009	0.040	0.173	0.148	0.063	0.034
	(0.381)	(0.437)	(0.975)	(0.896)	(0.561)	(0.620)	(0.828)	(0.909)
CGIALL1	-0.999 ***							
	(0.000)							
CGICORE1		-0.889 ***						
		(0.000)						
CGICL1			-0.464 ***					
			(0.006)					
CGIRED1				-0.508 ***				
				(0.003)				
CGIALL2					-1.019 ***			
					(0.000)			
CGICORE2						-0.909 ***		
						(0.000)		
CGICL2							-0.592 ***	
							(0.000)	
CGIRED2								-0.556 ***
								(0.001)
CGOV	0.019	0.017	0.002	0.010	0.032	0.030	0.004	0.016
	(0.481)	(0.524)	(0.955)	(0.720)	(0.241)	(0.276)	(0.880)	(0.555)
LNTA	-0.078 ***	-0.083 ***	-0.083 ***	-0.086 ***	-0.078 ***	-0.083 ***	-0.084 ***	-0.087 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEVERAGE	-1.970 ***	-1.987 ***	-2.025 ***	-2.004 ***	-1.964 ***	-1.982 ***	-2.000 ***	-1.995 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPEX	-3.855 ***	-3.883 ***	-3.913 ***	-3.919 ***	-3.877 ***	-3.907 ***	-3.959 ***	-3.915 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NWC	-2.435 ***	-2.446 ***	-2.451 ***	-2.449 ***	-2.429 ***	-2.442 ***	-2.445 ***	-2.450 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CF	3.227 ***	3.233 ***	3.274 ***	3.214 ***	3.213 ***	3.214 ***	3.287 ***	3.212 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SALESGR	-0.198	-0.195	-0.193	-0.200	-0.209	-0.206	-0.199	-0.199
	(0.121)	(0.128)	(0.135)	(0.119)	(0.101)	(0.107)	(0.123)	(0.120)
DIV	-0.333 ***	-0.338 ***	-0.332 ***	-0.333 ***	-0.338 ***	-0.343 ***	-0.343 ***	-0.336 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	1,655	1,655	1,655	1,655	1,655	1,655	1,655	1,655
R-squared	0.280	0.280	0.277	0.278	0.282	0.282	0.279	0.280

This table reports the results from cross-sectional regressions where CASH is the dependent variable. CASH is defined as the natural logarithm of cash and short-term investments divided by net assets, where net assets are defined as total assets minus cash and short-term investments. CGIALL1 is an additive governance index based on all 64 governance attributes listed in Table 4.1. CGICORE1 is an additive governance index based on all 64 governance attributes listed in Table 4.1 except for those that fall into the category "Corporate Behavior". CIGRED1 is an additive governance index based on a sub-sample of the 64 governance attributes listed in Table 4.1. This sub-sample consists of attributes 8 to 15, 19 and 20 from the "Board Accountability" category, attribute 25 from the "Financial Disclosure and Internal Control" category, attribute 30 from the "Shareholder Rights" category, attributes 35 and 40 from the "Remuneration category", and attributes 47, 52, and 53 from the "Market for Control" category. CGICL1 is an additive governance index based on those governance attributes that are also used by Chhaoccharia and Laeven (2009), namely attributes 10, 20, 25, 30, 32, 33, 40, 46, 47, 52, and 54. CGIALL2, CGICORE2, CGIRED2, and CGICL2 are additive governance indices based on the same governance attributes as the first four indices (CGIALL1, CGICORE1, CGIRED1, and CGICL1) but governance attributes where GMI was not able to obtain information on are considered to be not in place. CGOV is the revised anti-director index proposed by Djankov et al. (2006). All control variables are explained in Table 4.2. All regressions include industry dummy variables based on the industry groupings reported in Campbell (1996). p-values are in parentheses below each coefficient and are robust to heteroskedasticity. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4.4: Cash holdings, firm-level corporate governance, and country-level corporate governance

Dependent Variable: CASH

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)
CONSTANT	1.461	**	1.285	*	0.719		0.696		0.840		0.736		0.531		0.541
	(0.046)		(0.067)		(0.140)		(0.210)		(0.128)		(0.162)		(0.245)		(0.286)
CGIALL1	-3.036	***													
	(0.009)														
CGIALL1 x CGOV	0.477	*													
	(0.074)														
CGICORE1			-2.780	**											
			(0.015)												
CGICORE1 x CGOV			0.442	*											
			(0.090)												
CGICL1					-1.904	**									
					(0.017)										
CGICL1 x CGOV					0.341	*									
					(0.065)										
CGIRED1							-1.854	**							
							(0.042)								
CGIRED1 x CGOV							0.312								
							(0.129)								
CGIALL2									-2.369	**					
									(0.018)						
CGIALL2 x CGOV									0.318						
									(0.165)						
CGICORE2											-2.196	**			
											(0.025)				
CGICORE2 x CGOV											0.302				
											(0.179)				
CGICL2													-1.631	**	
													(0.042)		
CGICL2 x CGOV													0.245		
													(0.184)		

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CGIRED2								-1.697 *
								(0.054)
CGIRED2 x CGOV								0.263
								(0.183)
CGOV	-0.267 *	-0.233	-0.167 *	-0.145	-0.131	-0.114	-0.109	-0.104
	(0.097)	(0.120)	(0.073)	(0.168)	(0.266)	(0.295)	(0.205)	(0.267)
LNTA	-0.074 ***	-0.079 ***	-0.080 ***	-0.083 ***	-0.074 ***	-0.079 ***	-0.081 ***	-0.085 ***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
LEVERAGE	-1.990 ***	-2.006 ***	-2.046 ***	-2.027 ***	-1.979 ***	-1.998 ***	-2.011 ***	-2.016 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPEX	-3.845 ***	-3.866 ***	-3.897 ***	-3.914 ***	-3.863 ***	-3.889 ***	-3.949 ***	-3.893 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NWC	-2.425 ***	-2.440 ***	-2.437 ***	-2.442 ***	-2.419 ***	-2.434 ***	-2.430 ***	-2.447 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CF	3.221 ***	3.231 ***	3.268 ***	3.202 ***	3.208 ***	3.210 ***	3.284 ***	3.196 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SALESGR	-0.204	-0.198	-0.203	-0.199	-0.214 *	-0.209	-0.204	-0.198
	(0.112)	(0.121)	(0.118)	(0.121)	(0.094)	(0.102)	(0.113)	(0.122)
DIV	-0.339 ***	-0.345 ***	-0.340 ***	-0.337 ***	-0.344 ***	-0.349 ***	-0.349 ***	-0.341 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	1,655	1,655	1,655	1,655	1,655	1,655	1,655	1,655
R-squared	0.282	0.281	0.278	0.279	0.283	0.282	0.280	0.280

This table reports the results from cross-sectional regressions where CASH is the dependent variable. CASH is defined as the natural logarithm of cash and short-term investments divided by net assets, where net assets are defined as total assets minus cash and short-term investments. The remaining variables are explained in Tables 4.2 and 4.3. All regressions include industry dummy variables based on the industry groupings reported in Campbell (1996). *p*-values are in parentheses below each coefficient and are robust to heteroskedasticity. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4.5: Tobin's Q, firm-level corporate governance, and cash holdings

Dependent Variable: Tobin's Q

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CONSTANT	3.674 ***	3.913 ***	3.674 ***	3.749 ***	3.989 ***	3.918 ***	3.822 ***	4.027 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CASH	0.188 ***	0.187 ***	0.187 ***	0.187 ***	0.184 ***	0.186 ***	0.188 ***	0.184 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CGIALL1	1.043 ***							
	(0.000)							
CGICORE1		0.757 ***						
		(0.000)						
CGICL1			0.993 ***					
			(0.000)					
CGIRED1				0.785 ***				
				(0.000)				
CGIALL2					0.402 ***			
					(0.003)			
CGICORE2						0.714 ***		
						(0.000)		
CGICL2							0.718 ***	
							(0.000)	
CGIRED2								0.380 ***
								(0.004)
LNTA	-0.247 ***	-0.248 ***	-0.242 ***	-0.237 ***	-0.243 ***	-0.244 ***	-0.238 ***	-0.243 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEVERAGE	0.011	0.033	0.017	0.046	0.054	0.039	0.043	0.055
	(0.938)	(0.811)	(0.903)	(0.733)	(0.694)	(0.780)	(0.755)	(0.689)
CAPEX	3.555 ***	3.613 ***	3.570 ***	3.578 ***	3.636 ***	3.628 ***	3.647 ***	3.636 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CGOV	-0.048 *	-0.052 *	-0.046 *	-0.029	-0.035	-0.051 *	-0.032	-0.039
	(0.068)	(0.051)	(0.074)	(0.262)	(0.173)	(0.053)	(0.213)	(0.137)
Observations	1,875	1,875	1,875	1,875	1,875	1,875	1,875	1,875
R-squared	0.238	0.234	0.239	0.241	0.232	0.234	0.239	0.231

This table reports the results from cross-sectional regressions where the dependent variable is Tobin's Q computed as market value of equity plus total assets minus book value of equity, divided by total assets. The remaining variables are explained in Tables 4.2 and 4.3. All regressions include industry dummy variables based on the industry groupings reported in Campbell (1996). p-values are in parentheses below each coefficient and are robust to heteroskedasticity. The number of observations in this table is 1,875 as compared to 1,855 / 1,848 in the two subsequent tables that additionally include the explanatory variables DIV, CF, and/or PAYOUT. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4.6: Tobin's Q, firm-level corporate governance, cash holdings, and the interaction of cash and firm-level corporate governance

Dependent Variable: Tobin's Q

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CONSTANT	2.641 ***	2.581 ***	3.019 ***	3.143 ***	3.088 ***	3.042 ***	3.071 ***	3.246 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CGIALL1	1.971 ***							
	(0.000)							
CGIALL1 x CASH	0.432 **							
	(0.011)							
CGICORE1		2.064 ***						
		(0.000)						
CGICORE1 x CASH		0.471 ***						
		(0.002)						
CGICL1			1.436 ***					
			(0.000)					
CGICL1 x CASH			0.312 ***					
			(0.003)					
CGIRED1				1.157 ***				
				(0.000)				
CGIRED1 x CASH				0.315 ***				
				(0.001)				
CGIALL2					1.411 ***			
					(0.005)			
CGIALL2 x CASH					0.301 *			
					(0.059)			
CGICORE2						1.505 ***		
						(0.001)		
CGICORE2 x CASH						0.341 **		
						(0.019)		
CGICL2							1.415 ***	
							(0.000)	
CGICL2 x CASH							0.321 ***	
							(0.002)	
CGIRED2								1.035 ***
								(0.001)
CGIRED2 x CASH								0.272 ***
								(0.004)

CASH	-0.134	-0.148	-0.022	-0.036	-0.033	-0.047	-0.021	-0.005
	(0.217)	(0.114)	(0.685)	(0.504)	(0.719)	(0.552)	(0.685)	(0.916)
DIV	0.132	0.145	0.147	0.137	0.125	0.135	0.148	0.133
	(0.162)	(0.122)	(0.116)	(0.139)	(0.188)	(0.153)	(0.112)	(0.152)
CF	3.683 ***	3.682 ***	3.583 ***	3.692 ***	3.721 ***	3.728 ***	3.629 ***	3.712 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LNTA	-0.258 ***	-0.253 ***	-0.250 ***	-0.254 ***	-0.259 ***	-0.256 ***	-0.251 ***	-0.253 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEVERAGE	0.154	0.141	0.155	0.170	0.184	0.175	0.152	0.176
	(0.258)	(0.299)	(0.251)	(0.209)	(0.177)	(0.199)	(0.260)	(0.193)
CAPEX	2.139 ***	2.180 ***	2.174 ***	2.258 ***	2.146 ***	2.178 ***	2.221 ***	2.233 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CGOV	-0.052 **	-0.052 **	-0.037	-0.041	-0.055 **	-0.055 **	-0.040	-0.043 *
	(0.046)	(0.047)	(0.146)	(0.117)	(0.038)	(0.037)	(0.122)	(0.097)
Observations	1,855	1,855	1,855	1,855	1,855	1,855	1,855	1,855
R-squared	0.298	0.301	0.301	0.296	0.295	0.296	0.300	0.295

This table reports the results from cross-sectional regressions where the dependent variable is Tobin's Q computed as market value of equity plus total assets minus book value of equity, divided by total assets. The remaining variables are explained in Tables 4.2 and 4.3. All regressions include industry dummy variables based on the industry groupings reported in Campbell (1996). p-values are in parentheses below each coefficient and are robust to heteroskedasticity. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4.7: Tobin's Q, firm-level corporate governance, and dividend payout

Dependent Variable: Tobin's Q	Full Sample Analysis		Sub-Sample Analysis			
			Lo-Gov	Hi-Gov	Lo-Gov	Hi-Gov
	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	1.570 ***	1.941 ***	2.240 ***	2.170 ***	2.773 ***	2.668 ***
	(0.000)	(0.000)	(0.000)	(0.008)	(0.000)	(0.000)
CASH	-0.304 ***	-0.189 **	0.072 *	0.179 ***	0.063	0.156 ***
	(0.001)	(0.014)	(0.085)	(0.000)	(0.144)	(0.001)
PAYOUT	9.148 ***	9.191 ***	14.218 ***	12.231 **	14.454 ***	13.252 ***
	(0.000)	(0.000)	(0.000)	(0.010)	(0.000)	(0.003)
CASHxPAYOUT	6.036 **	6.012 **	2.168 *	1.608	2.260 *	1.251
	(0.015)	(0.016)	(0.066)	(0.258)	(0.053)	(0.356)
CGIALL1	2.019 ***		1.064	2.346 **		
	(0.000)		(0.271)	(0.045)		
CGIALL2		1.588 ***			0.191	1.856 *
		(0.000)			(0.827)	(0.059)
CGIxCASH	0.626 ***	0.493 ***				
	(0.000)	(0.000)				
CF	3.399 ***	3.423 ***	4.748 ***	1.922 *	4.402 ***	1.761 **
	(0.000)	(0.000)	(0.000)	(0.059)	(0.000)	(0.044)
LNTA	-0.173 ***	-0.174 ***	-0.221 ***	-0.173 ***	-0.227 ***	-0.180 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEVERAGE	0.209 *	0.226 *	0.315	-0.254	0.362 *	-0.077
	(0.082)	(0.059)	(0.122)	(0.429)	(0.075)	(0.806)
CAPEX	2.120 ***	2.110 ***	1.316	1.639	1.295	1.741
	(0.000)	(0.000)	(0.128)	(0.159)	(0.110)	(0.146)
REV	-0.021	-0.023	-0.026	-0.053	-0.052	-0.097
	(0.370)	(0.345)	(0.465)	(0.433)	(0.185)	(0.212)
Observations	1,848	1,848	490	454	499	445
R-squared	0.449	0.447	0.511	0.375	0.522	0.410

This table reports the results from cross-sectional regressions where the dependent variable is Tobin's Q computed as market value of equity plus total assets minus book value of equity, divided by total assets. PAYOUT denotes a firm's total dividend payments scaled by its assets. The remaining variables are explained in Tables 4.2 and 4.3. Columns 3 and 5 use a sub-sample including the firms whose respective CGI score is in the bottom quartile (Lo-Gov). Columns 4 and 6 use a sub-sample including the firms whose respective CGI score is in the top quartile (Hi-Gov). All regressions include industry dummy variables based on the industry groupings reported in Campbell (1996). p-values are in parentheses below each coefficient and are robust to heteroskedasticity. *,**, and *** denotes statistical significance at the 10%, 5%, and 1% level, respectively.

5   Conclusion

This doctoral thesis analyzes three different research questions concerning the corporate governance of international companies. First, we investigate whether better firm-level corporate governance leads to higher firm valuation. Second, we analyze if this positive valuation effect is evenly distributed across industries. Finally, we evaluate whether better firm-level corporate governance leads to fewer cash holdings, and how these two variables (and their interaction) affect firm value. We make use of a dataset on 64 individual corporate governance provisions provided by Governance Metrics International (GMI) comprising over 2,000 companies worldwide.

In Chapter 2, we analyze the direct impact of better firm-level corporate governance on firm value. To perform this analysis, we use an unbalanced panel dataset comprising 6,663 firm-year observations from 22 developed countries over the period from 2003 to 2007. Using our dataset on 64 individual governance attributes, we construct two additive governance indices and one index based on principal component analysis. For all indices, our results show a strong and positive relation between firm-level corporate governance and firm valuation. In further analyses, we also investigate the value relevance of governance attributes that document the companies' social behavior. Regardless of whether these attributes are aggregated into indices or considered individually, they have a positive and significant effect on firm value as well. These results are robust to the use of alternative corporate governance indices and to alternative estimation methodologies.

In Chapter 3, we investigate if the value effect of good corporate governance depends on the degree of competitiveness of the industry a company operates in. For this analysis, we use a large international sample covering 14 countries from the European Union (EU). This sample allows us to use more comprehensive and reliable measures of both product market

competition and corporate governance than previous studies. Consistent with the notion that competition acts as a substitute for corporate governance by enforcing discipline on managers to maximize firm value, our results show that corporate governance significantly increases firm value only in non-competitive industries. When analyzing the channels through which firm value may be increased, we find evidence that good governance in firms operating in non-competitive industries leads them to have more capital expenditures and less expenditures on acquisitions. They are also less likely to engage in value-destroying diversification. All of our results are robust to various robustness checks including the use of alternative measures of governance and competition and the use of alternative regression specifications.

In Chapter 4, we provide new and complementing international evidence on the relationship between cash holdings, corporate governance, and firm value. Using a cross-sectional sample consisting of 1,875 firms from 46 countries in 2007, our analyses yield three new main findings. First, we document that firms with poor firm-level governance hold significantly more cash than firms with good firm-level governance. Second, we show that the overall positive effect of cash holdings on firm value can only be observed for companies with good firm-level corporate governance. A likely explanation for this is that higher cash holdings might be exploited by management in firms with weak firm-level governance. Finally, we show that the payout of excess cash by paying dividends also positively affects the valuation effect of cash holdings. Moreover, firms with low firm-level corporate governance can still profit from holding cash if they maintain high dividend payout ratios.

Concluding, this thesis makes a contribution towards the better understanding of corporate governance in an international sample. While the emergence of detailed governance data has facilitated international corporate governance research a great deal, there are still

numerous questions that have not been answered and that future research may provide answers to. A very prominent open question that is endemic to all governance research is the question of causality. While longer datasets allow the use of dynamic panel estimators, a clean identification strategy has not been developed for international governance research. Future research might benefit from using new techniques such as a regression discontinuity approach to provide additional evidence on the question of whether better governance actually causes better performance and valuation. A second open question is the role that company ownership plays in international governance research. To date, it has not been possible to account for the differences in ownership structures across countries in international samples in a satisfactory way. Clearly, though, the optimal governance structure for a company that is controlled by a majority shareholder will look different than the optimal governance structure for a company that has many dispersed minority shareholders. Finally, the role that corporate governance played before and during the financial crisis is still under-researched. For instance, is the performance of non-financial firms during the crisis dependent on their particular corporate governance structure? Or, can the changes in governance structures at financial firms prior to the crisis explain their risk-taking during that time? For the time being, we leave these questions open for future research.

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