Cash and Governance[*]

Simone Hirschvogl [†]

First Draft: September, 2006

This Draft: November, 2007

Abstract

This paper analyzes the relation between cash and governance in a cross-country setting. This is done by integrating the effect of country-level shareholder protection and firm-level governance in one combined regression framework. The results suggest that both firm- and country-level governance are important determinants of corporate liquidity holdings. However, by extrapolating the country influence of the corporate governance index, the paper shows that it is only the investor protection that influences cash holdings. This latter finding is in line with previous papers that argue that country effects dominate firm effects (e.g. Harford et al. (2006)). Furthermore, the results suggest a significant valuation discount for firms being either located in poor shareholder protection countries or lacking sound corporate governance systems.

Keywords: Country- vs. Firm-level Corporate Governance, Agency Conflicts, Cash Holdings

JEL classification: G32, G34, G35

1 Introduction

The main impetus to this paper was sparked by coming across an article in the Wall Street Journal (April 3, 2006) that says "Typically, companies recycle a country's savings by borrowing the money to invest [...]. In the past five years, though, people and companies in the U.S. have switched roles. Households have been saving less [...]. Meanwhile, companies have been spending a lot less than they earn, building up huge hoards of cash." The main question that arises from this statement is: What is the reason for this corporate behavior or posed differently - Which *factors* lead firms to accumulate enormous amounts of cash? In effect, the related question is: What are the *value implications* of great cash piles in the company? And this is exactly what this paper strives for: finding answers to the last two questions.

Conventional wisdom suggests that cash is a zero net present value (NPV) investment. Hence, one dollar of additional cash should increase the market value by exactly one dollar. Accordingly, *in the absence of market frictions*, firms should optimally hold no cash as external finance can always be obtained at a price that resembles its fair value. However, relaxing the assumption of perfect capital markets and integrating transaction costs and taxes in the analysis, cash suddenly has a value attached to it. The underlying notion is that in this setting, external finance becomes costly and holding cash is an optimal response to having to raise costly external finance. The rationale behind this effect is subsumed under the *trade-off model* of cash holdings.

Second, if also the forces of *asymmetric information* and *agency costs* come into play, then the motivation for holding cash becomes even more pronounced. The underlying arguments date back to seminal papers in the capital structure literature. For instance, Myers and Majluf (1984) are the only ones who explicitly refer to cash or in their words: "financial slack". In their model, informational asymmetries lead firms to build up cash in order to finance all positive NPV projects as managers abstain from issuing undervalued securities. Similarly, agency costs of debt in the form of the underinvestment problem (Myers, 1977) and the asset substitution problem (Jensen and Meckling, 1976) make external finance more costly and provide further motivation for firms to hold cash. However, there are two sides to everything.

Importantly, Jensen (1986) puts forward the agency costs of free cash flow and thus contributes to the literature by analyzing the *costs* of excessive cash holdings. In sum, holding cash can be beneficial but sometimes also costly for shareholders, which effect dominates is an empirical question and will be addressed in the present work.

However, the motivation to study the determinants of cash holdings was not driven by theoretical arguments, but by detecting a contradiction in the existing empirical literature. Specifically, Dittmar et al. (2003) conduct a *cross-country study* and find a negative relationship between governance at the *country-level* and cash holdings, i.e. firms in weaker governance countries hold more cash. However, focusing on *one country*, Harford et al. (2006) observe a positive effect between governance at the *firm-level* and cash holdings, hence firms with weaker governance hold less cash. In this context, the latter two studies focus on either one dimension of governance only - either they are laid out as cross-country studies and then lose the firm-level governance dimension or the studies focus on one specific country but then hold the country-level governance fixed. This study extends the latter two strands of empirical literature by analyzing cash holdings in a cross-country setting, but including *proxies for governance at the firm-level as well as the country-level.* The only study who pursued the same approach[1] is Kalcheva and Lins (2007). However, their measure of firm-level governance is equal to absolute and also relative managerial ownership, in contrast to this study which uses the Transparency and Disclosure index as developed by Standard & Poor's in 2001. Thus, the rich setting of this study allows investigating the governance motive for holding cash by emphasizing the *country- and firm-dimension.*

Aside from the determinants of cash holdings, the second contribution of the paper is to turn to a different angle and analyze the value consequences of cash holdings. In this respect, the key idea is to establish a link between bad governance and value destruction, expressed in a lower sensitivity of market value to cash. The central idea behind this approach dates back to the related literature on agency costs (most notably, Jensen and Meckling, 1976). If the level of corporate governance is very low, then the checks and balances in the company are not very

---

[1]   From the first draft of this paper to this one, another paper was written that is similar in vein, for details refer to Huang and Zhang (2007).

well established and managers' control is unfettered. This in turn provides an incentive for managers to waste corporate resources and as Myers and Rajan (1998) point out, it is easier for management to siphon off cash as to use a plant for the sake of private benefits. Hence, investors value cash inside the firm for less than the fair value as they expect that cash is partly kept for the benefit of enjoying private benefits to the detriment of outside investors. Therefore, liquid assets represent a promising avenue to study the value consequences of good or bad corporate governance.

The results in the first part of the paper suggest that both dimensions of governance, that is the firm-level and the country-level, are important determinants of cash holdings. The influence of shareholder rights is negative while the governance practices at the firm-level have a positive effect on cash. In effect, corroborating the results from previous studies, but using one combined regression framework. Yet, if the corporate governance index is cleaned off country influences, then it loses its significance. This result provides an answer to the question whether country- or firm-level governance dominates and it clearly shows that only investor protection, i.e. the country-level, is significant in this respect.[2] The results in the second part of the paper reveal that firms with low corporate governance or firms operating in low shareholder protection countries endure a huge valuation discount. One additional dollar of cash built up over the last period increases the market value of those firms by far less than the fair value of one dollar. Finally, the last part of the paper investigates the reasons for the valuation discount of low corporate governance firms. The results bring to light that although firms lacking sound governance systems do not hold more excess cash, yet they use less cash for supposedly value-enhancing activities, such as R&D expense or capital expenditures.

The paper proceeds as follows. Section 2 reviews the main theoretical as well as empirical literature on cash holdings and derives the hypotheses tested in this study. Section 3 describes the data and discusses the summary statistics and then proceeds by outlining the main results from this empirical work. And last but not least, section 4 provides the concluding remarks.

---

[2]   This result is consistent with the hypothesis in Doidge et al. (2007) and Harford et al. (2006).

2 Related literature on cash holdings

In the absence of market frictions, firms should optimally maintain zero excess liquidity as external finance can always be obtained at a fair price. However, the existence of market frictions provides a rationale for firms to hold cash. In this context, the trade-off theory, the precautionary motive and the agency motive for holding cash will be reviewed.

2.1 Transaction costs and trade-off theory

In this model, the firm equates the marginal costs and benefits of cash in order to determine an optimal level of liquid asset holdings. In specific, the cost of liquid assets refers to the lower return (liquidity premium) generated by holding liquid assets. On the other hand, the benefits of liquidity are the saving of transaction costs as put forward by Keynes (1936) and further analyzed by Tobin (1956) and Miller and Orr (1966). The underlying notion is that the fixed costs of accessing capital markets induce firms to hold cash as a pillow and approach the capital markets only infrequently. Transaction costs are determined by characteristics that either increase the cost of cash shortfalls or increase the cost of raising funds. In this vein, Kim et al. (1998) theoretically provide some of the drivers for the transaction costs. Empirically, Opler et al. (1999) find that firms with the following characteristics hold lower cash balances: big firms, firms with high net working capital, high leverage, firms that pay dividends, and regulated firms. Furthermore, their empirical analysis shows that cash holdings increase with the cashflow to assets ratio, the capital expenditures to assets ratio, industry volatility, and the R&D to sales ratio. Hence, firms with strong growth opportunities, firms with riskier activities, and small firms hold more cash. In their analysis, however, they cannot corroborate the hypothesis that positive excess cash leads firms to overinvest or spend their money on wasteful acquisitions. Therefore, they cannot confirm the agency motive of managerial entrenchment for holding cash. But what they find is that managers accumulate cash if they have the possibility to do so, hence they find evidence for the precautionary motive of holding cash.

2.2 Asymmetric information, agency costs of debt, and cash holdings

The transaction cost model does neither consider information asymmetries nor agency costs. Hence, if those two effects are also included in the analysis, the motives for holding cash become even more pronounced as external finance becomes more costly (precautionary motive). Myers (1984) and Myers and Majluf (1984) propose the pecking order theory. Accordingly, asymmetric information between managers and investors leads firms to abstain from issuing undervalued security. Therefore, cash ('financial slack') is a natural way to finance all positive investment projects as external finance would be too costly. In this model, firms finance their activities first with retained earnings and cash, secondly with debt and only as a means of last resort with equity. Hence, there exists no optimal level of cash which is only a sideshow and fluctuates with the development of internal cash flow.

Another strand of literature considers the agency costs of debt. In this case, the interests of the debtholders and shareholders differ. Jensen and Meckling (1976) argue that highly levered firms are likely to engage in asset substitution, making it more expensive and difficult for those firms to raise external finance. Naturally, this leads to a further argument of why cash holdings can be value-enhancing. Furthermore, as put forward by Myers (1977) firms with high leverage are prone to the underinvestment problem where management abstains from implementing positive NPV projects as the benefits would mostly accrue to the debtholders. In this setting, cash holdings are a response to the increased cost of acquiring external finance to fund value-enhancing projects.

2.3 Agency costs of managerial discretion

As before, the subsequent discussion is also related to agency costs. However, the topic is studied from a different angle. Previously, agency costs of debt provided an optimal response for holding cash but now agency costs of free cash flow represent a deterrent to large cash amounts. As analyzed by Jensen (1986) large amounts of free cash flow lead managers to squander money on unprofitable acquisitions for the sake of empire-building or to pursue their pet projects. Hence, there are costs associated with liquidity holdings in addition to the liquid-

ity premium as already mentioned above. The preceding discussion relates to agency problems at the firm-level. However, factors at the country-level may also influence managerial opportunism. In this vein, shareholder protection can put a grip on outright stealing by management as outside investors are legally entitled to curb the management's decisions. Accordingly, the law dimension at the country-level may intensify or weaken agency problems at the firm-level. One might argue that agency problems at the-firm level may provide the incentives and lack of outside shareholder protection provides the ability of management/controlling shareholders to expropriate outside investors. The basic idea is as follows: the more protection outside investors enjoy, the more they are willing to provide capital at lower cost and consequently firms are less dependent on cash. The other side of the coin is that in countries with weak shareholder protection, firms face limited external finance opportunities, rendering cash more valuable in this setting. In this vein, La Porta et al. (1997) and La Porta et al. (1998) (hereafter, LLSV) have put forward some measures (anti-director rights, creditor rights, rule of law) for characterizing the institutional and legal systems across countries. However, although cash is more valuable in countries with weak shareholder protection, it is also well known that those countries are afflicted with more agency problems and hence lower firm values (see, for example, La Porta et al., 2002; Claessens et al., 2002). Hence, if according to Jensen (1986) high cash balances lead to overinvestment, then those countries with low protection of outside investors face an even more pronounced value discount.

In contrast to Opler et al. (1999), Dittmar et al. (2003) find that agency problems are an influential factor for the determination of cash holdings. Specifically, their results reveal that firms in countries with a low level of shareholder protection hold double the amount of cash than their counterparts in high shareholder protection countries. Interestingly, their results become even stronger if they control for capital market development. It is important to stress that Dittmar et al. (2003) use as their governance variable, the LLSV (1998) score at the country-level, hence they cannot control for agency problems at the firm-level. The derived predictions for the remaining variables are in line with prior evidence. For example, Dittmar et al. (2003) find that cash holdings increase with higher market-to-book ratios and higher R&D expenditures. On the other hand, their results show that cash holdings decrease with

the size of the firm, with higher net working capital, and dividend payments.

Another study which emphasizes the agency motive is the work by Kalcheva and Lins (2007). However, in contrast to Dittmar et al. (2003), Kalcheva and Lins (2007) not only control for a country-level measure of shareholder protection, but they also incorporate a proxy for firm-level agency problems in their analysis. Hence, the paper by Kalcheva and Lins (2007) is closely related to this study, but while they use as their firm-level corporate governance variables different measures of managerial control rights, this paper uses the S&P Transparency and Disclosure Index (which will be discussed in section 3.1). The common denominator between Kalcheva and Lins (2007) and Dittmar et al. (2003) is that they both are cross-country studies and both use the LLSV (1998) measure of anti-director rights at the country-level. However, Kalcheva and Lins (2007) can be seen as a fruitful extension of Dittmar et al. (2003) as the former also incorporate the *corporate* agency problem. Interestingly, their results reveal that neither the anti-director rights index from LLSV (1998), nor most of their managerial control rights measures are significantly related to corporate cash holdings. Thus they cannot corroborate the hypothesis that agency problems provide a motivation for firms to hold cash. Nevertheless, it is important to stress once again that this paper is closely related to Kalcheva and Lins (2007) in that they also study the determinants as well as the valuation consequences of cash. Furthermore, in pursuing this approach, the emphasis in their and this study is on two important dimensions: the country-level and the firm-level dimensions of governance.[3]

Similar to Opler et al. (1999), but contrary to Dittmar et al. (2003) and Kalcheva and Lins (2007), Harford et al. (2006) only study the U.S. capital market. Interestingly, they find that firms with high anti-takeover provisions (*weak shareholder rights*) have lower cash reserves. This stands in contrast to the results derived from cross-country studies (most notably, Dittmar et al., 2003) where firms hold more cash in countries with low anti-director rights (*weak shareholder rights*). Taken together, it is important to stress that whereas Dittmar et al. (2003) hold the firm-level dimension constant, Harford et al. (2006) hold the country-

---

[3]   In order to theoretically motivate the subject, the model by Pinkowitz and Williamson (2004) can be slightly modified. In their model, they use the illusive term b as a measure for the quality of institutions. If one replaces that variable by a term t*s whereby t refers to firm-level governance and s to shareholder rights, then their model delivers predictions consistent with the empirical results contained in this paper.

dimension constant. Therefore, it is interesting as a follow-up study to investigate the country-versus firm-layer in corporate governance and the relationship to cash holdings. This is exactly what the first part of this paper aims for: incorporating in a cross-country framework the country- and firm-dimension of corporate governance in the vein of Kalcheva and Lins (2007).

HYPOTHESIS 1: Based on Dittmar et al. (2003), it is assumed that the country-level influence of governance is negative. Thus firms conducting their business in countries with low shareholder rights hold more cash.

HYPOTHESIS 2: The influence of firm-level governance is not straightforward. Although Harford et al. (2006) find a positive influence of firm-level governance on cash holdings, they also put forward that the country-level might dominate the firm-level influence of governance. Given that their analysis focused on the U.S., no prediction concerning the influence of firm-level governance on cash can be inferred in an international context. It is left for the empirical part to shed more light on this matter.

Most notably, Pinkowitz et al. (2006) represent a cross-country study encompassing 35 countries and a period of 11 years. They focus on the value consequences of agency conflicts in relation to cash holdings. As corporate governance proxies the authors employ two measures: the anti-director rights index from LLSV (1998) and the index for the rule of law from the International Country Risk Guide. In order to derive their results, they classify the countries according to the medians of those two variables and then use a valuation specification which is built on the regression specification of Fama and French (1998). Their results bring to light that in countries with high investor protection, one dollar invested in liquid assets is also approximately worth this dollar. However, more interestingly, in countries with weak shareholder protection, one dollar of liquid assets is worth much less: ranging from 0.29 to 0.33 dollar. Taken together, the weak relation between firm value and cash holdings further corroborates the agency theory of cash holdings. Moreover, Pinkowitz et al. (2006) find that the relation between dividends and firm value is weaker if the external governance environment is stronger, thus providing further evidence for agency theory.

Another paper in this vein is the comprehensive study by Dittmar and Mahrt-Smith (2007) which focusses on the U.S. and encompasses the period from 1990 to 2003. Using several governance variables such as the Gompers et al. (2003) corporate governance index (it relates to anti-takeover provisions), the index from Bebchuk et al. (2005) which is similar to the Gompers et al. (2003) index, and two measures for institutional share ownership, they can confirm the results derived by Pinkowitz et al. (2006). More specifically, Dittmar and Mahrt-Smith (2007) find that pouring one dollar of cash in a poorly governed firm only increases the market value from a minimum of 0.42 to a maximum of 0.88 dollars depending on the governance variable used. In addition, they find that poorly governed firms spend cash quickly in contrast to firms with stronger governance. All this evidence points to the fact that firms with weak governance use cash in ways that are not consistent with shareholders' interests. Furthermore, the authors reveal that for good corporate governance firms, one dollar of cash increases the market value by about two dollars.

HYPOTHESIS 3: Similar to Pinkowitz et al. (2006) and Dittmar and Mahrt-Smith (2007), low governance (firm-level and country-level) significantly reduces the value of cash.

3 Empirical methodology

3.1 Sample selection and variable construction

For investigating the relationship between cash and governance, the sample is predetermined by the scope of the S&P Transparency and Disclosure Index being one of the main explanatory variables. This index is composed of 98 disclosure criteria[4] and will be used as the proxy for firm-level corporate governance in this paper (similar to Doidge et al., 2007; Durnev and Kim, 2005). The advantages of this index lie in its objectivity across countries and its wide scope covering slightly more than 1,400 firms from about 40 countries which can be grouped into the following regions (number of firms included in parentheses): Asia Pacific (99 firms), Europe

---

[4] In the empirical part (section 3.2.1), the S&P Transparency index is scaled to reach until a value of five in order for the results to be directly comparable to the anti-director rights measure (it has a maximum value of five).

(351 firms), U.S. (460 firms), Emerging Asia (254 firms), Latin America (89 firms), and Japan (150 firms). The disadvantage concerning this corporate governance measure relates to its static nature as it is only available for the year 2001. In order to obtain financial data for the firms covered by the S&P ranking, they had to be matched on a case-by-case basis with the Datastream/Worldscope files. However, firms engaged in the financial industry were discarded from the analysis as they arguably hold cash for other purposes.[5] This procedure leads to a final sample of 935 firms for one year and 10,912 firm-year observations for the period 1996 to 2006.

As can be seen from the summary statistics, Table 1, (the S&P Transparency and Disclosure Index is labeled t) there is a wide variation in the governance score. It ranges from a low of about 20 points for Venezuela and Turkey to a maximum of about 70 for the U.S. and Finland. The mean score over all firms and countries is about 48 and many European countries can be found in the mean range. In line with intuition, most countries from the Asian and Latin American region have scores below the mean value.

A key contribution of this paper is that in contrast to most previous studies, two dimensions of governance are explicitly incorporated in the analysis. In addition to firm-level corporate governance, the LLSV (1998) measure of anti-director rights (called *srights*) is also included to capture governance at the country-level due to the cross-country nature of this paper. *Srights* proxies for the external governance environment as it is determined by laws on shareholder protection and hence it is the same for firms within one country. This index ranges from zero to five with higher values indicating better protection at the country-level. As can be seen from the summary statistics (Table 1: low shareholder rights (Panel A); high shareholder rights (Panel B)), the countries with the lowest shareholder rights do not only include countries from emerging markets, but also encompass surprisingly many European countries. For example, two European countries (Belgium and Luxembourg) represent the bottom league of all countries with *srights* scores of zero. But also Austria, Belgium, Denmark, Italy, Greece, and Switzerland are considered to be not very investor-friendly. On the other hand, Panel B

---

[5]   This is consistent with the main studies in this literature; see, for example, Opler et al. (1999) or Pinkowitz et al. (2006).

contains the countries with the highest shareholder rights (above a value of two). The mean *srights* for the high shareholder rights panel is 3.91 with India, Hongkong, Pakistan, UK, and U.S. taking the lead with the maximum score of five.

As a measure of cash holdings, I employ the ratio of cash and cash equivalents to net assets where net assets are defined as book value of assets minus cash and cash equivalents (see, Opler et al., 1999). In section 3.2.1, I employ the natural logarithm of the cash ratio as dependent variable. Table 1 contains the summary statistics and shows that there is a wide dispersion in the cash variable across the sample. The values for cash range from a low of 0.05 for Venezuela and a maximum of 0.48 for Ireland. Interestingly, the summary statistics reveal that the countries belonging to the low shareholder rights group have a lower cash ratio compared to their counterparts in the high shareholder rights sample. However, this effect could be driven by the higher number of observations in the latter group (due to a U.S. overweight).

In some specifications, the market-to-book ratio (mtb) computed as total assets less book value of equity plus market capitalization of equity divided by net assets (see, Opler et al., 1999) is used instead of sales growth. Taking the means over all firms and years, Table 1 reveals that mtb is lower for firms in the low shareholder rights group (mtb: 1.83), compared to firms pertaining to the high shareholder rights sample (mtb: 2.32).

After having introduced the governance as well as the dependent variables, it is left to discuss the control variables included in the analysis. First, as it is expected that bigger firms need less cash, size is included as control variable and computed as the logarithm of net assets. Second, high leverage firms are assumed to hoard less cash and thus a variable for leverage is also considered, computed as the ratio of long-term debt plus short-term debt divided by net assets. Third, net working capital to assets ratio (nwc) calculated as current assets less current liabilities and cash divided by net assets is expected to be a cash substitute. Fourth, as firms that spend a lot on capital expenditures are assumed to need more cash, capital expenditures ($capex$) are also taken into consideration. This variable is measured as the ratio of capital expenditures to net assets. Fourth, a proxy for free cash flow (fcf) is included in

the empirical analysis computed as the ratio of Ebitda minus the sum of dividends, taxes, and interest payments in the nominator and net assets in the denominator. As it is expected that firms that experience higher growth need more cash, one-year sales growth (*salg1y*) is used as a proxy for growth opportunities. Finally, when viewed from an international perspective, another reason for holding cash might be the respective capital market development of the country; hence two proxies for this effect are included. They are taken from Beck et al. (2000) and measure the stock market capitalization as share of GDP (*mcap*) and the total amount of outstanding domestic debt (*privateb*), respectively. Furthermore, all empirical specifications include industry dummies (defined at the two-digit sic-code level) and region dummies (five regions: (1) Europe, (2) U.S., UK, Australia, New Zealand, (3) Latin America, Asia, (4) Japan, Singapore, Hongkong).[6]

[Insert Table 1: Summary Statistics here]

3.2 Empiricial results

This section contains the main empirical results which for the ease of presentation are subsumed under three different subsections. The first empirical analysis focusses on the determinants of cash. In specific, the main question is whether firm-level and country-level governance mechanisms are influential factors in the determination of corporate liquidity holdings. This approach is based on the analysis by Kalcheva and Lins (2007) and Dittmar et al. (2003). The second part of the empirics directly measures the value consequences of liquid asset holdings. In the vein of Pinkowitz et al. (2006), it will be analyzed by how much a one-dollar increase in cash increases the market value of the firm. If there exists a wedge in the value between low and high governance firms, the agency hypothesis, i.e. managers waste cash on the consumption of private benefits, finds some more empirical justification and should be further scrutinized. Directly addressing this issue, the following subsection further explores whether low governance firms hold more excess cash and on which items they spend their cash. This

---

[6]   Region dummies are chosen as country-dummies cannot be taken due to the country-level nature of the anti-director rights index. Otherwise the country-level influence of this variable would be swept away by the country dummies.

empirical approach was inspired by the influential work by Opler et al. (1999) and Dittmar and Mahrt-Smith (2007).

3.2.1 Determinants of cash

Following the main empirical literature in this area (see, for example, Opler et al., 1999; Dittmar et al., 2003), the log of cash is used as the dependent variable. As already outlined above, many control variables which previous studies (most notably, Opler et al., 1999) have found to be important are also included as well as the main variables of interest, i.e. the country- and firm-level governance measures. Furthermore, all regressions include industry and region dummies. Table 2 contains the empirical results from this subsection.

As a preliminary test, model (1) tries to retrieve the results from previous studies which only have governance data at the country-level at disposition. Thus, model (1) includes the anti-director rights index (*srights*) as main explanatory variable in addition to a battery of control variables. Interestingly, the results from extant cross-country studies can be corroborated. Like Dittmar et al. (2003), the influence of *srights* is negative, hence in countries where the shareholder protection is low, firms hold more cash. Dittmar et al.'s (2003) interpretation is that the level of cash in low investor protection countries is higher because that allows managers to spend more resources on pursuing their own ends, i.e. squandering cash on private benefits. This interpretation is also endorsed here and hence the empirical evidence is in line with *Hypothesis 1*. This managerial agency motivation is further emphasized by the fact that although the *capital market development* is directly controlled for (*mcap and privateb*), the influence of *srights* is *still* significant (at the 1% level) and negative. All the signs of the control variables are in line with expectations with the exception of sales growth (*salg1y*) which is not statistically significant at conventional levels. Furthermore, the results are fairly robust across all specifications due to the fact that most variables do neither switch sign nor become insignificant.

Model (2) is similar to model (1) with the difference that now the focus is on the Transparency and Disclosure index (*t5*) which is rescaled to range until a maximum of five in order to be

comparable to the LLSV (1998) anti-director rights index (*srights*). Again, the detected influence of *t5* is in line with prior *country* studies using some kind of measure for firm-level governance (e.g., Harford et al., 2006). The significant (at the 10% level), positive influence of *t5* on the log of cash means that firms with better governance practices in place use more cash. This effect is somehow counterintuitive to the negative relationship that was derived using country governance. With reference to *Hypothesis 2*, up to this point I found some preliminary evidence that the influence of firm-level governance is positive. Thus it is interesting to combine the two measures in one regression and examine whether they can coexist besides each other.

Model (3) includes the results from integrating both governance measures in one regression. As can be seen from Table 2, the influence of *srights* and *t5* remains negative and positive, respectively, and even slightly increases its economic significance. The effect of firm-level governance is a little bit stronger with a coefficient of 0.219 versus country shareholder protection having a coefficient of -0.199. This result is interesting as it deviates from the results obtained in the study by Kalcheva and Lins (2007) where country and firm-level governance does not remain individually significant if combined in one regression. Thus, the present results point to two independent effects which are working in the opposite direction. One interpretation of the firm-level governance results could be that good governance firms hold more cash simply because they are the ones being more profitable, hence generating higher free cash flow. This result could arguably be related to the endogeneity discussion of governance. Maybe it is not high governance that is driving performance, but firms that are more successful have higher governance standards because they can be implemented at relatively lower cost. Taken together, this effect would lead to the positive relationship between cash and governance. Thus it is essential to further investigate the agency motive of holding cash which will be pursued in the following subsection. At the country-level, there are at least two possible interpretations of the results that seem plausible. It could be argued that firms in low shareholder protection countries (low *srights*) accumulate cash because the shareholders have essentially no say in those countries and cannot take actions against the decisions of the management. The argument could also be put differently as follows. Firms hoard cash in low shareholder protection

countries as it is more difficult in this environment to raise external capital. However, the second interpretation seems to be more minor of nature as I directly take the capital market environment into consideration and still observe a significant influence between cash and external governance. Thus the first interpretation seems to be the more plausible in this context which is in line with *Hypothesis 1*.

One concern with model (3) of Table 2 is that the level of country governance and firm governance could be related. There are some similar papers that pursue that direction. For example, Doidge et al. (2007, p. 3) put forward that "Countries matter because they influence the costs that firms incur to bond themselves to good governance and the benefits from doing so." Moreover, Harford et al. (2006, p. 4) state that "the effects of country-level granting and enforcing of shareholder rights dominates the effect of firm-level variation in the control of agency conflicts. In countries with poor shareholder protection, managers can hoard cash and pay low dividends with relative impunity." Testing this hypothesis, it was found that the correlation between *srights* and *t5* is about 49% in this sample. In order to address this issue, *t5* was regressed on country dummies and the error terms from this regression are calculated. The residuals can be interpreted as the part of the firm-governance score that is not influenced by country aspects, hence the correlation afterwards between *srights* and *spnocou5* (i.e. the country-cleared firm-level governance score) is equal to zero. In a second step, the same regression specification as in model (3) of Table 2 is chosen but instead of *t5*, the now derived anti-country firm-level score (*spnocou5*), is added to the model. The results from model (4) of Table 2 reveal that the coefficient of the firm-level score is insignificant after this modification. Yet the influence of the country-governance, *srights*, strengthens in economic and statistical significance. This result entangles the influence of country- versus firm-level governance and clearly shows that only the level of investor protection has an influence on cash holdings which is in line with the papers cited above. That means that *Hypothesis 1* could be further corroborated and concerning *Hypothesis 2*, the empirics point to no significant influence of firm-level governance.

3.2.2 Valuation results

This subsection is based on the paper by Pinkowitz et al. (2006) which studies the valuation effects of governance and cash holdings. The authors propose that cash is valued at a discount in countries with low investor protection (low *srights*) because management enjoys more discretionary power in those countries and can use cash for pursuing their own interests.[7] They use the valuation regression of Fama and French (1998):

$$
\begin{aligned}
V_{i,t} = \alpha_i &+ \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dA_{i,t} + \beta_5 dA_{i,t+1} + \beta_6 RD_{i,t} \\
&+ \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+1} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+1} + \beta_{12} D_{i,t} \\
&+ \beta_{13} dD_{i,t} + \beta_{14} dI_{i,t+1} + \beta_{15} dV_{i,t+1} + \varepsilon_{i,t}
\end{aligned}
\tag{1}
$$

where $V_{i,t}$ refers to market value of the firm (measured as the sum of the market value of equity, long- and short-term debt); $E_{i,t}$ relates to earnings before extraordinary items plus interest, and tax credits; $A_{i,t}$ means total book value of assets; $RD_{i,t}$ refers to R&D expenditures; $I_{i,t}$ stands for interest payments; and finally $D_{i,t}$ measures dividend payments. Generally, all variables are deflated by total assets of the year t and in addition to the actual levels of the variables in year t, the lag and lead changes of the respective variables are also included as independent variables in the regression framework.

Pinkowitz et al. (2006) reformulate the previous equation and replace total assets by its two components: net assets ($NA_{i,t}$: total assets minus liquid assets) and liquid assets ($L_{i,t}$).

$$
\begin{aligned}
V_{i,t} = \alpha_i &+ \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+1} + \beta_6 RD_{i,t} \\
&+ \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+1} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+1} + \beta_{12} D_{i,t} \\
&+ \beta_{13} dD_{i,t} + \beta_{14} dI_{i,t+1} + \beta_{15} dV_{i,t+1} + \beta_{16} dL_{i,t} + \beta_{17} dLi, t+1 + \varepsilon_{i,t}
\end{aligned}
\tag{2}
$$

The hypothesis of Pinkowitz et al. (2006) is that the coefficient of the change in cash over the previous period (i.e. β_{16}) should be lower in countries with low investor protection as this sensitivity directly measures the effect of a change in cash (from the previous to the present

---

[7]   See also the discussion in section 3.2.1.

period) on the market valuation of the firm. The authors use the econometric framework of Fama and MacBeth (1973) (hereafter FM) to estimate their regressions. According to Petersen (2006), the approach of FM allows the researcher to tackle a time effect (the residuals are correlated across different firms in one year), but FM is not appropriate in the case of a firm effect (the residuals of one specific company are correlated across different years).

Table 3 contains the results of the valuation regressions. The period ranges from 1996 to 2006 as (1) it can be argued that over the medium-term governance does not change significantly and (2) the year 2001 (the publication date of the S&P Transparency and Disclosure index) is then surrounded by lead and lag terms of the FM regression framework to properly conduct the analysis.[8] In models (1) and (2) the sample is split according to the median of the S&P Transparency and Disclosure index. The results for the coefficient on the β_{16} term indeed point to a significant valuation discount for firms with low corporate governance. This result does not contradict the evidence from the previous section for the following reason. Although governance at the firm-level is ultimately not driving the level of liquidity, it still can be that corporate governance is responsible for how liquidity is deployed. This means that firms with low corporate governance are prone to wasting cash while firms with high corporate governance standards are using cash in the interest of shareholders. According to the empirical evidence a one dollar increase in cash accumulated over the last period leads only to a 0.879 increase in the market value of the firm. However, the market value of firms with high corporate governance standards increases by far more than one dollar, i.e. by 2.014 (significant at the 1% level). Model (3) and (4) address the same issue, however, they use the median of the LLSV (1998) anti-director rights index (*srights*) as criterion for splitting the sample. In line with the previous results, there exists a discount for low governance. The coefficient for low investor protection countries amounts to 0.859 while the value of cash in high investor protection countries amounts to 2.123. This empirical evidence is in line with Pinkowitz et al. (2006) as they also find a significant valuation discount for firms in countries with minor shareholder protection.

---

[8]   In order to mitigate the effect of outliers and following others in this literature, the sample is trimmed by dropping 1% in each tail of each variable.

[Insert Table 3: Valuation Effects (Fama MacBeth) here]

Doidge et al. (2007) argue that firms might be limited in their possibilities to credibly commit to good corporate governance in countries where shareholder protection is low. In order to test this hypothesis in the context of cash holdings and disentangle the value effects of governance and shareholder protection (*srights*), Table 4 presents combined splits. The sample is initially split on the basis of the median of shareholder protection and subsequently according to the median of the governance score (*t5*). Interestingly, being in a low shareholder protection environment does not have any significant impact on the value of liquidity if the firm's corporate governance regime is strong. Similarly, being in a high shareholder protection environment and having low corporate governance standards does not influence the market value of liquidity. This means that the casting vote is exercised by the governance rules and regulations at the country-level as for subsequent splits on the basis of firm governance only the groups are significant that are in line with the governance at the country-level. For example, if shareholder protection is low and firm governance is weak, the value of cash is equal to 1.050 (significant at the 5% level). Yet if shareholder rules at the country-level are sound, then being in the high firm governance regime is rewarded with a value of liquidity amounting to more than double (2.297) than that of the peer group. This result corroborates the hypothesis of Doidge et al. (2007) that governance at the country level is decisive and firm governance improvement might not credibly be communicated to shareholders.

[Insert Table 4: Valuation Effects (Fama MacBeth): Combined here]

3.2.3 Robustness tests

One problem with the FM approach is that it is based on the assumption that all firms have the same cost of capital which is a fairly strong simplification. Also Fama and French admit this shortcoming in their paper (1998) by saying "our regressions impose the same slope on all firms. The response of value to profitability depends, however, on capitalization rates (costs of capital), which differ across firms. Since the regressions do not allow for differences

in capitalization rates, there is a specification problem" (p. 827). Moreover, Pinkowitz and Williamson (2004, p. 13) note that "our implementation of the FM methodology may be problematic because it implicitly assumes that all firms have the same discount rate within a given year". Their solution to this problem is to compute fixed effects regressions in addition to the FM estimations. Thus this approach is also pursued here but in addition to firm-specific intercepts, time dummies are also added to the regressions in order to let the discount rate not only vary across firms but also across time.[9] The results from Table 5 show that if a fixed effects estimator is applied, the value of cash changes somewhat in that it is generally lower. But the main inference holds true that there is a large valuation discount of the value of cash between high and low governance firms (external and internal governance).

[Insert Table 5: Valuation Effects (Fixed Effects with Time and Year Dummies) here]

As a second robustness test, not the estimation methodology, but the estimation equation is modified. Pinkowitz et al. (2006) state that one concern with equation (2) is that an increase in cash might alter expectations about future growth opportunities as well. In principle, lead terms in the Fama and French model capture expectations, but in order to put this hypothesis under further scrutiny, Pinkowitz et al. (2006) replace the lead and lag of cash changes with the value of cash:

$$
\begin{aligned}
V_{i,t} = {} & \alpha_i + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+1} + \beta_6 RD_{i,t} \\
& + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+1} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+1} + \beta_{12} D_{i,t} \\
& + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+1} + \beta_{15} dV_{i,t+1} + \beta_{16} L_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{3}
$$

Accordingly, the coefficient on the the level of cash, β_{16}, estimates the induced change in market value if the level of cash holdings changes by one dollar. Table 6 contains the results. For both splits, the estimation results reveal a significant valuation discount between high and low external and internal governance. This means that the previous results are further corroborated.

---

[9]   There is also a recent paper by Autore and Kovacs (2006) in which they argue that capitalization rates change over time.

[Insert Table 6: Valuation Effects (Fama MacBeth): Cash-Level here]

3.2.4 Excess cash

This subsection calculates the excess cash level as defined by Opler et al. (1999). It is based on a two-steps approach. The first step involves a regression where the natural log of cash is used as the dependent variable:

$$
\begin{aligned}
lnCash_i = {} & \beta_0 + \beta_1 MTB_i + \beta_2 FCF_i + \beta_3 Size_i + \beta_4 NWC_i \\
& + \beta_5 Rd_i + \beta_6 Divdum_i + \beta_7 Capex_i + \varepsilon_i
\end{aligned}
\tag{4}
$$

In a second step, the residual of the previous equation is calculated. It is then taken to the exponential in order to arrive at the excess cash level. This notion defines cash which is not directly needed for the operations of the firm, but arguably accumulated for other purposes. Excess cash is calculated for all firms for the year 2001 and Table 7 contains the results. Additionally, Table 7 investigates the sources (EBITDA) and uses of cash (acquisitions, capital expenditures, R&D expense, dividends) over time.[10] In pursuing this approach, the sample is split in high and low internal governance firms (high and low t values) such that it can directly be observed whether low governance firms hold more excess cash and how the two groups differ according to their spending behavior.

Table 7 reports the results of this subsection. The empirical evidence reveals that there is no significant difference in means of excess cash between low and high governance firms which is in line with the results obtained in section 3.2.1. Yet according the the signs of the mean values, firms with high corporate governance hold negative excess cash and firms with low governance hold positive amounts of excess cash which is in line with expectations. Upon further examination of the results, the evidence exemplifies that high corporate governance firms on the one hand generate more cash (Ebitda is higher) but also spend more on items that are supposedly value increasing as their capital expenditures and R&D expenses are higher. They also return more cash back to shareholders as their dividend payments are

---

[10]   For related work, see, Dittmar and Mahrt-Smith (2007).

higher and they spend more on acquisitions where it is debatable whether these expenses are value-enhancing or not. Taken together with the evidence from the previous subsection, it seems that investors value a one dollar increase in cash of high governance firms more for the reason that these firms use their liquid asset holdings for purposes that are beneficial for their shareholders. In the case of low governance firms, this subsection reveals one reason for the valuation discount of liquid asset holdings derived in the previous section. These firms keep excess cash in the company and do not employ these funds in ways that are congruent with shareholder wealth maximization.

[Insert Table 7: Excess Cash here]

4 Conclusion

Liquid asset holdings provide a natural way to study the relation between agency conflicts and the value consequences as cash can be relatively easy transformed into private benefits. As a rather novel approach, this work uses not only data about country governance (LLSV anti-director rights), but also incorporates an objective firm-level governance measure, the S&P Transparency and Disclosure index, into the analysis.

In this context, the first part of this paper uses external and internal governance data of 935 firms worldwide in order to analyze the effect on global corporate liquidity. The results reveal that country-level governance negatively influences the level of cash while firm-level governance has a positive effect on the cash holdings. This provides evidence that the results derived from research on either firm-level governance or country-level governance also hold if the two partial effects are combined in an integrated framework. However, very importantly, if the firm-level index is cleared of country effects, then the corporate governance index loses its significance and is no longer related to the corporate liquidity holdings. This provides, for the first time, evidence that its is crucial to disentangle the firm-index in "pure" corporate decisions and country-influenced corporate governance factors.

The second part of the paper directly examines the value consequences of cash in different

governance regimes. It is shown that there is a significant value discount attached to cash accumulated in low governance firms as well as in low shareholder protection countries. One dollar of additional cash built up over the last period increases the firm value by less than a dollar in those environments. However, in the case of high firm-level governance firms and firms operating in high shareholder protection countries, the value of one additional dollar of liquid asset raises the firm's market value by much more than the one dollar paid in. Importantly, as an robustness check, the results are also computed via a fixed-effects estimator and qualitatively the same results can be obtained.

Finally, after identifying these huge value differences the paper continues by investigating the sources of value creation/destruction. It is shown that although low-governance firms do not hold significantly more excess cash, they spend less on sources that are congruent with value maximization (e.g. using capital for research and development or capital expenditures).

References

AUTORE, D. AND T. KOVACS (2006): "Temporal Variation in Analyst Agreement and Financing Decisions," Working paper, Available at SSRN: http://ssrn.com/abstract=639363.

BEBCHUK, L., A. COHEN, AND A. FERRELL (2005): "What matters in corporate governance," Harvard Law School John M. Olin Center Discussion Paper No. 49, Available at SSRN: http://ssrn.com/abstract=593423.

BECK, T., A. DEMIRGUC-KUNT, AND R. LEVINE (2000): "A New Database on Financial Development and Structure," *World Bank Economic Review*, 14, 597–605.

CLAESSENS, S., S. DJANKOV, J. P. H. FAN, AND L. H. P. LANG (2002): "Disentangling the Incentive and Entrenchment Effects of Large Shareholdings," *Journal of Finance*, 57, 2741–2771.

DITTMAR, A. AND J. MAHRT-SMITH (2007): "Corporate Governance and the Value of Cash Holdings," *Journal of Financial Economics*, 83, 599–634.

DITTMAR, A., J. MAHRT-SMITH, AND H. SERVAES (2003): "International corporate governance and corporate cash holdings," *Journal of Financial and Quantitative Analysis*, 38, 111–133.

DOIDGE, C., G. A. KAROLYI, AND R. M. STULZ (2007): "Why do countries matter so much for corporate governance?" *Journal of Financial Economics*, 86, 1–39.

DURNEV, A. AND E. H. KIM (2005): "To Steal or Not to Steal: Firm Attributes, Legal Environment, and Valuation," *Journal of Finance*, 60, 1461–1493.

FAMA, E. F. AND K. R. FRENCH (1998): "Taxes, Financing Decisions, and Firm Value," *Journal of Finance*, 53, 819–843.

FAMA, E. F. AND J. D. MACBETH (1973): "Risk, Return, and Equilibrium: Empirical Tests," *Journal of Political Economy*, 81, 607–636.

GOMPERS, P., J. ISHII, AND A. METRICK (2003): "Corporate governance and equity prices," *Quarterly Journal of Economics*, 118, 107–155.

HARFORD, J., S. A. MANSI, AND W. F. MAXWELL (2006): "Shareholder Rights and Corporate Cash Holdings," AFA 2006 Boston Meetings Paper, Available at SSRN: http://ssrn.com/abstract=595150.

HUANG, P. AND Y. ZHANG (2007): "Corporate Transparency and Cash Holdings: An International Perspective," Working paper.

JENSEN, M. C. (1986): "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," *American Economic Review*, 76, 323–330.

Jensen, M. C. and W. H. Meckling (1976): "Theory of the firm: Managerial behavior, agency costs and ownership structure," *Journal of Financial Economics*, 3, 305–360.

Kalcheva, I. and K. V. Lins (2007): "International Evidence on Cash Holdings and Expected Managerial Agency Problems," *Review of Financial Studies*, 20, 1087–1112.

Keynes, J. M. (1936): *The general theory of employment, interest and money*, Macmillan for the Royal Economic Society: London.

Kim, C.-S., D. C. Mauer, and A. E. Sherman (1998): "The Determinants of Corporate Liquidity: Theory and Evidence," *Journal of Financial and Quantitative Analysis*, 33, 335–359.

La Porta, R., F. Lopez-De Silanes, A. Shleifer, and R. W. Vishny (1997): "Legal Determinants of External Finance," *Journal of Finance*, 52, 1131–1150.

La Porta, R., F. Lopez-de Silanes, A. Shleifer, and R. W. Vishny (1998): "Law and Finance," *Journal of Political Economy*, 106, 1113–1155.

——— (2002): "Investor Protection and Corporate Valuation," *Journal of Finance*, 57, 1147–1170.

Miller, M. H. and D. Orr (1966): "A Model of the Demand for Money by Firms," *Quarterly Journal of Economics*, 80, 413–435.

Myers, S. C. (1977): "Determinants of corporate borrowing," *Journal of Financial Economics*, 5, 147–175.

——— (1984): "The Capital Structure Puzzle," *Journal of Finance*, 39, 575–592.

Myers, S. C. and N. S. Majluf (1984): "Corporate financing and investment decisions when firms have information that investors do not have," *Journal of Financial Economics*, 13, 187–221.

Myers, S. C. and R. G. Rajan (1998): "The Paradox of Liquidity," *Quarterly Journal of Economics*, 113, 733–771.

Opler, T., L. Pinkowitz, R. Stulz, and R. Williamson (1999): "The determinants and implications of corporate cash holdings," *Journal of Financial Economics*, 52, 3–46.

Petersen, M. A. (2006): "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches," Kellogg Finance Dept. Working Paper No. 329, Available at SSRN: http://ssrn.com/abstract=661481.

Pinkowitz, L., R. Stulz, and R. Williamson (2006): "Does the Contribution of Corporate Cash Holdings and Dividends to Firm Value Depend on Governance? A cross-country analysis," *Journal of Finance*, 61, 2725–2751.

Pinkowitz, L. and R. Williamson (2004): "What is a Dollar Worth? The Market Value of Cash Holdings," Working paper, Georgetown University.

TOBIN, J. (1956): "The Interest-Elasticity of Transactions Demand For Cash," *Review of Economics and Statistics*, 38, 241–247.

Table 1: Summary Statistics for Low Shareholder Rights Countries (Panel A) and High Shareholder Rights Countries (Panel B).

| | | | | | | Panel A. Low Shareholder Rights | | | | | | | | |
country	size	cash	leverage	capex	nwc	fcf	div	t	mtb	salg1y	privateb	mcap	srights
Austria	15.5	0.10	0.22	0.09	0.02	0.11	62,489	46.5	1.20	0.13	0.28	0.07	2
Belgium	15.8	0.14	0.25	0.09	-0.02	0.12	333,180	48.3	2.38	0.12	0.48	0.26	0
Denmark	15.1	0.10	0.21	0.09	0.12	0.12	382,179	56.0	2.91	0.18	1.04	0.22	2
Germany	16.6	0.16	0.25	0.09	0.03	0.10	419,288	52.8	2.13	0.09	0.37	0.19	1
Greece	15.9	0.08	0.26	0.13	-0.01	0.13	250,680	66.0	1.81	0.12	0.04	0.08	2
Indonesia	13.8	0.17	0.47	0.07	-0.03	0.07	22,746	35.4	1.69	0.43	0.00	0.05	2
Italy	16.6	0.11	0.35	0.05	-0.03	0.08	706,533	57.6	1.60	0.70	0.28	0.12	1
Korea	13.8	0.28	0.38	0.10	-0.07	0.01	45,866	45.4	1.57	0.26	0.32	0.25	2
Luxembourg	17.2	0.09	0.28	0.06	0.07	0.09	181,632	36.0	1.12	0.07	0.00	2.14	0
Mexico	15.3	0.12	0.23	0.06	0.02	0.09	130,080	22.3	1.90	0.14	0.01	0.15	1
Switzerland	16.2	0.19	0.31	0.05	0.05	0.11	475,060	50.6	2.43	0.07	0.62	0.71	2
Thailand	13.6	0.19	0.44	0.07	-0.08	0.13	44,355	48.8	2.40	0.14	0.00	0.26	2
Turkey	13.6	0.19	0.38	0.08	-0.03	0.01	9,322	19.0	1.82	0.29	0.01	0.06	2
Venezuela	13.8	0.05	0.09	0.06	-0.02	0.10	13,863	17.0	0.64	0.27	0.00	0.08	1
Mean	**15.2**	**0.14**	**0.29**	**0.08**	**0.00**	**0.09**	**219,805**	**43.0**	**1.83**	**0.22**	**0.25**	**0.33**	**1.4**

(continued)

Table 1–*Continued*

| | | | | | | Panel B. High Shareholder Rights | | | | | | | |
country	size	cash	leverage	capex	nwc	fcf	div	t	mtb	salg1y	privateb	mcap	srights
Argentina	14.6	0.09	0.49	0.07	-0.18	0.10	65,013	28.7	1.49	0.22	0.06	0.05	4
Australia	15.3	0.07	0.28	0.07	-0.05	0.07	282,056	56.3	2.06	0.11	0.14	0.43	4
Brazil	15.7	0.09	0.33	0.07	-0.07	0.07	237,733	28.8	1.14	0.19	0.04	0.12	3
Chile	14.4	0.18	0.31	0.06	0.01	0.03	87,381	32.6	1.62	5.73	0.00	0.43	5
Finland	16.5	0.22	0.27	0.06	0.02	0.13	625,059	70.3	3.58	0.13	0.39	0.18	3
France	16.5	0.15	0.29	0.06	-0.06	0.07	327,909	64.4	2.17	0.10	0.41	0.20	3
Hongkong	15.6	0.18	0.25	0.07	-0.04	0.09	398,613	44.9	2.31	0.33	0.05	1.28	5
India	13.5	0.13	0.25	0.09	0.12	0.12	29,886	37.3	3.42	0.20	0.06	0.13	5
Ireland	14.7	0.48	0.57	0.14	-0.11	0.10	29,635	72.0	4.04	0.21	0.04	0.27	4
Japan	16.0	0.24	0.32	0.06	0.00	0.08	101,851	50.3	1.96	0.05	0.30	0.73	4
Malaysia	13.5	0.20	0.33	0.07	-0.04	0.07	26,624	42.2	2.15	0.16	0.21	1.07	4
New Zealand	15.1	0.08	0.27	0.03	0.05	0.03	60,392	52.0	0.93	0.01	0.00	0.41	4
Norway	15.5	0.18	0.31	0.07	0.00	0.10	483,455	58.9	3.01	0.12	0.19	0.15	4
Pakistan	13.1	0.14	0.34	0.07	-0.07	0.10	47,270	37.0	1.58	0.16	0.00	0.09	5
Peru	13.0	0.19	0.18	0.05	-0.01	0.14	22,647	22.0	2.15	0.22	0.00	0.06	3
Philippines	15.0	0.12	0.39	0.07	-0.02	0.09	42,845	26.7	1.48	0.15	0.00	0.21	3
Portugal	15.7	0.06	0.41	0.07	-0.09	0.09	183,435	56.0	1.61	0.12	0.11	0.08	3
Singapore	15.2	0.29	0.25	0.08	-0.14	0.08	139,906	56.0	2.45	0.09	0.04	1.23	4
Spain	16.2	0.05	0.33	0.08	-0.07	0.10	334,769	49.7	1.85	0.18	0.09	0.18	4
Sweden	15.5	0.16	0.24	0.07	0.06	0.11	198,108	58.2	2.97	0.10	0.58	0.38	3
Taiwan	14.3	0.20	0.29	0.10	-0.03	0.11	92,897	28.2	2.14	0.29	0.00	0.49	3
UK	15.4	0.15	0.31	0.06	-0.08	0.08	373,222	67.0	3.29	0.10	0.14	0.76	5
US	15.4	0.23	0.27	0.07	0.02	0.11	240,864	68.5	3.92	0.14	0.53	0.58	5
Mean	**15.0**	**0.17**	**0.32**	**0.07**	**-0.03**	**0.09**	**192,677**	**48.2**	**2.32**	**0.40**	**0.15**	**0.41**	**3.9**

Means are reported by country grouped into high (anti-director index equal to three and above) and low (anti-director index equal to two and below) shareholder rights for non-financial firms (i.e. excluding firms operating in industries where the sic-code equals six) covered by the Worldscope database. The values shown are means over the period 1996 to 2006 and over all firms. Size refers to the natural logarithm of total assets minus cash. Cash refers to the ratio of cash plus short-term investments divided by net assets (total assets minus cash). Leverage stands for the ratio of long-term debt plus short-term debt divided by net assets. Capex is the abbreviation for capital expenditures and is simply the ratio of capital expenditures (as reported in the balance sheet) divided by net assets. Nwc refers to net working capital and is calculated as the ratio of current assets minus current liabilities minus cash in the nominator and net assets in the denominator. Fcf denotes free cash flow and is equal to ebitda minus dividends, taxes, and interest payments, divided by net assets. Div is equal to the dividend payments in dollar amounts. T is equal to the S&P Transparency and Disclosure index. The market-to-book ratio (mtb) is computed as total assets less book value of equity plus market capitalization of equity divided by net assets. Sales growth (salg1y) denotes the one year growth rate in sales. The two measures for the capital market development are mcap (equal to the stock market capitalization) and privateb (equal to total amount of outstanding domestic debt). The latter two variables are taken from Beck et al. (2000). Srights refer to the anti-director rights as reported by LLSV (1998).

Table 2: Determinants of Cash

Variable	(1) lncash	(2) lncash	(3) lncash	(4) lncash
size	-0.210***	-0.203***	-0.216***	-0.163***
	(-6.38)	(-6.15)	(-6.56)	(-5.38)
leverage	-1.251***	-1.254***	-1.268***	-1.341***
	(-5.42)	(-5.40)	(-5.50)	(-5.78)
capex	2.450***	2.266***	2.301***	2.602***
	(3.22)	(2.96)	(3.02)	(3.37)
nwc	-0.682***	-0.677***	-0.670***	-0.676***
	(-5.63)	(-5.56)	(-5.54)	(-5.52)
fcf	1.151***	1.154***	1.160***	1.176***
	(4.13)	(4.12)	(4.18)	(4.18)
salg1y	-0.053	-0.061	-0.056	-0.040
	(-1.10)	(-1.26)	(-1.16)	(-0.81)
divdum	-0.705***	-0.723***	-0.695***	-0.644***
	(-6.51)	(-6.65)	(-6.42)	(-5.91)
privateb	-0.336	-0.329	-0.465*	-0.165
	(-1.21)	(-1.17)	(-1.65)	(-0.75)
mcap	0.735***	0.680***	0.738***	1.012***
	(3.55)	(3.28)	(3.57)	(5.98)
srights	-0.180***		-0.199***	-0.261***
	(-3.38)		(-3.69)	(-6.68)
t5		0.164*	0.219**	
		(1.69)	(2.24)	
spnocou5				0.071
				(0.58)
Constant	1.570**	0.054	1.062	1.044**
	(2.57)	(0.09)	(1.63)	(2.26)
Adj. R^2	0.27	0.27	0.28	0.25
N	935	935	935	935

Regression estimates of the natural logarithm of cash as the dependent variable on external and internal governance variables of interest and controls. All specifications are for the year 2001 (publication date of the S&P Transparency and Disclosure index).In model (4) the S&P Transparency and Disclosure index (t) will be orthogonalized by firstly regressing t on country dummies and then proceeding only with the residuals of this equation. This procedure is done in order to clear t of any country effect. Then the residuals are scaled in order to range until a maximum of five (spnocou5) and included instead of t5. Cash refers to the ratio of cash plus short-term investments divided by net assets (total assets minus cash). Size refers to the natural logarithm of total assets minus cash. Leverage stands for the ratio of long-term debt plus short-term debt divided by net assets. Capex is the abbreviation for capital expenditures and is simply the ratio of capital expenditures (as reported in the balance sheet) divided by net assets. Nwc refers to net working capital and is calculated as the ratio of current assets minus current liabilities minus cash in the nominator and net assets in the denominator. Fcf denotes free cash flow and is equal to ebitda minus dividends, taxes, and interest payments, divided by net assets. Sales growth (salg1y) denotes the one year growth rate in sales. Divdum is a dummy variable and takes the value of one if the firm paid dividends in the year 2001 and is set to zero otherwise. The two measures for the capital market development are mcap (equal to the stock market capitalization) and privateb (equal to total amount of outstanding domestic debt). The latter two variables are taken from Beck et al. (2000). Srights refer to the anti-director rights as reported by LLSV (1998). T5 corresponds to the S&P Transparency and Disclosure index, however, the values are scaled to range only until five in order to be comparable srights. All models include industry dummies (defined at the two-digit sic-code) and region dummies (there are five regions: Europe; U.S., UK, Australia, New Zealand; Latin America; Asia; Japan, Singapore, Hongkong). T-values are reported in parentheses below the coefficients. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 3: Valuation Effects (Fama MacBeth)

Variable	(1) Low CG V(t)	(2) High CG V(t)	(3) Low SH V(t)	(4) High SH V(t)
E(t)	4.764***	7.662***	4.521***	7.887***
	(4.08)	(8.58)	(4.29)	(10.03)
dE(t)	-0.460	-1.305*	-0.719	-1.470**
	(-1.00)	(-2.22)	(-1.40)	(-3.17)
dE(t+1)	2.458***	3.707***	1.854***	3.782***
	(4.77)	(5.75)	(4.26)	(6.13)
dNA(t)	0.112	0.290	0.314	0.213
	(0.64)	(0.99)	(1.65)	(0.83)
dNA(t+1)	0.182	0.388*	0.120	0.356*
	(1.15)	(2.30)	(0.68)	(2.07)
D(t)	7.840***	9.285***	10.441***	7.804***
	(4.46)	(5.03)	(7.00)	(5.00)
dD(t)	3.436	-0.994	-0.064	1.950**
	(0.80)	(-0.82)	(-0.07)	(2.31)
dD(t+1)	9.059***	-1.950	4.767*	2.628
	(3.87)	(-0.82)	(1.87)	(1.31)
dV(t+1)	-0.191	-0.212	-0.224	-0.197
	(-1.08)	(-1.38)	(-1.16)	(-1.37)
dL(t)	0.879**	2.014***	0.859**	2.123***
	(3.30)	(5.15)	(2.42)	(4.60)
dL(t+1)	1.490*	2.113***	1.546**	1.994***
	(2.11)	(4.06)	(2.62)	(4.12)
dI(t)	3.159	1.371	-0.548	7.142**
	(1.38)	(0.53)	(-0.39)	(2.50)
dI(t+1)	-4.798	-7.943*	0.432	-8.664*
	(-1.67)	(-2.04)	(0.23)	(-2.04)
I(t)	-10.596***	-13.539***	-4.919***	-14.486***
	(-5.34)	(-7.19)	(-4.70)	(-7.67)
dRD(t)	-11.951	9.687*	10.359**	9.672
	(-1.58)	(1.95)	(2.37)	(1.75)
dRD(t+1)	-0.278	14.739***	8.614***	16.198***
	(-0.03)	(4.52)	(3.47)	(4.42)
RD(t)	9.378**	7.165***	5.375***	7.474***
	(2.38)	(6.56)	(4.55)	(5.81)
Constant	0.576***	0.307**	0.320***	0.352***
	(7.37)	(3.12)	(3.38)	(4.34)
R²	0.61	0.57	0.62	0.58
N	1,365	6,126	1,839	5,652
T	9	9	9	9

The regressions are estimated using the method of Fama and MacBeth (1973) for the period 1996 to 2006. The dependent variable in all specifications is V, the market value of the firm (measured as the sum of the market value of equity, long- and short-term debt). E relates to earnings before extraordinary items plus interest, and tax credits; A means total book value of assets. D is equal to the total dividend payments in a given year in U.S. dollar terms. Generally, all variables are deflated by total assets of the year t and in addition to the actual levels of the variables in year t, the lag and lead changes of the respective variables are also included as independent variables in the regression framework. The R^2 of the Fama MacBeth regression is the average value of the R^2 of the single years. T-values are reported in parentheses below the coefficients. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 4: Valuation Effects (Fama MacBeth): Combined

Variable	(1) Low SH Low CG V(t)	(2) Low SH High CG V(t)	(3) High SH Low CG V(t)	(4) High SH High CG V(t)
E(t)	5.436***	2.436***	2.474***	8.168***
	(3.78)	(6.56)	(3.64)	(8.83)
dE(t)	-1.364**	-0.323	0.721	-1.567**
	(-2.42)	(-0.46)	(1.06)	(-2.64)
dE(t+1)	1.891**	0.781*	2.501**	3.989***
	(2.84)	(2.29)	(3.35)	(5.92)
dNA(t)	0.286	0.218	0.438	0.284
	(1.04)	(1.18)	(1.86)	(0.98)
dNA(t+1)	-0.000	0.346	0.440	0.448**
	(-0.00)	(1.42)	(1.68)	(2.52)
D(t)	5.934	16.969***	12.607***	9.427***
	(1.76)	(10.45)	(15.88)	(4.77)
dD(t)	1.591	0.173	-0.114	0.441
	(0.37)	(0.11)	(-0.02)	(0.36)
dD(t+1)	6.505	5.931*	9.770***	-0.711
	(1.80)	(1.96)	(4.41)	(-0.29)
dV(t+1)	-0.051	-0.402	-0.346*	-0.191
	(-0.25)	(-1.85)	(-2.11)	(-1.26)
dL(t)	1.050**	0.755	0.918	2.297***
	(2.44)	(1.43)	(1.59)	(4.98)
dL(t+1)	1.782**	1.948**	0.331	2.200***
	(2.53)	(2.32)	(0.45)	(4.76)
dI(t)	1.335	-0.124	0.722	3.460
	(0.38)	(-0.06)	(0.14)	(1.02)
dI(t+1)	-3.446	6.521**	-5.358	-12.538**
	(-1.11)	(2.36)	(-1.03)	(-2.86)
I(t)	-9.619***	2.845	-6.462***	-15.275***
	(-5.14)	(1.67)	(-4.87)	(-5.84)
dRD(t)	-3.253	18.998*	-83.331	9.310
	(-0.45)	(2.14)	(-1.78)	(1.67)
dRD(t+1)	3.647	15.254***	8.563	15.754***
	(0.45)	(3.69)	(0.23)	(4.46)
RD(t)	1.143	7.140***	84.737**	6.908***
	(0.30)	(3.65)	(2.86)	(5.89)
Constant	0.472***	0.229**	0.617***	0.302**
	(4.20)	(2.73)	(9.63)	(3.01)
R^2	0.70	0.71	0.75	0.60
N	762	1,077	603	5,049
T	9	9	9	9

The regressions are estimated using the method of Fama and MacBeth (1973) for the period 1996 to 2006. The dependent variable in all specifications is V, the market value of the firm (measured as the sum of the market value of equity, long- and short-term debt). E relates to earnings before extraordinary items plus interest, and tax credits; A means total book value of assets. D is equal to the total dividend payments in a given year in U.S. dollar terms. Generally, all variables are deflated by total assets of the year t and in addition to the actual levels of the variables in year t, the lag and lead changes of the respective variables are also included as independent variables in the regression framework. The R^2 of the Fama MacBeth regression is the average value of the R^2 of the single years. T-values are reported in parentheses below the coefficients. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 5: Valuation Effects (Fixed Effects with Time and Year Dummies)

Variable	(1) Low CG V(t)	(2) High CG V(t)	(3) Low SH V(t)	(4) High SH V(t)
E(t)	4.886***	5.427***	3.565***	5.880***
	(5.26)	(8.41)	(4.62)	(8.68)
dE(t)	-0.844**	-0.587**	-0.253	-0.876***
	(-2.30)	(-2.46)	(-1.07)	(-3.28)
dE(t+1)	2.520***	3.149***	2.040***	3.205***
	(7.01)	(8.58)	(6.07)	(8.36)
dNA(t)	0.036	0.398***	0.090	0.371***
	(0.33)	(3.28)	(0.94)	(2.83)
dNA(t+1)	0.515***	0.653***	0.536***	0.674***
	(3.76)	(5.66)	(5.31)	(5.27)
D(t)	-7.776**	4.209	-2.713	1.260
	(-2.04)	(1.36)	(-0.62)	(0.41)
dD(t)	1.747	-1.202	2.097	-0.306
	(1.42)	(-0.92)	(1.49)	(-0.30)
dD(t+1)	-0.723	-2.618	0.550	-1.652
	(-0.35)	(-1.55)	(0.28)	(-0.94)
dV(t+1)	-0.320***	-0.242***	-0.267***	-0.256***
	(-7.64)	(-7.70)	(-9.96)	(-7.80)
dL(t)	0.346	0.627**	-0.064	0.834***
	(0.83)	(2.37)	(-0.21)	(2.95)
dL(t+1)	0.628**	1.090***	0.323	1.210***
	(2.47)	(3.87)	(1.14)	(4.20)
dI(t)	2.442**	-3.286**	0.300	-0.488
	(2.03)	(-2.11)	(0.31)	(-0.24)
dI(t+1)	-4.838**	-13.584***	-4.743***	-14.140***
	(-2.44)	(-4.77)	(-3.05)	(-4.31)
I(t)	-8.081***	-8.057**	-8.709***	-8.152**
	(-3.23)	(-2.25)	(-4.13)	(-2.04)
dRD(t)	-0.193	4.293	8.996	2.694
	(-0.05)	(1.60)	(1.63)	(1.00)
dRD(t+1)	-6.141	11.427***	-0.245	13.074***
	(-0.92)	(4.50)	(-0.05)	(4.82)
RD(t)	-5.584	9.698***	-6.319	12.575***
	(-0.46)	(2.83)	(-1.05)	(3.45)
Constant	1.305***	0.782***	1.424***	0.938***
	(8.67)	(5.50)	(10.77)	(6.45)
R²	0.44	0.36	0.36	0.37
Groups	185	771	245	711
N	1,365	6,126	1,839	5,652

The regressions are estimated using a firm fixed-effects model including time dummies for the period 1996 to 2006. The dependent variable in all specifications is V, the market value of the firm (measured as the sum of the market value of equity, long- and short-term debt). E relates to earnings before extraordinary items plus interest, and tax credits; A means total book value of assets. D is equal to the total dividend payments in a given year in U.S. dollar terms. Generally, all variables are deflated by total assets of the year t and in addition to the actual levels of the variables in year t, the lag and lead changes of the respective variables are also included as independent variables in the regression framework. The R^2 of the fixed effects regression represents the R^2 of the within dimension. Robust standard errors are clustered at the firm-level. T-values are reported in parentheses below the coefficients. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 6: Valuation Effects (Fama MacBeth): Cash-Level

Variable	(1) Low CG V(t)	(2) High CG V(t)	(3) Low SH V(t)	(4) High SH V(t)
E(t)	4.882***	7.699***	4.664***	7.917***
	(4.57)	(8.36)	(4.67)	(9.73)
dE(t)	-0.229	-1.187**	-0.540	-1.330***
	(-0.59)	(-2.52)	(-1.20)	(-3.57)
dE(t+1)	2.666***	4.060***	2.225***	4.083***
	(5.20)	(6.18)	(4.16)	(6.46)
dNA(t)	0.180	0.588**	0.405**	0.491*
	(0.99)	(2.50)	(2.33)	(2.13)
dNA(t+1)	0.158	0.312*	0.057	0.297
	(1.07)	(1.92)	(0.32)	(1.67)
D(t)	6.966***	9.415***	9.033***	7.376***
	(4.53)	(4.76)	(6.11)	(4.09)
dD(t)	2.926	-1.680	-1.244	2.071**
	(0.68)	(-1.05)	(-1.60)	(2.75)
dD(t+1)	8.830***	-3.208	2.972	2.192
	(4.28)	(-1.24)	(1.12)	(0.96)
dV(t+1)	-0.124	-0.176	-0.203	-0.160
	(-0.93)	(-1.30)	(-1.20)	(-1.25)
L(t)	0.904***	2.185***	1.841***	1.898***
	(4.04)	(8.49)	(7.20)	(7.62)
dI(t)	2.622	0.807	-1.180	5.627*
	(1.18)	(0.34)	(-0.92)	(2.25)
dI(t+1)	-5.934	-3.730	2.951	-6.643
	(-1.72)	(-1.04)	(1.29)	(-1.58)
I(t)	-10.226***	-6.885***	-3.651**	-8.857***
	(-6.38)	(-5.03)	(-3.19)	(-5.75)
dRD(t)	-7.723	11.083**	13.280**	11.442*
	(-0.95)	(2.36)	(2.36)	(2.12)
dRD(t+1)	1.138	13.984***	6.657*	15.675***
	(0.15)	(4.69)	(2.11)	(4.64)
RD(t)	9.190**	5.678***	4.122***	6.077***
	(2.43)	(5.22)	(3.70)	(4.45)
Constant	0.510***	0.015	0.136	0.115*
	(7.34)	(0.18)	(1.32)	(1.95)
R²	0.59	0.58	0.63	0.58
N	1,371	6,120	1,845	5,646

The regressions are estimated using the method of Fama and MacBeth (1973) for the period 1996 to 2006. The dependent variable in all specifications is V, the market value of the firm (measured as the sum of the market value of equity, long- and short-term debt). E relates to earnings before extraordinary items plus interest, and tax credits; A means total book value of assets. D is equal to the total dividend payments in a given year in U.S. dollar terms. Generally, all variables are deflated by total assets of the year t and in addition to the actual levels of the variables in year t, the lag and lead changes of the respective variables are also included as independent variables in the regression framework. The R^2 of the Fama MacBeth regression is the average value of the R^2 of the single years. T-values are reported in parentheses below the coefficients. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 7: Excess Cash

Means	High CG	Low CG	T-test (p-value)
excess cash	-0.25	0.10	0.205
netacquisitions	350,098	82,485	0.000
ebitda	2,040,650	1,093,513	0.000
capex	1,112,204	605,532	0.000
div	296,726	112,723	0.000
rdex	319,201	160,842	0.001

This table shows t-tests for equality of means for the year 2001 for all firms separated into low and high corporate governance groups (by defining high and low at the median of the S&P Transparency and Disclosure index). Excess cash is calculated similar to the paper by Opler et al. (1999). This variable is calculated in two-steps approach. The first stage involves a regression of the log of cash on many independent variables which are known to determine the level of cash. In a second step, the residual is calculated from the previous regression and taken to the exponential in order to obtain a ratio of excess cash divided by net assets. Netacquisitions refers to net assets from acquisitions as defined by Worldscope. Ebitda stands for earnings before interests, taxex, and depreciation. Capex is the abbreviation for capital expenditures and is simply the ratio of capital expenditures (as reported in the balance sheet) divided by net assets. Div is equal to the dividend payments in dollar amounts. Rdex refers to expenditures for research and development in U.S. dollar terms. A t-test for the equality of coefficients is performed and the p-values are reported in the fourth column.