Corporate Governance and the Value of Dividends

Stockholm School of Economics
Bachelor Thesis in Finance
Spring 2015

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Abstract

In this paper we investigate how corporate governance affect the value of dividends, using a sample of 1124 companies in the United States between the years 1990 and 2007 for a total sample of 9901 observations. Companies with poor corporate governance should be associated with a higher risk to investors than companies with good corporate governance and dividends should be a way to decrease the risk of managers wasting resources on overinvestment and on extracting personal benefit, as well being a signal from managers that they are willing to be monitored by the capital market. This suggests that dividends from companies with poor corporate governance should be valued higher than dividends from companies with good corporate governance. By using a firm valuation model by Fama and French (1998) and a corporate governance index by Gompers et al. (2003), running a regression on a badly governed and a well-governed portfolio of companies as well as a regression with an interaction effect between dividends and corporate governance, we find that dividends from companies with poor corporate governance are valued higher than dividends from companies with good corporate governance. The findings have implications for understanding how corporate governance, dividends and their interaction affect firm value.

Acknowledgments: We would like to thank our tutor, Jungsuk Han, for guidance and valuable insights.

Keywords: Dividends; Corporate governance; Take-over provisions; Firm value

Date: 2015-05-18

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Introduction

When ownership and control is separated between shareholders and managers, as is the case in most modern corporations, managers will waste resources if left to their own devices. This is the conclusion put forward in the literature on agency cost, a field which depends greatly on Jensen and Meckling´s (1976) work. In this paper we examine the connection between corporate governance and dividends. There are three main reasons for examining this connection. Firstly, dividends are thought to have a big impact on the value of a firm and be a good signal of future cash flows. Secondly, the signal from a dividend payout is believed to relay information about the corporate governance of the firm. Thirdly, by paying out cash as dividends, the risk of management wasting resources might be diminished.

To determine the connection between corporate governance and dividends we use the methodology developed by Pinkowitz, et al. (2006) in their cross-country study of cash, dividends and corporate governance. Their model is an extension of the original model put forward by Fama and French (1998). We first follow Pinkowitz, et al. (2006) and divide the dataset into a well-governed portfolio and a badly governed portfolio and compare the coefficients from our fixed-effect regressions. Secondly, we add interaction effects between the dividend term and dummy variables based on different tranches of the portfolio with respect to their level of corporate governance and run the model on the entire dataset to further examine the connection between governance and dividends.

Our hypothesis, based on earlier literature in the field, is that dividends should be valued higher when a company is badly governed as opposed to if it is well-governed. We do the above mentioned tests and use the corporate governance index created by Gompers, et al. (2003) and companies from the S&P1500 index.

We find a statistically significant interaction between dividends and corporate governance and difference of dividend value between the two differently well-governed portfolios. We argue that this difference might be due to mainly two different reasons. Firstly investors might value the cap dividend payouts set on the amount of resources managers can waste on extracting personal benefits or overinvesting, by limiting the available resources. The other explanation is that by paying dividends a manager shows a willingness to risk having to sustain the capital markets monitoring by increasing the risk of having to raise new capital and by that shows good faith towards shareholders. We are hesitant to draw any conclusions of the reasons behind the different value since this was not the target of the paper. However, we see some indications, though not conclusive, that the value do not come from the protection against managerial waste.

In section 1 we describe previous literature. In section 2 we will introduce the approach we use to test the hypothesis. In section 3 we describe the data we have used. In section 4 we describe

the results we receive from our tests and the robustness of them. In section 5 we discuss possible explanations for the results. We conclude the paper in section 6.

1. Previous literature

The fundamental work of Modigliani and Miller (1958) laid out the theory of irrelevance of financing decisions with regard to investment. As long as the investments' return is higher than the marginal cost of capital, how it is financed is irrelevant. This, they argue, does not mean that shareholders and managers have to be indifferent in the choice of financing plan. For example, preferences might arise from the possibility of raising additional capital at a later period if a certain financing option is chosen today. The concerns of managers do not have to be in conflict with maximizing shareholder wealth. Modigliani and Miller argue that, for example when raising debt, lenders might stipulate terms that managers believe restricts their freedom to manoeuvre, thus limiting the possibility of paying dividends for example. Arrow (1964) reasons that when organizations are seen as a collection of individuals trying to reach a common goal, maximizing one common objective, each individual has in contrast to the common goal individual goals which rarely align perfectly with the organization´s goal.

Jensen and Meckling (1976) take this argument further and argues, using agency theory, that there is a great risk that the agent, in this case the manager, will extract wealth from the principle, the shareholders, when both are maximizing their own utility. Dittmar and Mahrt-Smith (2007) investigate the empirical evidence on management waste of resources. They argue that liquid assets are the easiest for managers to extract for personal benefits and shows that liquid assets are valued considerably lower in badly governed firms by investors. These findings are in line with Pinkowitz, et al. (2006) findings in their cross-country study of the value of liquid assets between legal systems with different levels of investor protection.

Shareholders can minimize this risk, Jensen and Meckling (1976) argue, by aligning the managers' interests with their own by means of incentives and monitoring, while incurring the costs associated with these measures. It is generally impossible for the principle at zero cost to ensure that the agent will maximise the wealth of stockholders. The agency cost lowers the market value, given that the cost of ensuring that the agent will maximize the principle´s wealth and the risk that the effort is not successful is incurred by shareholders. One way of increasing control over managers Jensen and Meckling (1976) continue, is to reduce the dispersion of ownership. They argue that if the cost of reducing the dispersion is lower than the benefit from doing so, it will pay some investor or group to buy shares in the market. This is sometimes seen in proxy fights, tender offers or market purchases.

Throughout this paper we measure investor oversight and corporate governance as managerial entrenchment, a result from antitakeover provisions. Specifically we use the index developed by Gompers, et al. (2003), sometimes referred to as the GIM index, measuring corporations' antitakeover provisions. We focus on these aspects because of their effect on shareholders ability to pressure managers. As DeAngelo and Rice (1983) and Gompers, et al. (2003) show, sheltering managers from the scrutiny of the market for corporate control has a detrimental effect on future stockholder returns.

In the famous pecking order theory, popularized by Myers and Majluf (1984), they describe how managers might limit dividend payouts in order minimize the risk of having to go to the capital markets for fresh equity. Fama and French (2002) uses the pecking order theory when considering dividends and debt. They find evidence for the pecking order over the trade-off theory. More profitable firms have lower debt and higher dividend payouts. They also argue that dividends do not vary, but rather debt is used to accommodate short-term variations and that dividends might be considered sticky, in line with Myer´s (1984) findings.

Kothari and Shanken (1992 and 1997) show that revisions of future expectations on dividends explain a large part of the variations in stock return. Fama and Babiak (1968) find a consistency in the view that dividend-paying companies only increase dividends if the managers are relatively certain that the higher level can be sustained. Bernheim (1990) shows the existence of a pool of heterogeneous, low-quality firms which pay out no dividends and that when quality moves over some threshold, dividends jump from zero to some positive number.

John and Williams (1985) argue that dividends relay all private information not communicated in audits and current stockholders therefore capture all rent, net the signalling cost. Insiders in firms with more valuable future cash flows pays out larger dividends and therefore receives higher prices for their stock. These ideas are in conflict with the results laid forth by Watts (1973) who concludes that while a change in dividends do convey information about changes in future earnings, they do not convey any information on the absolute change in future earnings. He argues that dividends as a signal is trivial since the transaction cost is higher than the return from monopolistic possession of the information. Furthermore, the inside information used by management to set the dividends is lost in the noise of the dividend model.

Bhattacharya (1979) writes about the use of dividends as a signal to outside investors of profitability and future cash flows when outside investors have imperfect information. Existing shareholders care about the value outsiders put on the company, i.e. the market value. He assumes that communication of cash flow and future cash flows is costly and affected by moral hazard. The

benefit of dividends as a signal comes from the rise in liquidation value caused by committed and paid out dividends.

Jensen (1986) argues that by paying out dividends, managers has less resources under their control, thus lessening their power and making it more likely that they will have to endure the capital markets' monitoring, which takes place when the company must obtain new capital. With too much free cash flows, managers will have a tendency to overinvest by investing below the cost of capital. However, an increase in dividends, all other things equal, will decrease the overinvestment and increase the value of the firm. Lang and Litzenberger (1989) give evidence for these views by showing that if an overinvesting company increases its dividend payout, it signals information about their investment policy. Fama and French (2002) show that firms with fewer investments also have higher dividend payouts. Pinkowitz, et al. (2006) find, as said earlier, that in legal systems with poor investor protection, liquid assets are valued lower by investors because of the risk that managers will extract personal benefits. They also find that in these countries, dividends are valued higher than in countries with better protection, suggesting that investors believe high payouts of dividends to be a protection against managers' waste. These findings are in line with Jensen´s (1986) theory.

Zwiebel (1996) argues that managers that want to empire build and thereby extract personal wealth from shareholders would actually both take on more debt and pay out a high dividend. Managers will take on debt to defend against takeovers from raiders. Entrenched managers will then pay out earnings as dividends voluntarily. By taking on more debt and paying out dividends until a level is reached that would lead to bankruptcy if new investments that were unprofitable was undertaken, managers would keep raiders away, because raiders could not extract any extra value from a takeover. Thus, the difference in Zwiebel's (1996) theory is that managers voluntarily take on debt and pay out dividends in order to entrench themselves.

There seems to be two main branches of possible explanations to our hypothesis. Either investors would value the decrease in risk of managerial waste when dividends are paid out or value the signal that managers would be willing to sustain the monitoring of the capital market, by increasing the risk of having to raise new capital.

2. Methodology

To investigate if dividend payouts are valued higher in badly governed firms as opposed to well-governed, we need a model that relates company value to company characteristics. Pinkowitz, et al. (2006) expanded a model originally created by Fama and French (1998) to measure how investors put value on liquid cash holdings and dividends based on the strength and integrity of the legal system where the company operated. They argue that even though this valuation model should be considered

ad hoc for the purpose in the sense that it is not a functional form derived from a theoretical model, it is still well-suited for their purpose since it explains the cross-section variation in firm values well. Therefore, it is also well-suited for our paper. Pinkowitz, et al. (2006) basic regression is as follows:

$$V_{i,t} = \propto + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+2} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+2} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+2} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+2} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+2} + \beta_{15} dV_{i,t+2} + \beta_{16} dL_{i,t} + \beta_{17} dL_{i,t+2} + \epsilon_{i,t} \quad (1)$$

Where $X_t$is the level of variable X in the year t divided by assets in year t, dX_t is the change in the level of X from year t-1 to year t calculated as $X_t - X_{t-1}$divided by assets year t and $dX_{t+2}$is the change in the level of X from year t to year t+2 calculated as $X_{t+2} - X_t$, divided by the level of assets in year t. Here we choose two years into the future rather than one year, as Pinkowitz, et al. (2006) do. The reason for this is that we in this regard choose to follow Fama and French (1998) in the original model, whose argument is in turn based on Kothari and Shanken (1992). Kothari and Shanken argue that the independent variable in the regression must only reflect the information arriving in year t. To purge the realized growth from expectations already existing earlier than year t we use the variables $dX_{i,t}$. We also need to remove the portion of future growth that is unexpected at year t. Investors, Fama and French (1998) argue, can predict two years into the future, and these expectations are built into the X_t variables. By adding the dX_{t+2}variables we can remove the growth rate that is unexpected relative to expectations in year t. We then get a variable X_t eliminated for all effects except information arriving in year t.

V is the market value of the firm calculated as the sum of market value of equity and the total book value of debt, E is earnings as earnings before interest and taxes (EBIT), NA is net assets defined as assets subtracted with liquid assets, R&D is research and development expenses, I is interest expenses, D is common dividend paid and L is liquid asset holdings. We follow the example of Pinkowitz, et al. (2006) and define R&D as equal to zero if the values are missing from the data. By using this model we can both investigate our hypothesis that dividends are valued differently based on the level of corporate governance and draw some possible explanations about the value of dividends, specifically about the explanation of dividends supressing managerial waste of resources. We will thereby follow the example of Pinkowitz, et al. (2006) and derive evidence from the value of β_{12}. In that case we would expect the value of liquid assets to be lower for badly governed firms and the value of dividends to be higher.

When testing for a difference in the value of dividends and how they depend on corporate governance, the observations are split into two roughly equally-sized portfolios based on their level of corporate governance as defined in the Gompers, Ichii and Metrick index. The split is made at the median level of the GIM index. We then run fixed-effect regressions, fixing for both company and year

effects. We expect the coefficient β_{12} to be higher in badly governed firms than in well-governed. We then run t-tests on the difference between the two portfolios´ coefficients to check for statistical and economical significance in the difference.

In our interaction model we have split the companies into three different categories, which we refer to as portfolios, based on their number of points in the GIM index, using dummy variables. We have created these three portfolios so that approximately one third of the observations are in each portfolio. $PortfolioMid_{i,t}$ is the dummy variable for companies in the data with a medium level of corporate governance relative to the other companies and $PortfolioLow_{i,t}$ is the dummy variable for companies in the data with a low level of corporate governance relative to the other companies. We then interact these two dummy variables separately with the dividend term in order to find the effect of corporate governance on dividends relative to the third of the observations with the highest level of corporate governance. The GIM index we use for corporate governance is ordinal data, and thus of an arbitrary scale. However, by using binary dummies to interact rather than the corporate governance itself, we avoid this problem.

Our prediction is that both of these interaction effects will be positive, i.e that dividends are valued higher for companies with lower levels of corporate governance. We thus also predict that the interaction effect with the portfolio with the lowest level of corporate governance will be largest of the two interaction terms. Our interaction model thus looks as follows:

$$\begin{aligned} V_{i,t} = \propto &+ \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+2} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+2} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} \\ &+ \beta_8 dRD_{i,t+2} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+2} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+2} \\ &+ \beta_{15} dV_{i,t+2} + \beta_{16} dL_{i,t} + \beta_{17} dL_{i,t+2} + \beta_{18} PortfolioMid_{i,t} + \beta_{18} PortfolioLow_{i,t} \\ &+ \beta_{19} PortfolioMid_{i,t} * D_{i,t} + \beta_{19} PortfolioLow_{i,t} * D_{i,t} + \epsilon_{i,t} \end{aligned} \quad (2)$$

3. Data

For the regression model described earlier we need firm-level data as well as data on firms' individual corporate governance. In this section we describe the data as well as the motivation behind using it.

The firm-level data comes from the Thomson Reuters Datastream database. It consists of companies in the S&P1500 index and uses data from the year 1989 through 2009 to accommodate the dX_t and dX_{t+2} variables. The years are chosen based on the years the Gompers, Ichii and Metrick (2003) index, our governance index, exists for. The index is only available since 1990, and in 2007 the index was changed and a consistent analysis is therefore impossible after 2007. We follow the example of Dittmar and Mahrt-Smith (2007) and exclude firms in the financial services, due to the problem of assessing these firms' liquidity, as well as excluding utility companies since their liquidity and governance might be driven by regulatory factors. Our final sample consists of 1124 companies, with

9901 firm-year observations. In our analysis we winsorize all firm-level ratios at the 1% and 99% levels to minimize the effect of outliers, which is also in line with Dittmar and Mahrt-Smith (2007).

The Gompers, Ichii and Metrick index, which was created in Gompers, et al. (2003), is based on data from Investors Responsibility Research Center (IRRC). The index is based around antitakeover defences, which they argue is detrimental for corporate governance, given that the disciplining effect the market for corporate control would have on management is diminished. The index measures the numbers of antitakeover provisions a company has in its charters, such as poison pills and golden parachutes, as well as the legal code of the state in which the company is incorporated. The index varies between zero and 24 points. When a provision acts as a takeover defence and restricts shareholder rights, the company receives one point and if the company does not have the provision it receives zero points, so that a high number corresponds to a badly governed firm and a lower corresponds to a well-governed firm. The index was reported about every second year by the IRRC (1990, 1993, 1995, 1998, 2000, 2002, 2004 and 2006) and we follow Dittmar and Mahrt-Smith (2007) when we assume that the index is unchanged from the most recent report, when a year is not reported.

Table 1 contains some descriptive data regarding our dataset. The average dividend during this time span was 0.014 with a standard deviation of 0.019. Dividend is, as said above, defined as dividend/assets. We have 9901 observations, distributed on 1124 companies. Our corporate governance index, the Gompers, Ichii and Metrick index, varies between 1 and 18 with an average of 9.4 and a standard deviation of 2.694. As seen in graph 1 the index seems to be normally distributed. In the appendix, table A and graph A report dividends and corporate governance by industry.

Table 1
Summary statistics

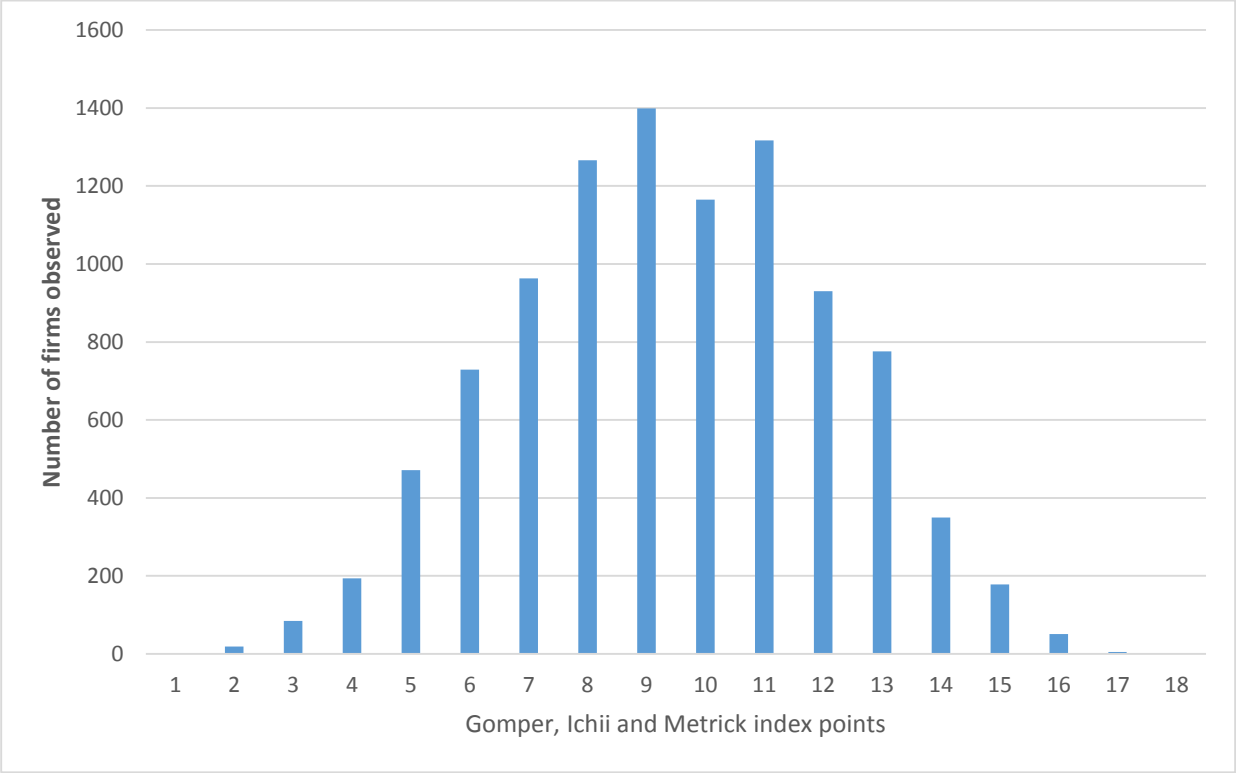
This table provides some descriptive statistics on the data used in the analysis. The data is from year 1990 through 2007. The table provides average, max, min and standards deviation for dividends, defined as dividend/assets, as well as for the corporate governance index Gompers, Ichii and Metrick index used throughout this paper. Number of observations and firms are also displayed. All ratios are winsorized at the 1% and 99% levels.

	Average	Max	Min	Standard deviation
Dividend	0,014	0,103	0,000	0,019
Gompers, Ichii and Metrick index	9,408	18	1	2,694
Number of observations	9901			
Number of firms	1124			

Graph 1

Distribution of Gompers, Ichii and Metrick index points

The distribution of corporate governance in the dataset. The corporate governance is derived from the Gompers, Ichii and Metrick index. The index is built around companies' antitakeover provisions, where a company receives one point for every provision that it has in place. The maximum number of points is 24. The points seems to be normally distributed around the average of 9.408.



4. Results

Here we present the results from the regressions. In section 4.1 we will present the results from model (2), where we have split the data into three different tranches based on the companies' GIM index points. In section 4.2 we will present our results from our model (1), where we have split the dataset into two parts based on the companies´ median GIM index points in the dataset, in order to further examine our data. We thus have a portfolio with companies having a low level of corporate governance and a portfolio having a high level of corporate governance to run the model on. In section 4.3 we discuss the robustness of our results.

4.1 Results from the interaction model

Table 2

The impact of governance on the value of dividends

We estimate regressions using a fixed effects model. Where X_t is the level of variable X in the year t divided by assets in year t, dX_t is the change in the level of X from year t-1 to year t calculated as $X_t - X_{t-1}$divided by assets year t and $dX_{t+2}$is the change in the level of X from year t to year t+2 calculated as $X_{t+2} - X_t$, divided by the level of assets in year t. V is the market value of the firm calculated as the sum of market value of equity and the total book value of debt, E is earnings defined as earnings before interest and taxes (EBIT), NA is net assets defined as assets subtracted with liquid assets, RD is research and development expenses, I is interest expenses, D is common dividend paid and L is liquid asset holdings. The independent variables now include two governance dummies, firms with a medium level of governance and firms with a low level of governance based on which tercile of the Gompers, Ichii and Metrick index an observation belongs to. We let the dummies interact with the dividend term ($PortfolioMid_{i,t} * D_{i,t}$ and $PortfolioLow_{i,t} * D_{i,t}$). All regressions include dummy variables for each year. The regression is:

$$V_{i,t} = \propto + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+2} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+2} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+2} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+2} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+2} + \beta_{15} dV_{i,t+2} + \beta_{16} dL_{i,t} + \beta_{17} dL_{i,t+2} + \beta_{18} PortfolioMid_{i,t} + \beta_{18} PortfolioLow_{i,t} + \beta_{19} PortfolioMid_{i,t} * D_{i,t} + \beta_{19} PortfolioLow_{i,t} * D_{i,t} + \epsilon_{i,t}$$

	Interaction model	p-value
$E_{i,t}$	5.322***	0.000
	(0.338)	
$dE_{i,t}$	-1.377***	0.000
	(0.162)	
$dE_{i,t+2}$	1.215***	0.000
	(0.167)	
$dNA_{i,t}$	-0.0256	0.734
	(0.0755)	
$dNA_{i,t+2}$	0.394***	0.000
	(0.0484)	
$RD_{i,t}$	2.561**	0.030
	(1.179)	
$dRD_{i,t}$	3.572**	0.011
	(1.396)	
$dRD_{i,t+2}$	3.245***	0.002
	(1.050)	
$I_{i,t}$	-9.407***	0.000
	(2.172)	
$dI_{i,t}$	0.997	0.534
	(1.601)	
$dI_{i,t+2}$	-4.514***	0.002
	(1.485)	
$D_{i,t}$	5.360***	0.001
	(1.661)	
$dD_{i,t}$	1.341	0.638
	(2.848)	
$dD_{i,t+2}$	4.020*	0.052
	(2.062)	
$dV_{i,t+2}$	-0.259***	0.000
	(0.0149)	
$dL_{i,t}$	0.161	0.301
	(0.155)	
$dL_{i,t+2}$	0.729***	0.000
	(0.119)	
$PortfolioLow_{i,t}$	0.0250	0.768
	(0.0849)	

(continued)

	Interaction model	p-value
$PortfolioMid_{i,t}$	0.0840	0.250
	(0.0730)	
$PortfolioLow_{i,t} * D_{i,t}$	3.978*	0.100
	(2.414)	
$PortfolioMid_{i,t} * D_{i,t}$	1.799	0.426
	(2.259)	
Constant	0.789***	0.000
	(0.101)	
R-squared	0.382	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results from our regression with the interaction model, model (2) are presented in table 2. It shows that the interaction term between the dividend term and the dummy variable for the portfolio containing the companies with low corporate governance is different from zero at the 10% significance level, i.e. there is a statistically significant difference between the value of a dividend from a company with a high level of corporate governance compared to a company with a low level of corporate governance. Moreover, the value of the coefficient is 3.978, which is in line with our predictions since we expected the firms with the lowest level of corporate governance to have the highest value of dividends. For the interaction term between the dividend term and the dummy variable for the portfolio containing the companies with a medium level of corporate governance, there is not a statistically significant result. Nevertheless it can be noted that the coefficient of 1.799 is larger than zero and smaller than the interaction term between the dividend term and the dummy variable for the portfolio containing the companies with the lowest level of corporate governance, i.e. smaller than 3.978, which is in line with our predictions.

The way to interpret these interaction terms and findings is as follows: a company with a low level of corporate governance paying out an extra dollar in dividend increases the firm value by an amount equal to the coefficient of the interaction term in addition to the dividend term, i.e. circa 9.338 dollars. As discussed in the methodology section, the value of 1 dollar in dividend depends both on the value investors put on that particular dollar as well as the expectations that particular dollar creates about the future, and the same interpretation is true for all variables X_t. Similarly, the firm value of a company with a medium level of corporate governance is increased by circa 7.159 dollars from paying out an extra dollar. The firm value of a company with a high level of corporate governance is increased by circa 5.360 dollars from paying out an extra dollar, i.e. equal to the dividend term. Lastly, if there was no effect on the value of dividends from corporate governance, the coefficients of the interactions terms should be zero.

Furthermore, we test if the interaction term between the dividend term and the dummy variable for the portfolio containing the companies with low corporate governance is economically

significant using a one-sided t-test. The results are shown in table 3. We see that around the coefficient value of 0 the interaction term is significant at the 95% level, and at a coefficient value of circa 0.883 the interaction term is significant at the 90% level. This indicates that there is an economically significant difference in the value of dividends from companies with a high level of corporate governance compared to those with a low level of corporate governance.

Table 3.

Test for economic significance of the interaction term $PortfolioLow_{i,t} * D_{i,t}$

Here we perform one-sided t-tests for the coefficient of the term $PortfolioLow_{i,t} * D_{i,t} = 3.978$ from model (2) in table 2 in order to test for economic significance. We test the null hypothesis that $PortfolioLow_{i,t} * D_{i,t}$ is equal or less than various specific values of μ_0 against the alternative hypothesis that it is larger than μ_0. In the interaction model regression we used two dummy variables, $PortfolioLow_{i,t}$ and $PortfolioMid_{i,t}$, thus splitting the data into three different subgroups based on whether the firm was in the top, middle or bottom tercile of the GIM index.

Value of μ_0	≤ 0	≤ 0.2	≤ 0.4	≤ 0.6	≤ 0.8	≤ 0.883
p-value	0.0498	0.0589	0.0693	0.0810	0.0941	0.1000

4.2 Results from the two-portfolio model

Table 4

The change in value of dividends and corporate governance

We estimate regressions using a fixed effects model. X_t is the level of variable X in the year t divided by assets in year t, dX_t is the change in the level of X from year t-1 to year t calculated as $X_t - X_{t-1}$ divided by assets year t and dX_{t+2} is the change in the level of X from year t to year t+2 calculated as $X_{t+2} - X_t$, divided by the level of assets in year t. V is the market value of the firm calculated as the sum of market value of equity and the total book value of debt, E is earnings as earnings before interest and taxes (EBIT), NA is net assets defined as assets subtracted with liquid assets, R&D is research and development expenses, I is interest expenses, D is common dividend paid and L is liquid asset holdings. The two portfolio regressions are made on a subset of our data which we split into two parts based on whether the firm was in the top or bottom half of the GIM index. All regressions include dummy variables for each year. The regression is:

$$V_{i,t} = \propto + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+2} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+2} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+2} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+2} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+2} + \beta_{15} dV_{i,t+2} + \beta_{16} dL_{i,t} + \beta_{17} dL_{i,t+2} + \epsilon_{i,t}$$

	Low Corporate Governance	High Corporate Governance	p-value of Difference
$E_{i,t}$	4.821***	5.475***	0.000
	(0.399)	(0.481)	
$dE_{i,t}$	-1.220***	-1.394***	0.000
	(0.234)	(0.222)	
$dE_{i,t+2}$	1.139***	1.258***	0.000
	(0.213)	(0.229)	
$dNA_{i,t}$	-0.130	0.00883	0.567
	(0.0956)	(0.116)	

(continued)

	Low Corporate Governance	High Corporate Governance	p-value of Difference
$dNA_{i,t+2}$	0.308***	0.423***	0.000
	(0.0514)	(0.0754)	
$RD_{i,t}$	3.493*	3.084**	0.055
	(2.097)	(1.325)	
$dRD_{i,t}$	2.847*	3.085	0.108
	(1.727)	(1.961)	
$dRD_{i,t+2}$	3.998***	2.583*	0.028
	(1.454)	(1.536)	
$I_{i,t}$	-10.77***	-7.878**	0.003
	(3.149)	(3.065)	
$dI_{i,t}$	2.145	0.954	0.476
	(1.851)	(2.493)	
$dI_{i,t+2}$	-3.118*	-3.821*	0.075
	(1.769)	(2.127)	
$D_{i,t}$	10.06***	4.658**	0.003
	(2.870)	(2.024)	
$dD_{i,t}$	3.912	1.651	0.466
	(4.543)	(3.086)	
$dD_{i,t+2}$	10.46***	0.532	0.054
	(3.225)	(2.484)	
$dV_{i,t+2}$	-0.251***	-0.267***	0.000
	(0.0186)	(0.0223)	
$dL_{i,t}$	0.166	0.207	0.372
	(0.226)	(0.192)	
$dL_{i,t+2}$	0.755***	0.662***	0.000
	(0.173)	(0.141)	
Constant	0.712***	0.912***	0.000
	(0.150)	(0.119)	
R-squared	0.411	0.379	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Our results from model (1) are in line with our findings from model (2). As shown in table 4, we see that there is a statistically significant difference between the values of the dividends from the companies with a low corporate governance compared with the companies with a high corporate governance at the 99% significance level. The coefficients for the dividends are 10.06 for the portfolio with the companies having a low level of corporate governance and 4.658 for the portfolio having a high level of corporate governance, which are in line with our prediction that dividends from companies with a low level of corporate governance are valued higher than dividends from companies with a high level of corporate governance. The findings are also in line with our findings from model (2).

The way to interpret these coefficients is the same as described in the methodology section. The value of 1 dollar paid out as a dividend depends both on the value investors put on that particular dollar as well as the expectations that particular dollar creates about the future. I.e. a company with a

low level of corporate governance is predicted to increase the value of the firm by 10.06 dollars for every 1 dollar it pays out in dividend, and a company with a high level of corporate governance is predicted to increase the value of the firm by 4.658 dollars for every 1 dollar it pays out in dividend.

Furthermore we test if this difference between the two coefficients is economically significant using a one-sided t-test. As shown in table 5, the difference is significant at a 5% significance level for differences over 6 dollars, and over 8 dollars at a 10% significance level. These are large values and indicates that there is a statistically as well as economically significant difference between the value of dividends from companies with a high level of corporate governance compared to those with a low level of corporate governance.

Table 5

One-sided t-test for economic significance of the difference between $D_{i,t}$ from the regressions on the good corporate governance portfolio and the bad corporate governance portfolio.

Here we perform one-sided Welch's t-tests for the difference between the two dividend terms $D_{i,t} = 10.06$ and $D_{i,t} = 4.568$ which we received from our two portfolio regressions in table 1. We test the null hypothesis that the difference between the two population means, μ_1- μ_2, is equal or less than various specific values against the alternative hypothesis that μ_1- μ_2 is larger than these specific values. The two portfolio regressions were made on a subset of our data which we split into two parts based on whether the firm was in the top or bottom half of the GIM index.

Value of μ_1- μ_2	≤ 0	≤ 2	≤ 4	≤ 6	≤ 8	≤ 8.446
p-value	0.001	0.0004	0.0014	0.0375	0.0850	0.1000

4.3 Robustness of results

We have used various techniques to ensure that our results are robust. Firstly, we use a fixed-effect model with cluster standard errors which are clustered by firm and thus allow for the errors terms to be serially correlated over time within firms. We believe that this is a more suitable model than the Fama-Macbeth method to use in our case, since the Fama-Macbeth method produces downward-biased standard errors in the presence of serially correlated errors terms over time within firms in the data (Petersen 2009).

Furthermore, we examine the relationship between corporate governance and the value of dividends using both the model (2) and model (1). The interaction terms with dividends and corporate governance dummies in model (2) gives us the means in differences, and with our two regressions in model (1) we compare differences in means between the two dividend coefficients. Since both these tests yield similar results, this is a sign of robustness in our models and findings. Also, since all of our panel data regressions are adjusted for firm fixed effects, any effects which are constant for any firm

across the time span in our panel data and that is not included in our model as control variables, and which correlates with our independent variables as well as our dependent variable, are eliminated. Also we adjust for time fixed effects, meaning that any effects which are constant during any year and which affects our independent variables as well as our dependent variable, and is not captured by our control variables, are eliminated.

Also, there are some potential issues with our data. As we have already discussed in the data section, we have assumed that R&D spending has been equal to zero when values when values have been missing from the Thomson Reuters Datastream Database, which is in line with Pinkowitz, et al. (2006). We have also assumed that firms' GIM index points have been equal to their previous year's GIM index point when GIM index values have been missing for a year. We will further address the potential issues of using the GIM index in our models in the discussion section of this paper. Furthermore, we have in line with Ditmar and Mehrt-Smith (2007) removed financials and utilities from our dataset, which was discussed further in the data section.

5. Discussion

The results are in line with the literature regarding the value of dividends. Investors seem to put a large value on dividends regardless of corporate governance level. In both model (1) and (2) the value of dividends are around 5, which should be interpreted as 1 dollar in dividend payout is valued, together with expectations it creates, as 5 dollars, but in line with our hypothesis we see a large increase in value when the level of corporate governance decreases.

As mentioned earlier, there might be different explanations for the difference in the value of dividends that we see in the data. While we do not specifically test the different explanations for the results, our test can give some indications on which of the previously mentioned explanations in the previous literature section that might be the answer.

There are two main explanations of the higher value investors put on dividends. The first main explanation was that by paying out dividends, managers have less resources to waste on things that are not increasing the wealth of the shareholders. The second explanation was that by paying out dividends the managers are signalling that they are willing to increase the risk of having to raise capital in the market and therefore having to sustain the monitoring of the capital market. The manager is thereby showing good faith towards the shareholders.

Dittmar and Mahrt-Smith (2007) examine the explanation that managers in badly governed firms waste money and that investors therefore values liquid assets less in badly governed firms. Pinkowitz, et al (2006) do the same research, but cross-country and on different legal systems, but their basic argument is the same; that liquid assets are the easiest type of assets for managers to waste

and that if investors believes that there is a risk of managers extracting wealth, then liquid assets should be differently valued between differently well-governed firms. Both find evidence for this in their data. In Dittmar and Mahrt-Smith (2007) results, 1 dollar in a badly governed company is valued at 0.42 dollar, against 0.88 dollar in a well-governed company. Pinkowitz, et al. (2006) finds a value of 0.33 dollar in versus 0.91 dollar between countries with different levels of investor protection. Since we are using the same model as Pinkowitz, et al. (2006), we can use the same logic as they to analyse liquid assets. They compare the coefficient $dL_{i,t}$ which shows how 1 dollar more in liquid assets are value by investors. Our $dL_{i,t}$ in the model (1) is 0.17 in badly governed firms and 0.21 in well-governed. The p-value of the difference is 0.372, so we cannot in our data conclude any statistically significant difference in liquid assets. We also did an interaction regression between liquid assets and corporate governance, $PortfolioLow_{i,t} * dL_{i,t}$:

$$V_{i,t} = \propto + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+2} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+2} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+2} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+2} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+2} + \beta_{15} dV_{i,t+2} + \beta_{16} dL_{i,t} + \beta_{17} dL_{i,t+2} + \beta_{18} PortfolioMid_{i,t} + \beta_{18} PortfolioLow_{i,t} + \beta_{19} PortfolioMid_{i,t} * dL_{i,t} + \beta_{19} PortfolioLow_{i,t} * dL_{i,t} + \epsilon_{i,t}$$

The results can be find in table B in the appendix. The interaction variable $PortfolioLow_{i,t} * dL_{i,t}$ had a p-value of 0.59. We can therefore not determine that the interaction is different from zero and that corporate governance has an effect on the value of liquid assets. It is therefore hard for us to argue that the value of dividends that we see in our data can be explained by investors seeing dividends as an insurance against management extracting personal wealth or wasting of resources.

Pinkowitz, et al. (2006) argues that it will be problematic if $dL_{i,t+2} > dL_{i,t}$ since that would be interpreted as investor putting a higher value on next period change in liquid assets than on this periods change in badly governed firms. In our data we see just this difference, therefore we are hesitant to draw any far-reaching conclusions from the $dL_{i,t}$ variable. We can therefore not rule out a capping effect by dividends on the ability of managers to waste resources and the effect this would have on the value investors put on dividends.

Even though the data does not give a clear answer to the question of whether the dividend value comes from less managerial waste or not, it give some indications of this not being the case. We therefore lean toward the explanation that the difference in the value of dividends to a larger extent comes from the signalling effect and to a lesser extent from managers being able to waste less resources. The investors see large dividend payouts as a signal from managers that they are willing to endure the monitoring of the market, since they increase their risk of having to go to the capital market to raise new capital.

One possible, problematic explanation of the different value of dividends which is built into the model when using the Gompers, Ichii and Metrick index is if the index is not explaining the real corporate governance of the firm. La Porta, et al. (2000) test two agency models of dividends when looking at countries with different legal protection of shareholders. One is that a high dividend is paid out by managers who wants to establish a good reputation of treatment of shareholders. The other is that shareholders pressure managers to pay out dividends and this means that shareholders has considerable power over managers. They find evidence for the second agency model; that in countries with better protection of investors, shareholders pressure managers to pay out dividends. Our data comes from the same legal system and shareholder therefore has the same legal power to pressure managers, but a possible implication on our results would be if the index we are using does not really explain the corporate governance and shareholder power of a firm. In this context companies with strong shareholder power and good corporate governance would have a high value and shareholders would be able to by force get high dividends, but could still end up in the portfolio with badly governed firms. If this were true the high value put on high dividend would actually come from the company being a well-governed firm and the dividend an indication of corporate governance. Testing the Gompers, Ichii and Metrick index is outside this papers scope, but to do this we would have to test other proxies for corporate governance.

6. Conclusion

In this paper we examine if investors put different value on dividend payouts depending on corporate governance. We find that investors value one dollar in dividend payouts considerably higher if it is paid out by a firm with bad governance as opposed to one with good corporate governance. We argue that the possible reasons for this is either that investors appreciate the decrease of resources managers have at their disposal to waste as a consequence of paying out the dividends, or that investors value the signal dividends send about managers willingness to be monitored by the capital market. We are hesitant to draw any far-reaching conclusions about the two possible explanations.

In this paper we provide insight into the question on how corporate governance affect firm value by providing a link between corporate governance, firm value and dividends. Our paper contributes to the growing literature on corporate governance and the vast literature on dividend. Since dividend payout is a variable investors put great value on as an indicator of future returns, the findings should also be of interest to investors.

However, we cannot as we have said categorically state the reason for the observed results. What is therefore unanswered in this paper is the specific reason for the difference in value of

dividend. Thus we leave for future research to find the explanations to why dividends are valued higher in badly governed firms. Does dividend cap managers possibility of extracting personal benefits, is it a signal that managers are willing to be monitored by the capital markets or is Zwiebel (1996) right and managers actually take on debt and pay out dividend in order to entrench themselves?

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Appendices

Table A

Report on corporate governance and dividends by industry

In this table we show some descriptive data on dividends and corporate governance by industry. Dividend is defined as dividend/assets. Gompers, Ichii and Metrick index (GIM) is used to describe corporate governance. The three industries in which there are no dividend payouts have all bellow 10 observations. The same is true for industries with small intervals in the GIM index. All ratios are winsorized at the 1% and 99% levels.

Industry	Observations	Average GIM	Max GIM	Min GIM	Average Dividend	Max Dividend	Min Dividend
Engines,Components&PartsManufacturers	64	12	15	4	0,010	0,027	0,000
Military&CommercialAircraftManufacturers	18	9	11	6	0,016	0,022	0,011
MiscellaneousAerospace	15	9	11	6	0,010	0,022	0,000
ApparelManufacturers	118	10	15	5	0,015	0,040	0,000
ShoeManufacturers	62	8	11	4	0,012	0,033	0,000
DiversifiedAutomotiveManufacturers	18	6	6	5	0,006	0,023	0,000
OriginalParts&AccessoriesManufacturers	64	11	13	8	0,015	0,070	0,000
ReplacementParts&AccessoriesManufacturers	64	11	14	8	0,010	0,042	0,000
Truck&TrailerManufacturers	55	11	15	6	0,011	0,067	0,000
Brewers	22	9	11	4	0,033	0,048	0,009
Distillers	6	6	6	6	0,000	0,000	0,000
SoftDrinkProducers&Bottlers	72	6	13	3	0,031	0,098	0,001
DiversifiedChemicalManufacturers	118	10	14	5	0,022	0,087	0,000
HouseholdChemicals	41	10	13	5	0,033	0,062	0,007
IndustrialChemicals&GasesManufacturers	135	11	14	4	0,017	0,050	0,000
Paint&ResinManufacturers	51	13	15	7	0,026	0,040	0,011
Rubber&TireManufacturers	38	10	13	5	0,016	0,042	0,000
MiscellaneousChemicals	195	9	14	2	0,028	0,103	0,000
Brick,Clay&RefractoryProducts	4	6	6	6	0,026	0,028	0,024
Builders'MetalProducts	6	14	14	13	0,007	0,011	0,000
ConstructionAggregates	28	11	12	9	0,023	0,044	0,008
Engineering&ContractingServices	43	10	13	6	0,005	0,017	0,000
HomeBuilders	136	9	16	4	0,004	0,018	0,000
Gypsum,Lumber&BuildingSupplies	67	10	13	7	0,018	0,073	0,000
Plumbing,Heating&AirConditioning	4	8	9	7	0,024	0,028	0,020
Prefabricated&MobileHomeBuilders	36	7	10	5	0,025	0,103	0,000
MiscellaneousConstruction	29	10	13	7	0,005	0,023	0,000
GeneralDiversified	337	10	14	5	0,022	0,103	0,000
Diversified	62	8	12	5	0,036	0,075	0,000
Cosmetics&Toiletries	72	10	12	7	0,042	0,103	0,011
EthicalDrugManufacturers	303	9	15	3	0,025	0,103	0,000
Medical,Surgical&DentalSuppliers	342	10	14	3	0,010	0,094	0,000
Appliances&ConsumerProducts	96	11	15	5	0,021	0,103	0,000

(continued)

Industrial&CommercialElectricalEquipment	60	11	13	9	0,031	0,062	0,000
PowerTransmissionEquipment	4	8	8	8	0,000	0,000	0,000
MiscellaneousElectrical	61	10	13	7	0,014	0,050	0,000
Diversified	50	10	12	8	0,018	0,042	0,000
AutomaticControls	49	9	10	7	0,003	0,029	0,000
ElectronicDataProcessingEquipment	106	8	12	4	0,003	0,033	0,000
Government&DefenseElectronicSystems	41	11	15	6	0,015	0,045	0,000
Instruments,Gauges&Meters	66	10	12	3	0,009	0,030	0,000
Parts&Components	557	8	17	1	0,004	0,103	0,000
Radio,T.V.&PhonographManufacturers	9	6	7	5	0,002	0,003	0,001
Systems&Subsystems	313	9	17	4	0,007	0,103	0,000
MiscellaneousElectronics	575	8	13	2	0,004	0,103	0,000
Diversified	50	10	14	5	0,030	0,074	0,002
Bakers	12	9	12	7	0,011	0,043	0,000
Canners&Processors	39	9	11	5	0,029	0,060	0,000
ConfectioneryGoods	40	8	12	6	0,060	0,103	0,018
DairyProducts	9	11	14	9	0,011	0,103	0,000
Grain,Flour&Cereal	44	8	13	5	0,028	0,082	0,000
MeatPackers	16	9	11	7	0,016	0,032	0,000
MiscellaneousFood	87	9	11	6	0,034	0,103	0,000
DiversifiedMachinery	18	12	13	11	0,025	0,045	0,019
AgriculturalMachinery	24	11	13	10	0,013	0,019	0,008
BusinessMachines&OfficeEquipment	46	11	14	6	0,014	0,037	0,000
ConstructionMachinery	47	11	13	7	0,010	0,047	0,000
Engines	17	11	12	9	0,029	0,043	0,009
Gauges&MetersManufacturers	10	4	5	3	0,000	0,000	0,000
IndustrialMachinery	130	10	14	4	0,012	0,103	0,000
PortableTools	36	12	13	9	0,023	0,045	0,006
TransportationEquipment	26	9	10	8	0,025	0,065	0,005
MiscellaneousMachinery&Equipment	116	10	18	6	0,017	0,042	0,000
AluminumProducers	29	11	13	8	0,010	0,023	0,000
CopperProducers	16	9	13	6	0,020	0,103	0,000
GoldProducers	33	10	11	7	0,015	0,050	0,000
IronOreProducers	18	10	11	9	0,022	0,103	0,000
SteelProducers-Integrated	21	9	11	8	0,004	0,013	0,000
SteelProducers-Non-Integrated	6	7	7	7	0,007	0,017	0,000
SteelProducers-Specialty	58	9	13	5	0,018	0,074	0,004
MiscellaneousMetalProducers	54	11	12	5	0,014	0,044	0,000
Diversified	74	10	16	3	0,022	0,103	0,000
BearingManufacturers	31	11	14	8	0,019	0,032	0,012
MetalContainers	26	9	11	5	0,008	0,023	0,000
MetalFasteners	11	13	13	13	0,008	0,023	0,000
Wire,Chain&Spring	15	10	14	4	0,014	0,030	0,000
MiscellaneousMetalProductsManufacturers	99	10	14	3	0,023	0,103	0,000

(continued)

CoalProducers	15	10	13	6	0,007	0,012	0,004
CrudeOil&NaturalGasProducers	190	10	15	5	0,008	0,036	0,000
IntegratedDomesticOilProducers	13	11	12	11	0,020	0,026	0,017
IntegratedInternationalOilProducers	18	7	9	6	0,028	0,041	0,011
Exploration,DrillingService&Equipment	174	9	15	5	0,007	0,031	0,000
OilRefiners&Distributors	86	10	15	7	0,017	0,044	0,000
MiscellaneousOil,Gas&Coal	33	9	12	3	0,002	0,017	0,000
Diversified	38	12	13	11	0,027	0,053	0,007
PackagingProducts	85	9	12	5	0,017	0,103	0,000
Printing&WritingPaper	17	9	13	8	0,034	0,047	0,015
MiscellaneousPaper	33	10	11	9	0,009	0,022	0,000
BookPublishers	18	7	11	4	0,002	0,010	0,000
MagazinePublishers	23	11	13	5	0,013	0,019	0,008
NewspaperPublishers	87	11	13	6	0,023	0,052	0,007
Printers	64	9	13	4	0,032	0,103	0,000
MiscellaneousPrinting&Publishing	42	8	10	6	0,042	0,103	0,000
Games&Toys	42	11	15	6	0,016	0,063	0,000
Radio&T.V.Broadcasts	24	9	11	6	0,002	0,016	0,000
Restaurants&FastFoodFranchisers	176	9	13	4	0,010	0,061	0,000
SportingGoods	20	7	13	4	0,016	0,036	0,000
MiscellaneousRecreation	66	9	14	5	0,006	0,103	0,000
ApparelStoreChains	121	8	14	4	0,008	0,103	0,000
DepartmentStoreChains	88	10	12	5	0,011	0,103	0,000
DiscountStores	57	8	14	5	0,017	0,084	0,000
DrugStoreChains	32	10	14	8	0,015	0,033	0,000
NationalRegionalFoodStoreChains	39	12	16	10	0,011	0,034	0,000
ShoeRetailers	29	12	14	11	0,005	0,026	0,000
VarietyStoreChains	42	7	9	4	0,007	0,025	0,000
MiscellaneousRetailers	303	8	13	4	0,005	0,039	0,000
Diversified	15	4	5	4	0,011	0,016	0,000
HomeFurnishings	10	7	8	6	0,000	0,000	0,000
MiscellaneousTextiles	21	7	8	7	0,014	0,039	0,000
CigaretteManufacturers	20	10	12	9	0,056	0,103	0,029
MiscellaneousTobacco	34	12	12	11	0,058	0,103	0,012
Airlines	54	9	11	5	0,001	0,007	0,000
FreightForwarders	39	9	12	6	0,013	0,047	0,000
Railroads	1	5	5	5	0,000	0,000	0,000
RailroadHoldingCompanies	86	10	12	7	0,011	0,025	0,000
Shipping	36	11	16	6	0,009	0,034	0,000
Trucking	60	7	13	3	0,007	0,103	0,000
MiscellaneousTransportation	29	9	10	7	0,016	0,070	0,007
AdvertisingAgencies	38	11	14	7	0,013	0,021	0,008
Furnishings	107	11	15	6	0,026	0,103	0,008
Glass	21	11	13	7	0,012	0,021	0,000

(continued)

Hotel&MotelChains	60	12	14	8	0,008	0,035	0,000
MedicalServices	206	9	14	4	0,003	0,103	0,000
ScientificEquipment&Supplies	58	8	11	5	0,005	0,034	0,000
ServiceOrganizations	656	10	16	3	0,016	0,103	0,000
Wholesalers	376	10	15	3	0,014	0,076	0,000
MiscellaneousCompanies	122	10	16	5	0,022	0,103	0,000

Graph A

Dividends and corporate governance split on industry

The graph depicts dividends (line) and corporate governance (columns). Dividend is defined as dividend/assets. Gompers, Ichii and Metrick index (GIM) is used to describe corporate governance. All ratios are winsorized at the 1% and 99% levels.

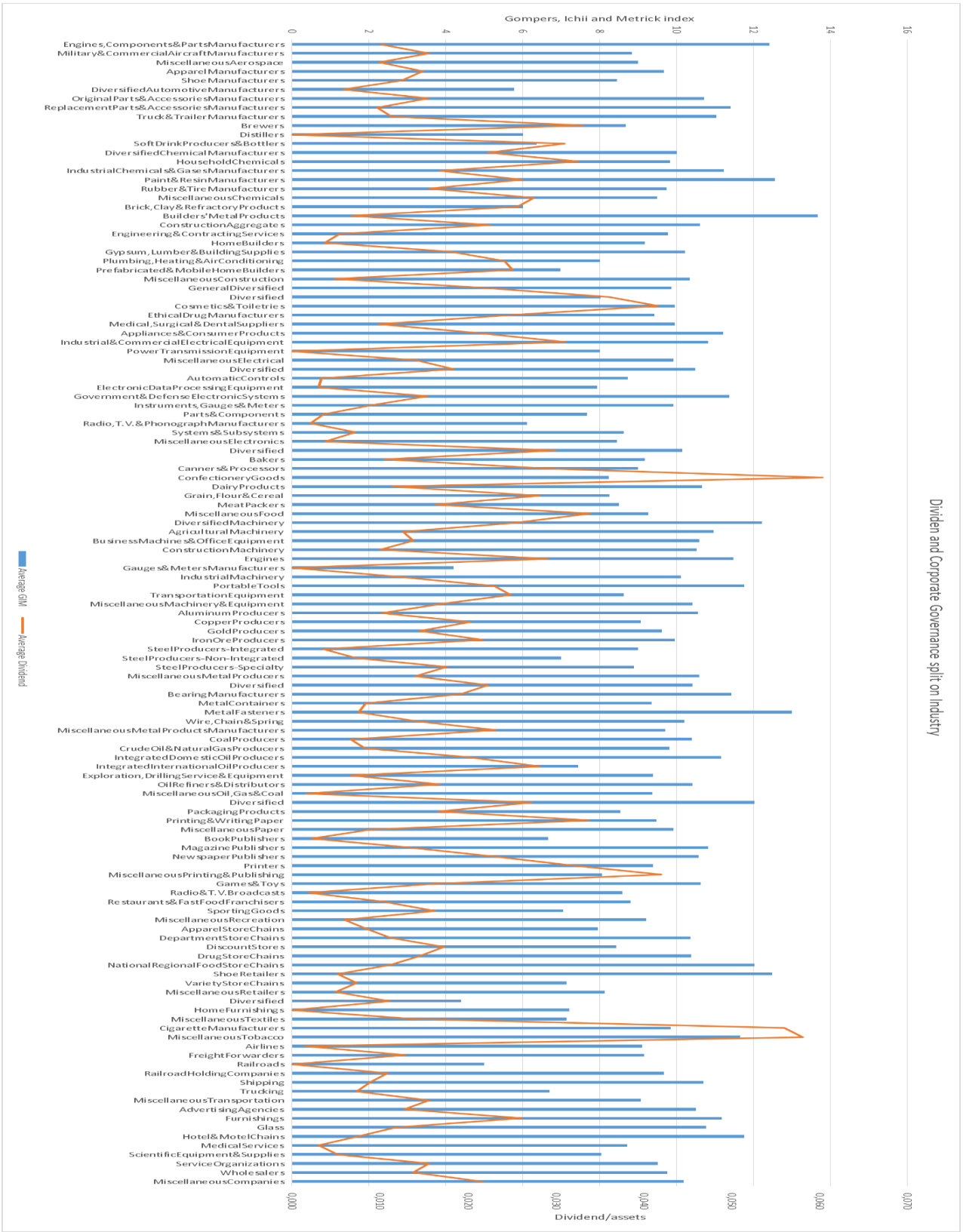

Table B

The Impact of Governance on the value of liquid asset holdings

We estimate the regression using a fixed effects model. Where X_t is the level of variable X in the year t divided by assets in year t, dX_t is the change in the level of X from year t-1 to year t calculated as $X_t - X_{t-1}$divided by assets year t and $dX_{t+2}$is the change in the level of X from year t to year t+2 calculated as $X_{t+2} - X_t$, divided by the level of assets in year t. V is the market value of the firm calculated as the sum of market value of equity and the total book value of debt, E is earnings as earnings before interest and taxes (EBIT), NA is net assets defined as assets subtracted with liquid assets, RD is research and development expenses, I is interest expenses, D is common dividend paid and L is liquid asset holdings. The independent variables now include two governance dummies, middle firms and badly governed firms based on which tercile of the Gompers, Ichii and Metrick index an observation belongs to. We let the dummies interact with the change in the level of liquid asset holdings from year t-1 to year t ($PortfolioMid_{i,t} * dL_{i,t}$ and $PortfolioLow_{i,t} * dL_{i,t}$). All regressions include dummy variables for each year. The regression is:

$$V_{i,t} = \propto + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+2} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+2} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+2} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+2} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+2} + \beta_{15} dV_{i,t+2} + \beta_{16} dL_{i,t} + \beta_{17} dL_{i,t+2} + PortfolioMid_{i,t} * dL_{i,t} + PortfolioLow_{i,t} * dL_{i,t}$$

	Interaction model with liquidity factors	p-value
$E_{i,t}$	5.332***	0.000
	(0.336)	
$dE_{i,t}$	-1.382***	0.000
	(0.161)	
$dE_{i,t+2}$	1.219***	0.000
	(0.166)	
$dNA_{i,t}$	-0.0326	0.666
	(0.0755)	
$dNA_{i,t+2}$	0.394***	0.000
	(0.0481)	
$RD_{i,t}$	2.576**	0.030
	(1.188)	
$dRD_{i,t}$	3.577**	0.011
	(1.401)	
$dRD_{i,t+2}$	3.280***	0.002
	(1.051)	
$I_{i,t}$	-9.362***	0.000
	(2.183)	
$dI_{i,t}$	1.022	0.524
	(1.602)	
$dI_{i,t+2}$	-4.427***	0.003
	(1.485)	
$D_{i,t}$	6.585***	0.000
	(1.665)	
$dD_{i,t}$	1.374	0.631
	(2.858)	
$dD_{i,t+2}$	4.068**	0.049
	(2.067)	
$dV_{i,t+2}$	-0.259***	0.000
	(0.0149)	
$dL_{i,t}$	0.151	0.469
	(0.209)	
$dL_{i,t+2}$	0.723***	0.000
	(0.118)	
$PortfolioLow_{i,t}$	0.0864	0.226
	(0.0714)	

(continued)

	Interaction model with liquidity factors	p-value
$PortfolioMid_{i,t}$	0.114**	0.044
	(0.0567)	
$PortfolioLow_{i,t} * dL_{i,t}$	0.199	0.593
	(0.372)	
$PortfolioMid_{i,t} * dL_{i,t}$	-0.146	0.676
	(0.348)	
Constant	0.770***	0.000
	(0.0992)	
R-squared	0.382	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1