Creditor Rights and Cash Levels

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Abstract

This study examines the impact of creditor rights on cash holdings of firms from 53 countries. We find that the influence of creditor rights on cash holdings depends on country governance. In countries with poor overall governance, we observe that as creditor rights increase, the level of cash increases. We argue that management in these countries prefers to hold more cash when creditor rights are strong because they fear the consequences of financial distress and decide that it is prudent to perform risk reducing activities including holding more cash. On the other hand, we find that cash levels of firms residing in countries with strong country governance are not positively related to creditor rights. We believe that in these cases, creditors are not concerned with their money being expropriated and instead prefer companies to follow strategies of long run value maximization.

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1. Introduction

Cash and short-term investments represent a significant fraction of total assets. We find that firms from 53 countries during the period 1980-2006 held on average 16% of their total assets in cash and short-term investments. Companies in our sample from the US, Singapore, Norway, Jordan, Japan, Israel, Hong Kong, and China all held on average over 17% of their assets in cash and short-term investments, indicating that having sizeable cash balances is a worldwide phenomenon and occurs in both developed as well as less developed countries. The average cash holdings increased in our sample from 7.9% in 1980 to 18.1% in 2006. The fact that firms hold so much of their assets in cash is a little surprising since the expected return for cash should be lower than for most other assets.

There are many theories to explain why firms hold cash. The tradeoff theory seems the most popular as the firm trades of the benefits and costs of holding cash. Our paper focuses on whether creditor rights affects the amount of cash a firm holds.

Creditors wield a significant influence over the operations of the firm. Traditionally many researchers have viewed their powers as occurring primarily during periods of bankruptcy or perhaps in financial distress. More recently, scholars have documented the influence of creditors in investment decisions, capital structure choices, and innovative activities. Management clearly wants to avoid being in financial distress under any situation but the consequences to management are worse the more powers creditors possess. As the firm approaches or enters financial distress, the more powers creditors have the more they will be involved in day-to-day decisions and thus management will lose some decision making. If the financial situation of the

firm worsens even more, the existing management may not have the ability to resurrect the firm and instead may simply lose their jobs.

The more powers/rights creditors have the more management may be tempted to engage in risk reducing activities. One such strategy may be to increase the percentage of cash the firm has and this approach at least in the short-run should reduce the likelihood of non-payment to creditors. However, this strategy of "excess" cash has a cost in that these funds will be employed in activities with a small-expected payoff and management will not be pursuing a strategy of long-run shareholder maximization.

In this paper, we investigate whether firms, in general, hold more cash when creditor rights are strong. In addition, we see if the relationship between creditor rights and cash levels depends on country governance. When country governance is poor, creditors may be especially worried about management expropriating funds. In situations where creditors have lots of power and country governance is poor, management may see it in their best interests to pursue strategies that limit the chance that creditors will not be paid and holding sufficient cash is one of these strategies. On the other hand, when country governance is good, creditors may not worry very much about expropriation and thus encourage managers to pursue more value maximizing strategies that should be more beneficial to firms and creditors in the long run.

The results for our entire sample indicate that strong creditor rights are not associated with more cash holdings. In fact, the coefficient is statistically negative. However, when the sample is broken down into high and low governance countries our findings change. When country governance is weak, there is a positive relationship between cash holdings and creditor rights. Our results are consistent with our hypothesis that in this environment, (low country governance) creditors are worried about expropriation of their funds and if creditors possess

sufficient rights, managers will see that it is in their best interests to hold more cash. No such relationship between creditor rights and cash holdings exists for firms residing in high governance countries.

Many studies examine the impact of either shareholder rights [for example, Pinkowitz et al. (2006) or Dittmar et al. (2003)] or firm governance provisions (for example, Dittmar and Mahrt-Smith (2007) or Kalcheva and Lins (2007) on cash levels. Our paper, in contrast, researches the importance of country governance in cash holdings. Using country governance indicators focuses more on the importance of the rule of law in general and whether countries in general enforce their laws.

We find that stronger country governance scores by themselves lower the amount of cash held by firms. More importantly, we show that country governance interacts with creditor rights to influence cash holdings.

We observe that higher shareholder rights are generally associated with lower levels of cash as previous researchers have found. This effect is most pronounced when country governance is weak. Shareholders in these settings (low country governance) use their powers to "force" management to hold less cash. Presumably, when country governance is strong there are firm governance mechanisms that limit management from having too much cash and strong shareholder rights are not necessary.

The influence of creditor rights is distinct from shareholder rights. When shareholder rights are included in our regressions, we find that creditor rights also impacts on the levels of cash holdings. The influence of creditor rights on cash holdings is stronger than the influence of shareholder rights on cash levels as there are a number of regressions where the impact of

shareholder rights is either insignificant or changes signs when the definition of cash is changed. In contrast, creditor rights have a very consistent influence on cash holdings.

Our paper also shows the importance of leverage in determining the level of cash. Our results indicate that the more leverage the lower the amount of cash. Our findings are consistent with the disciplinary role of debt [Jensen (1986)] in that the more debt the firm has the more it must pay out, thereby reducing the amount of excess cash. When industry adjusted leverage is substituted for firm leverage, our results continue to hold and this provides additional support for the disciplinary role of debt as these firms have more debt than their industry counterparts and hold, on average, less cash than their rivals. Finally, when we look at the subset of firms that hold either no debt or less than five percent in debt, these companies hold, in general, more cash which suggests that no or little debt results in excess cash.

Many of our other findings are consistent with the literature. Firms with greater market-to-book ratios (a proxy for investment opportunities) hold more cash. Firms that have assets that can "substitute" relatively easy for cash hold less cash. Firms that perform more R&D hold more cash. Firms with more cash flow hold less cash. Our results concerning firm size, asymmetric information, and stock market capitalization do not have consistent signs throughout all of our regression specifications. We do not detect a significant relationship between ownership and cash holdings.

The rest of the paper is as follows: in section 2, we briefly review some relevant literature and in section 3, we present our hypotheses, data definitions and sources, and methodology. In section 4, we first present our basic regressions. We next explore the influence of debt on cash levels and finally we present results that explicitly control for the fact that cash and debt are likely jointly determined. Finally, in section 5, conclusions are offered.

2. A Brief Review of Relevant Literature

In this section, we review two areas: (1) determinants of cash holdings and (2) the influence of creditor rights on corporate decision-making.

Cash Holdings

The tradeoff model[1] of corporate cash holding provides a useful way to examine the determinants of cash holdings[2]. Firms equate the marginal cost of holding cash with its marginal benefit. The costs of holding cash consist of the lower return on cash relative to other more productive assets and the possibility that managers will use the cash unwisely. Managers could spend cash on unnecessary perks, negative net present value projects, or expropriate the cash. As Myers and Rajan (1998) point out, cash can disappear easier than physical assets like plant and equipment.

The benefits for holding cash are the savings on transaction costs if firms would have to raise funds or liquidate assets in order to make payments. In addition, firms benefit if they have liquid assets to finance investments if the alternative would involve raising funds at a high cost.

A number of implications emerge as a result of the tradeoff model. First, firms that have relatively more asymmetric information would be expected to have higher cash holdings because the cost of raising funds should be higher for them[3]. As a result, firms engaged in lots of R&D or whose activities are not very transparent to investors should have more cash. Dittmar et al. (2003) report evidence consistent with this hypothesis.

Second, in a similar vein, firms with riskier cash flows should hold more cash since these firms are more likely to have shortfalls in cash and having more cash would reduce the

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[1] Another model attempting to explain cash holdings is the financing hierarchy hypothesis. See Opler et al. (1999) for a description.
[2] See also Opler et al. (1999) and Dittmar et al. (2003).
[3] See Drobetz et al. (2010) for a discussion of information asymmetry and the value of cash.

probability of having to go to the markets to acquire it. Opler et al. (1999) and Dittmar et al. (2003) report evidence supporting this conjecture.

Third, larger firms would expected to have less cash since they probably have more access to capital markets and on average are able to obtain funds cheaper (there are economies to scale in raising funds) than smaller firms. Dittmar et al. (2003) find using international data that larger firms in fact, hold less cash and Opler et al. (1999) show the same for US firms.

Fourth, firms with more investment opportunities should hold more cash because the lost to them of not being able to take advantage of these opportunities is greater than for firms with few worthwhile investments. Firms with high market-to-book ratios are generally assumed to have high investment opportunities. Opler et al. (1999) observe that firms with many growth opportunities hold more cash as does Dittmar et al. (2003).

Fifth, firms with lots of close substitutes to cash should be able to have lower levels of cash. If necessary, these firms could sell these substitutes without incurring a substantial penalty. Opler et al. (1999), Kalcheva and Lins (2007) and Dittmar et al. (2003) find support for this hypothesis.

Sixth, firms with high cash flow should be able to have smaller cash holdings. All things being equal, these firms are less likely to have to raise cash to pay for future expenses/payments because of their higher cash flow. On the other hand, if increased cash flow is not spent/paid out, then greater cash flow would be associated with increased cash holdings. Opler et al. (1999), Kalcheva and Lins (2007), and Dittmar et al. (2003) find evidence consistent with the second hypothesis (greater cash flow greater cash holdings).

Seventh, firms with agency problems will probably have more cash. Managers in these firms may waste resources on perks or projects with negative net present values or worse, divert

funds to themselves through tunneling and having excess cash makes it easier to accomplish this. Holding more cash than necessary as opposed to having funds tied up in excess fixed assets makes it easier to divert funds. Also having excess cash provides more flexibility for managers. They can spend when they want to.

The level of governance in a country should affect the likelihood that a firm would have agency issues and as a consequence, the level of cash. Firms from countries where managers are accustomed to expropriating funds from outside shareholders and face few penalties for doing so would be expected to have greater cash holdings. On the other hand, firms residing in countries with strong shareholder rights/governance provisions that can curtail the powers of controlling shareholders/managers would be expected to hold less cash.

Dittmar et al. (2003) find evidence consistent with this idea. In their study, companies in countries with poor shareholder protection hold almost twice as much cash as companies located in countries with good shareholder protection. On the other hand, Harford et al. (2008) find that firms with weak corporate governance hold smaller amounts of cash.

Other studies have compared the value of cash in good governance companies with the value in companies with poor governance. Dittmar and Mahrt-Smith (2007) observe that the value of cash in good governance companies is approximately double the value in poor governance companies. These authors argue poor governance firms spend (in some cases on acquisitions[4]) excess cash quicker than in good governance firms. These expenditures lead to poor operating performance. Pinkowitz et al. (2006) also show that cash is worth considerably more in countries with good investor protection than in countries with poor investor protection. These authors also indicate that dividends are worth more for firms residing in countries with low investor protection than for firms located in countries with high investor protection. These

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[4] See Hartford, Mansi, and Mawell (2008) for more evidence on poor governance firms spending on acquisitions.

results suggest that minority investors worry about the possibility of firms expropriating their funds in poor governance countries and dividend payments reduce the possible amount of expropriation. Fresard and Salva (2010) observe that investors place a higher value on excess cash for foreign companies that list on US exchanges than for similar firms in their home country. These findings are consistent with the idea that investors place additional value for firms that operate in countries with better governance practices.

Debt can also used to reduce agency issues. Making a commitment to pay interest and principle should reduce the amount of excess cash. D'Mello and Miranda (2010) find that after a formerly unlevered firm issues debt its cash ratio falls significantly. Their results are consistent with the fact that agency costs influence cash levels and that debt can reduce agency issues.

Eight, access to cheap funds should reduce the level of cash holdings. If firms can easily obtain funds at a reasonable cost, they can get by with a lower level of cash. Opler et al. (1999) find evidence consistent with this hypothesis[5].

Creditor Rights

Researchers have recently documented that creditors possess many powers. Traditionally the emphasis in finance has been on the powers of creditors during bankruptcy or during periods of financial distress. More recently, researchers have noted that creditors have significant influence on corporate policies especially for firms that have private credit agreements as opposed to firms that just use the public bond markets. When a firm violates a private credit agreement (for example, acquires an adverse credit rating or the ratio of debt to cash flow increases too much), the agreement is generally renegotiated (as opposed to being called) but the

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[5] D'Mello, Krishnaswami, and Larkin (2008) study the level of cash holdings by examining the cash allocations associated with spin-offs. Many of their findings are similar to other studies that examine the determinants of cash levels. One noticeable difference between their results and others is that investment opportunities as proxied by market-to-book ratios were not significant in determining cash levels while in most other studies there is a negative relationship between cash levels and investment opportunities.

terms of the agreement change as additional restrictions are imposed on the firm. It is important to note that the great majority of these violations do not lead to bankruptcy.

As a result of these violations and the additional restrictions, a number of corporate policies are affected. Nini et al. (2009) find that investments are reduced[6]. Roberts and Sufi (2009) report that debt policy is affected with the amount of debt reduced. Nini et al. (2009) indicate that following violations there is an increase in CEO turnover, reduction in corporate payouts (repurchases and dividends), and an increase in cash balances[7].

Acharya et al. (2009) observe that stronger creditor rights result in more diversifying acquisitions, and Acharya and Subramanian (2009) show that strong creditor rights are associated with less innovation.

3. Hypotheses, Data Sources, and Methodology

Hypotheses

We have previously stated that creditors have powers beyond bankruptcy and they can and do influence corporate decision-making. In this section, we argue first that the more rights creditors possess, the more likely management will perform risk reducing strategies. Second, we hypothesize that under conditions of poor country governance, creditors will demand that management hold more cash.

The more rights that creditors have the worse are the consequences to management should the company face financial distress/bankruptcy. Violating covenants will result in unwanted consequences. Management, for example, may have to reduce important investment

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[6] They show that 32% of their private credit agreements had restrictions on future investments while Billett et al. (2007) show that only 5% of public bond indentures have similar restrictions.

[7] Two earlier studies on the effect of creditor rights on cash balances reach differing conclusions. Guney et al. (2003) find that higher creditor rights are associated with higher cash holdings while Ferreira and Vilela (2004) observe just the opposite.

opportunities or change its capital structure to a less desirable one. Managers will therefore lose some of their powers/decision making. If the financial problems get worse, the company may find that it will go into bankruptcy. In this case, the consequences to management are worse and include the possibility of dismissal by law. Clearly, no management wants to get into financial distress or bankruptcy. But since the consequences to managers in countries with strong creditor rights are worse than under weak creditor rights, managers may take additional steps to reduce risk. Holding more cash is one risk-reducing strategy in the short-term as it reduces the probability of bankruptcy/financial distress.

Under conditions of poor country governance, creditors will be very reluctant to lend to firms because they will naturally worry that their funds may be expropriated or used unwisely. In these situations, if creditors have sufficient powers they will demand that firms increase the probability that they (creditors) will be repaid. Holding excess cash that could be used to payoff creditors will help satisfy creditors. In addition, management will likely agree to this strategy since they want to avoid bankruptcy and its consequences to them.

Holding more cash than necessary may be justified under conditions of poor country governance but it comes with a price. Holding excess cash is not consistent with long-run shareholder maximization as the yields on cash are lower than other assets. Therefore, in countries with good governance, it would be "unnecessary" to hold excess cash. The threat of expropriation or outright theft would be minimal. There are other governance mechanisms (for example, the labor market for executives) in countries with good governance that can "force" management not to spend unwisely.

In summary, our hypothesis is that in countries with poor governance, there will be a positive relationship between creditor rights and cash levels. This association will not be present in countries with good governance.

Data Sources

For creditor rights we use the index from Djankov et al. (2007) that rates the powers of secured lenders during bankruptcy for the year 2003. Countries are scored according to four attributes – "(1) whether there are restrictions, such as creditor consent, when a debtor files for reorganization; (2) whether secured creditors are able to seize their collateral after the petition for reorganization is approved, that is, whether there is no automatic stay or asset freeze imposed by the court; (3) whether secured creditors are paid first out of the proceeds of the liquidating a bankrupt firm; and (4) whether an administrator, and not management, is responsible for running the business during reorganization" (page 302).

We use a broad definition of governance from the World Bank[8]. They define governance as "the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored, and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them" (page 5). Six dimensions are used to measure this definition: (1) voice and accountability, (2) political stability and absence of violence, (3) government effectiveness, (4) regulatory quality, (5) rule of law, and (6) control of corruption (page 6). Our scores for each country are the means for each country for the years 1996, 1998, 2000, and 2008-2002.

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[8] See Kaufmann et al. (2009).

We include a variable for shareholder rights in our models. This index is from Djankov et al. (2008) and measures the legal protection afforded to minority shareholders against expropriation by corporate insiders for the year 2003.

Our financial data comes from *Worldscope.* Utilities and financial firms are excluded due to possible regulatory influences. Since *Worldscope* does make some recording errors, we winsorize the data. The top and bottom one percent for all variables are set equal to the values for the 99 and 1 percent levels respectively for these variables. Thus, we eliminate extreme outliers.

Basic Model

The following regression equation is our basic model to examine the impact of creditor rights on cash levels. Endogeneity concerns are addressed later in the paper.

$$CASH_{it} = b_0 + b_1 CR_j + b_2 SR_j + b_3 GOV_j + b_4 MB_{it} + b_5 RSIZE_{it} + b_6 NWC_{it} + b_7 CFLOW_{it} + b_8 R\&D_{it} +$$

$$b_9 LEV_{it} + b_{10} AI_{it} + b_{11} STOCKCAP_{jt} + b_{12} OWN_{jt} + \sum YEAR + \sum INDUSTRY + e_t \qquad (1)$$

The literature has used to two definitions to define both cash and the corresponding independent variables. Listed below are the general definitions for each of the variables in equation 1 and precise definitions for all the variables are given in Table 1.

Where $CASH_{it}$ = Cash ratio at time t for firm i

CR_j = Creditor Rights for country j from Djankov et al. (2007)

SR_j = Shareholder Rights for country j from Djankov et al. (2008)

GOV_j = Governance Score for country j from Kaufmann et al. (2009)

MB_{it} = Market-to-Book Ratio for time t for firm i

$RSIZE_{it}$ = LN of Real Total Assets in US$ for time t for firm i

NWC_{it} = Net Working Capital for time t for firm i

$CFLOW_{it}$ = Cash Flow for time t for firm i

R&D$_{it}$ = Research and Development expenses for time t for firm i

LEV$_{it}$ – Leverage for time t for firm i

AI$_{it}$ = Asymmetric Information for time t for firm i

STOCKCAP$_{t}$ = Stock Market Capitalization for country j for time t

OWN$_{jt}$ = Ownership structure for time t for firm i

YEAR = A set of year dummies

INDUSTRY = A set of industry dummies

[Table 1 about here]

We include two variables in equation 1 that were not discussed earlier. For neither of these variables is there a clear-cut hypothesis on how it should affect cash holdings. The first is ownership (OWN$_{jt}$) defined as the ownership structure for time t for firm i and is the percentage of shares held by insiders. Ownership structure may influence cash holdings. At some level of ownership, increased ownership on the part of management/insiders may increase the alignment of managers' interest with those of stockholders. In that case, cash should be negatively related to ownership as shareholder maximization suggests a lower amount of cash than if firms were run by managers dominated by self-interest. On the other hand, too much ownership by managers may lead to entrenchment and management may increase the percentage of cash holdings. This would be expected if management becomes more risk averse because of being more entrenched. In some of our regression specifications, we add the square of the ownership variable in addition to the ownership variable to see if we can capture the two possible effects (increased alignment and entrenchment) of the ownership variable. Ozkan et al. (2004) find that ownership structure does affect cash holdings for a sample of British firms.

The second variable is leverage (LEV$_{it}$) and equals the ratio of short-term debt and long-term debt) to total assets for time t for firm i. As Opler et al. (1999) points out under the tradeoff

model there is no clear prediction on how leverage should affect cash holdings. On one hand, it is possible to argue that more debt increases the odds of bankruptcy and therefore firms should hold more cash. On the other hand, increased debt may result in less cash if debt acts to reduce agency issues. Empirically debt appears to negatively affect the level of cash as shown in Opler et al. (1999). The effects of leverage on cash levels will be discussed in greater detail below.

We use the two different definitions for cash (as well as some of the independent variables) to see if our main findings are robust to different definitions of cash holdings.

Our initial model is run using OLS with robust standard errors. In some of the regressions, we control for endogenity by using the lag of the independent variables. Results using simultaneous equations are discussed later in the paper.

4. Results

Data Description

Table 2 gives descriptive statistics for cash, governance, creditor rights, and shareholder rights by country. The number of observations for the US represents a little over 41% of the total so it is not surprising that the US scores are close to the mean and median.

[Table 2 about here]

Table 3 presents information for the two different definitions for cash by year. Table 4 provides descriptive statistics for the variables in our model for three different samples: (1) the entire sample, (2) low governance countries, and (3) high governance countries.

From Table 2 we observe that cash and short-term investments (definition 1) average 16% of total assets for the entire sample or about one sixth of total assets are cash and short-term

investments. The median is a bit smaller (.089). Table 3 indicates that the mean percentage of cash and short-term investments to total assets is 14.1% when the US observations are excluded and this shows that cash levels are high throughout the world. Firms in Hong Kong and Israel have averages exceeding 20% while companies in Argentina, Chile, Colombia, Czech Republic, Greece, India, Mexico, New Zealand, Portugal, Russia, Slovakia, Spain, Sri Lanka, Thailand, and Venezuela have averages below 10%[9].

Scores for creditor rights range from zero to four with a mean (median) of 1.8 (1.0). Colombia, France, Mexico and Peru have the lowest score (0) while Hong Kong, New Zealand and the United Kingdom have the highest score (4). The United States has a score of one.

Scores for shareholder rights range from one to five with a mean (median) of 3.7 (3). Countries with the highest score are Brazil, Chile, Hong Kong, India, Ireland, Malaysia, Singapore, South Africa, Spain and United Kingdom. Venezuela, China, and Jordan have the lowest score while the US has a score of three.

Governance scores range from -1.52 for Sudan to 1.86 for Finland with a mean (median) of 1.2 (1.39). Denmark, Luxembourg, Netherlands, New Zealand, Norway, Sweden, and Switzerland have particularly high scores and most of these countries are located in Europe. Indonesia, Pakistan, Russia, and Venezuela have very low scores. The US score is 1.39.

For the entire sample, the mean (median) market-to-book ratio is 1.8 (1.28) while the ratio of cash flow to assets averages .024 (median = .057). Mean leverage is about 22% and insiders on average own about 39% of the stock.

Table 3 shows that cash levels have increased steadily over time. For the entire sample, the cash ratio (definition 1) in 1980 was .079 and by 2006 it was .181, peaking in 2004-2005 at

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[9] The number of observations for some of these countries is relatively little so for these countries the findings should be viewed as tentative.

.189. Over the entire period, cash levels increased by 3.8% per year. Similar results can be seen for the sample of all non-US companies[10]. Our findings are similar to Bates et al. (2009) that show a big increase in average cash holdings for US firms and argue that most of the increase can be explained by increases in the determinants of cash holdings.

[Table 3 about here]

Correlation Analysis

Panel B of Table 4 presents the correlations for the variables used in our regressions. The correlations are similar regardless of which definition is used for cash and which definitions are employed for the independent variables. Like previous studies, we find a strong positive relationship between market-to-book ratios and cash holdings, which suggests that more cash is held, the greater are the investments opportunities. In addition, there is negative association between real size and cash holdings indicating that larger firms generally have less cash. Net working capital has a negative correlation with cash holdings, suggesting that these assets can be more easily be substituted for cash than fixed assets can. R&D has a positive correlation with cash that indicates that firms that do a lot of R&D prefer to have more cash. The association between asymmetric information has a positive association with cash that suggests that firm with more asymmetric information hold more cash on average than firms with less asymmetric information. Cash flow has a negative relationship with cash as does leverage.

The relationship with creditor rights and cash holdings is negative but less than 10%. A similar relationship exists for cash levels and shareholder rights. The correlation for governance is positive with cash (using the first definition) but negative using the second definition. In both

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[10] It should be noted that for the first few years the number of observations in the non-US sample is extremely small.

cases, these correlations are less than 5%. Finally, ownership has a small negative correlation with cash.

It should be pointed out that there is a strong positive correlation between shareholder rights and creditor rights. More often than not countries that have strong (weak) creditor rights also have strong (weak) shareholder rights. The correlations between our governance scores and either creditor rights or shareholder rights are both small in magnitude.

[Table 4 about here]

Basic Regression Results

Tables 5 and 6 present our initial regression findings. In each table we give the results using the two definitions for cash (definition 1 in Panel A and definition 2 in Panel B). All observations are used in Table 5 and only non-US observations are given in Table 6. We report the results from Table 6 since a little over 40% of our sample is US firms and it is important to see if our results are being driven by the US observations. All the variables in the first eight columns are contemporaneous. The first three columns give the results from simple regressions where only one independent variable is used (creditor rights, shareholder rights or governance). The next two columns present results for the full model (column 5 with all variables included and column 4 where the variable shareholder rights is excluded).

In each of the tables, we also report our findings when we lag the independent variables[11] (columns 9-11). We do this to address possible endogeneity issues as leverage and cash holdings) may be jointly determined.

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[11] Creditor rights, shareholder rights, and governance scores are constant for each firm for each country and hence lagging them does not change their value.

We follow a conservative approach in reporting the results. Since we utilize many observations, it is relatively simple to obtain significance. Before we "claim" that a particular variable has a negative or positive impact on cash holdings we first make sure that it has a similar impact across many different specifications (samples and dependent variables)[12].

Creditor Rights

In Tables 5 and 6 creditor rights has a reliably negative coefficient. This suggests that greater creditor rights are associated with less cash holdings. Creditors, in general, do not use their powers to "force" management to hold more cash. Creditors may realize that holding cash has a cost (lower return) and that in general it is better for management in the long run to pursue a value maximization strategy. Holding more cash than necessary may increase the odds of being repaid in the short run but it is probably not the best strategy in the long run.

However, if creditors are worried that their funds could easily be expropriated (as in the case of countries with poor overall governance) they may want management to pursue strategies that increase the chance that they will be paid. Keeping more cash than necessary should increase the odds of creditors being paid. Management may likely oblige because they fear the consequences to them of going into financial distress or worse still bankruptcy. Stronger creditor rights increase the likelihood that management will lose decision making in financial distress and may get dismissed in bankruptcy.

Evidence consistent with this hypothesis is shown in Tables 5 and 6. In columns 6-11, we employ two additional variables. The first (LOW GOV) is a dummy that equals one if the firm is

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[12] We make a couple of exceptions to this rule if the results for all tables but one follow a consistent pattern. In that case, we highlight the general pattern and mention the one exception.

located in a country that is in the bottom quartile[13] of governance scores and zero otherwise. The second (CR * LOW GOV) is an interactive term that represents the product of the creditor rights score and the dummy LOW GOV. The coefficient on the interactive term is significantly positive in all specifications (entire sample, non-US sample, lagged independent variables and both definitions of cash) and this indicates that cash holdings increase with creditor rights in countries with low governance scores.

Tables 7 and 8 provide additional support for our hypothesis. In Table 7 (8) we report regressions using both definitions of cash holdings using only the bottom (top) quartile[14] of observations sorted by governance. Since the US governance score is near the median, no US observations are included in the top or bottom quartile. The coefficients for creditor rights are positive in Table 7 for low governance countries and negative in Table 8 for high governance countries.

[Table 5 and 6 about here]

Other Variables

The sign on the governance variable (Tables 5-6) has a distinctive pattern in all of our specifications. If it is the only variable in an equation, it has a positive significant sign while if it is part of the full equation then it has a significant negative sign. Our findings for the full equation suggest that increases in country governance scores lead to smaller cash holdings.

The variable shareholder rights (Tables 5-8) does not have a uniform effect on cash holdings. While the coefficient is usually negative and significant, it is not consistently negative throughout all of our specifications. A negative coefficient would be consistent with the work of

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[13] We also experimented using the bottom and top third and the findings are very similar.
[14] Our main results remain unchanged when we use the top and bottom third of the data instead of the top and bottom quarter to distinguish high and low governance.

Dittmar et al. (2003) and would suggest that in countries with low shareholder protection, outside shareholders are unable to get managers to reduce the amount of excess cash.

An examination of Tables 7-8 indicates that the effect of shareholder rights is evident in low governance countries but not in high governance countries. In high governance countries, firm governance mechanisms may be sufficient in general to control excess cash levels. However, in low governance countries, greater shareholder rights have the power to reduce average cash holdings.

Perhaps, more importantly, the inclusion of the shareholder rights in our equations does not negate the impact of creditor rights on cash holdings. In columns 5, 7, 10, and 11 in Tables 5-6 and columns 4 and 6 in Tables 8-9, we include both shareholder rights and creditor rights in the regressions. In no instances does the inclusion of shareholder rights in the regressions change the sign or the significance of creditor rights.

The market-to-book ratio always has a positive sign suggesting that firms with more investment opportunities generally hold more cash. Net working capital has negative sign indicating that these assets can act as substitutes for cash. They can be sold or liquidated rather easily and thus provide a buffer for cash.

 Cash flow has a generally negative coefficient (greater cash flow less cash holding). As a result of the increased cash flow, firms may simply increase their rate of spending or feel confident that they do not need to hold as much cash because they will soon being getting more cash flow. There is one exception to our general findings. In Table 7 (observations with low governance), we find that in some specifications (when the second definition of cash is used), the impact of increased cash flow on cash levels is positive. Our main result (increased cash flow smaller cash holdings) is contrary to the findings of Opler et al. (1999) and Dittmar et al. (2003).

R&D has a positive impact on cash holdings. Firms that perform a lot of R&D may have trouble raising funds cheaply and therefore they may find it advantageous to hold extra cash to minimize the chance of being short on cash. Also, R&D may be an indication of asymmetric information and firms with more asymmetric information would be expected to hold more cash because they may have trouble borrowing funds cheaply when they need to.

The variables measuring real firm size, asymmetric information, and stock market capitalization do not have consistent signs throughout our regression specifications. Like Oppler et al. (1999) we find that leverage has a significantly negative effect on cash holdings.

The variable for ownership does not have a consistent sign. If the dominant effect of increased ownership is to align management with stockholders' interests then we would expect additional ownership to reduce cash holdings. On the other hand, if additional ownership causes management to be entrenched, then additional ownership may cause firms to hold more cash as managers become more risk averse. In some regression specifications, we use the square of the ownership variable (OWNSQ) in addition to the ownership variable to see if we could capture both an incentive effect and an entrenchment effect. We did not find consistent signs in these specifications as well. We conclude that ownership variables do not have a major impact on cash holdings.

[Table 7 and 8 about here]

Additional Leverage Results

Our previous results indicate that leverage has a significantly negative effect on cash holdings. In this section, we explore further the role of leverage in determining cash levels and extend the work of D'Mello and Miranda (2010).

Jensen (1986) argues that leverage can reduce agency costs by forcing managers to use excess cash to pay off debt. We would expect that if Jensen is correct, then firms that employ more leverage than their rivals would have lower cash levels as these firms would use more of their cash to pay off interest and principle. To examine this conjecture, we compute the industry adjusted leverage (firm leverage – industry average) for all the firms in our sample.

In Panel A (all firms), Panel B (low governance countries) and Panel C (high governance countries) in Table 9, we replace leverage with industry adjusted leverage. We find that regardless of the definition used for cash holdings, the governance level of the country, or whether industry adjusted leverage is contemporaneous or lagged, industry adjusted leverage has a significantly negative impact on cash levels. These findings are consistent with the disciplinary role of debt.

On the other hand, companies with little or no debt might be expected to have more agency costs because the disciplinary role of debt is little/absent for these firms. In Panels A-C of Table 9, we run regressions where we replace the leverage variable with a dummy variable that equals 1 if the firm has leverage less than or equal to five percent. The findings in all of the panels indicate that firms with little or no leverage hold on average more cash than firms that hold more leverage. Our results are the same if our dummy variable is restricted to firms with no leverage (results not shown).

In summary, our results support the hypothesis of a negative relationship between leverage and cash. Our findings are consistent with the hypothesis that debt plays a disciplinary role in agency issues.

[Table 9 about here]

<u>Simultaneous Equation Models</u>

It is likely that debt and cash levels are jointly determined and therefore it is inappropriate to use OLS to estimate equation 1. In this section, we model leverage and cash in a two equation system.

The problem is that variables that affect leverage are very likely to affect cash holdings and vice versa. So, if we use a technique like 2SLS, it is necessary to find a variable (s) that is not in the cash (leverage) equation but affects leverage (cash).

We use a firm's effective tax rate (computed as the ratio of tax to pre tax income) as the variable that affects leverage but not cash. Taxes/tax rates should affect leverage as higher tax rates should induce a preference for debt according to the tradeoff theory of leverage. While theoretically taxes may influence cash levels[15], most models of cash holdings exclude this variable and as a result, we use the effective tax rate as an instrument for leverage.

Cash, R&D, cash flow, size, market-to-book, and effective tax rates are the variables used to explain leverage. We use all of the variables in equation 1 for our cash equation and as a result we have more than enough excluded variables from the leverage equation to act as instruments for cash.

Tests for endogeneity indicate that leverage is endogenous in the cash equation and cash is endogenous in the leverage equation[16]. A two-equation system therefore seems appropriate.

Table 10 presents the 2SLS results using both definitions for cash. We report only the results for the cash equation[17]. Our most important result and consistent with our prior findings is that the coefficient on Creditor Rights is positive for low governance countries. In countries

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[15] See, for example, Riddick and Whited (2009).
[16] See Wooldridge (2000) chapter 15.
[17] For the leverage equation, we find that cash and real size have significantly positive relationships with leverage while tax, market-to-book and R&D have significantly negative relationships. The association between cash flow and leverage is unstable.

where governance is poor, creditors demand that firms hold more cash, a finding that is not the case for high governance countries.

Using the second definition for cash, the coefficient on leverage is negative, consistent with a disciplinary role for debt. However, we did not find the same result using the first definition for cash.

Most of other findings are consistent with our OLS results. Market-to-book (+), net working capital (-), research and development (+), and cash flow (-) have the same signs as in Table 5. The sign for stock market capitalization has an inconsistent sign in Table 10 unlike the positive signs in Table 5.

[Table 10 about here]

5. Conclusions

The main purpose of our paper is to investigate the impact of creditor rights on cash holdings. We hypothesize that in countries with poor overall governance (corruption, little evidence of the rule of law prevailing, and problems with enforcement of the law) firms residing in countries with strong creditor rights will hold more cash than firms in countries with weak creditor rights. In these situations, management will fear the consequences of financial distress and decide that it is prudent to perform risk reducing activities including holding more cash. Creditors are in agreement with this strategy since they fear that their money may be expropriated. On the other hand, in countries with good governance, creditors are not as concerned with their money being expropriated and instead would prefer companies follow strategies of long run value maximization.

Our findings are in strong support of this hypothesis. Overall, there is a significant negative relationship between creditor rights and cash holdings in our samples. However, when the sample is broken down into high and low governance countries our hypothesis is supported. In countries with weak governance scores, there is a positive and significant effect of creditor rights on cash holdings. No such relationship is found in countries with high governance scores.

Our findings concerning creditor rights are robust to different definitions of cash, different country samples, and concerns about endogeneity. In particular, our results for creditor rights hold whether we use OLS with robust standard errors or a system of equations with 2SLS.

We find that strong shareholder rights generally reduce cash levels. This result is most evident in countries with low governance scores. Our findings also indicate that the influence of creditor rights is distinct from the influence of shareholder rights.

Our second important result is that leverage plays a disciplinary role. Firms that have lots of leverage or greater amounts of industry adjusted leverage hold less cash. Presumably, debt forces companies to pay out some of their excess cash. Our findings concerning debt are strong using OLS but not as strong using 2SLS.

Our findings also support prior research that argues that cash holdings are positively affected by R&D and investment opportunities and negatively affected by size and net working capital. Our results also support the idea that cash flow has a negative effect on cash levels.

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Table 1: Definitions of variables

Dependent Variables

CASH =   Cash ratio, with two different definitions
Definition 1 =   Cash and Short-term Investments / Total Assets
Definition 2 =   Ln (Cash and Short-term Investments / Net Assets)
Net Assets =   Total Assets – Cash and Short-term Investments

Independent variables
1. Country level variables:
CR =   Creditor Rights [Djankov et al. (2007)]
SR =   Shareholder Rights [Djankov et al. (2008)]
GOV =   World Governance Index, World Bank [Kaufmann et al., (2009)]
                       Average score on mean of six governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption) for 10 years (2008, 2007, 2006, 2005, 2004, 2003, 2002, 2000, 1998 and 1996).
LOW GOV=   Low Governance Countries
                       (Dummy variable being 1 for countries with governance index in the bottom quartile, otherwise 0)
STOCKCAP =   Annual Stock Market Capitalization [Beck et al. (2010)]
                       Value of listed shares to GDP, deflated by CPI (Consumer Price Index)
                       (For most of the sample countries this adapt is available after 1989)

2. Firm level variables that do not change according to the definition for cash:
MB =   Market to Book Ratio
                       [(Total Debt + Market Value of Equity) / Total Assets]
RSIZE =   Ln of Real Total Assets in US$
R&D =   Research and Development Expenses
                       (Research and Development Expenses / Sales)
LEV=   Leverage
                       [(Short-term Debt + Long-term Debt) / Total Assets]
INDADJLEV =   Leverage adjusted by the industry median leverage at country level.
LOWLEVDUM=Dummy variable that takes 1 if leverage is equal or lower than 5%, and 0 otherwise.
AI =   Asymmetric Information
                       (The standard deviation of the firm's daily price returns minus the local market returns)
OWN =   Ownership Structure
                       (The percentage of shares held by insiders)
OWNSQ =   Ownership Squared

3. Firm level variables that change according to the definition for cash
NWC =   Net Working Capital
CFLOW =   Cash Flow
                       These variables have two different measures based on two cash measures accordingly:
Using Definition 1 for cash
NWC =   [(Current Assets–Cash and Short-term Investments–Current Liabilities) / Total Assets]
CFLOW =   [(Operating Income+Depreciation and amortization–Interest–Taxes–Cash Dividends) / Total Assets]

Using Definition 2 for cash
NWC =   [(Current Assets–Cash and Short-term Investments–Current Liabilities) / Net Assets]
CFLOW =   [(Operating Income+Depreciation and amortization–Interest–Taxes–Cash Dividends) / Net Assets]

Fixed effect variables
INDUSTRY =   A set of industry dummies based on two digit SIC codes
YEAR =   A set of year dummies from 1980 to 2006

Instrument in leverage equation for 2sls regressions
Tax Rate =   Income taxes divided by pretax income, which are items from income statement.

The data for sample countries is collected for the period from 1980 to 2006 from Worldscope. The definitions of variables CASH with definitions of 1 and 2, GOV, CR, and SR are given in Table 1.

	CASH (Definition 1)			CASH (Definition 2)			GOV	CR	SR
Country	N	mean	median	N	mean	median			
ARGENTINA	331	0.069	0.043	331	-3.167	-3.112	-0.175	1	2
AUSTRALIA	6579	0.158	0.074	6538	-2.508	-2.509	1.610	3	4
AUSTRIA	370	0.133	0.096	369	-2.307	-2.244	1.616	3	2.5
BELGIUM	463	0.124	0.069	463	-2.456	-2.596	1.377	2	3
BRAZIL	1354	0.115	0.087	1316	-2.606	-2.289	-0.009	1	5
CANADA	7778	0.133	0.044	6534	-2.697	-2.550	1.644	1	4
CHILE	747	0.071	0.040	746	-3.203	-3.167	1.135	2	5
CHINA	2602	0.177	0.139	2601	-1.856	-1.827	-0.475	2	1
COLOMBIA	217	0.081	0.061	217	-2.899	-2.735	-0.534	0	3
CZECH REPUBLIC	87	0.086	0.042	87	-2.934	-3.123	0.825	3	4
DENMARK	1300	0.165	0.120	1300	-2.141	-1.988	1.793	3	4
EGYPT	84	0.169	0.140	84	-2.112	-1.814	-0.473	2	3
FINLAND	841	0.124	0.072	841	-2.446	-2.563	1.861	1	3.5
FRANCE	3661	0.137	0.100	3656	-2.245	-2.197	1.222	0	3.5
GERMANY	2666	0.134	0.073	2664	-2.550	-2.540	1.533	3	3.5
GREECE	194	0.076	0.044	193	-3.082	-3.082	0.709	1	2
HONG KONG	2980	0.228	0.178	2980	-1.553	-1.527	1.222	4	5
HUNGARY	146	0.109	0.069	146	-2.633	-2.605	0.891	1	2
INDIA	3740	0.072	0.032	3738	-3.337	-3.397	-0.182	2	5
INDONESIA	822	0.135	0.094	822	-2.400	-2.261	-0.703	2	4
IRELAND	966	0.141	0.093	957	-2.418	-2.277	1.528	1	5
ISRAEL	478	0.234	0.161	478	-1.681	-1.654	0.578	3	4
ITALY	2002	0.131	0.088	2002	-2.423	-2.340	0.714	2	2
JAPAN	12696	0.172	0.139	12696	-1.838	-1.827	1.138	2	4.5
JORDAN	68	0.173	0.132	68	-2.213	-1.887	0.040	1	1
KOREA, SOUTH	4695	0.139	0.091	4694	-2.278	-2.306	0.641	3	4.5
LUXEMBOURG	86	0.121	0.095	86	-2.444	-2.255	1.762	.	2
MALAYSIA	2267	0.124	0.072	2264	-2.701	-2.549	0.381	3	5
MEXICO	964	0.085	0.057	964	-2.861	-2.808	-0.071	0	3
MOROCCO	31	0.134	0.089	31	-2.594	-2.321	-0.194	1	2
NETHERLANDS	2411	0.110	0.059	2393	-2.876	-2.756	1.725	3	2.5
NEW ZEALAND	631	0.066	0.020	572	-3.685	-3.711	1.776	4	4
NORWAY	1376	0.176	0.124	1375	-1.905	-1.955	1.714	2	3.5
PAKISTAN	704	0.107	0.049	704	-3.073	-2.972	-0.943	1	4
PERU	297	0.073	0.027	297	-3.421	-3.601	-0.326	0	3.5
PHILIPPINES	881	0.100	0.054	881	-3.015	-2.865	-0.335	1	4
POLAND	457	0.102	0.068	457	-2.684	-2.615	0.600	1	2

Table 2 - continued

	CASH (Definition 1)			CASH (Definition 2)			GOV	CR	SR
PORTUGAL	124	0.069	0.024	124	-3.585	-3.707	1.166	1	2.5
RUSSIA	149	0.086	0.056	149	-2.838	-2.818	-0.672	2	4
SINGAPORE	1993	0.174	0.133	1993	-1.932	-1.874	1.526	3	5
SLOVAKIA	25	0.060	0.035	25	-3.043	-3.304	0.626	2	3
SOUTH AFRICA	2089	0.109	0.076	2006	-2.742	-2.432	0.367	3	5
SPAIN	855	0.095	0.050	855	-3.032	-2.943	1.113	2	5
SRI LANKA	122	0.094	0.066	122	-2.925	-2.651	-0.340	2	4
SUDAN	120	0.135	0.080	120	-2.417	-2.438	-1.521	.	.
SWEDEN	1659	0.156	0.105	1659	-2.114	-2.146	1.751	1	3.5
SWITZERLAND	1662	0.152	0.115	1660	-2.103	-2.044	1.796	1	3
TAIWAN	4796	0.151	0.111	4796	-2.181	-2.080	0.861	2	3
THAILAND	3425	0.088	0.046	3425	-3.199	-3.030	0.030	2	4
TURKEY	343	0.109	0.069	343	-2.765	-2.597	-0.151	2	3
UNITED KINGDOM	18978	0.142	0.077	18379	-2.673	-2.415	1.557	4	5
UNITED STATES	73814	0.188	0.089	73177	-2.311	-2.306	1.385	1	3
VENEZUELA	123	0.094	0.067	123	-2.565	-2.629	-0.873	2	1
Total	178249	0.160	0.089	175501	-2.394	-2.293	1.200		

Table 3: The Dependent Variables by Year

This table reports mean and median values of CASH by year for all sample countries and for all countries excluding the US, separately. The sample period is from 1980 to 2006. The definitions of variables CASH with definitions of 1 and 2 are given in Table 1.

| | CASH (Definition 1) | | | | | | CASH (Definition 2) | | | | | |
| | All Countries | | | All Countries excluding the U.S. | | | All Countries | | | All Countries excluding the U.S. | | |
Year	N	Mean	Median	N	Mean	Median	N	Mean	Median	N	Mean	Median
1980	1122	0.079	0.051	10	0.022	0.010	1122	-2.961	-2.914	10	-4.777	-4.625
1981	1181	0.088	0.051	13	0.038	0.019	1180	-2.937	-2.921	13	-3.857	-3.950
1982	1262	0.098	0.056	20	0.066	0.044	1259	-2.841	-2.817	20	-3.698	-3.102
1983	1410	0.126	0.079	45	0.084	0.060	1407	-2.579	-2.452	45	-3.329	-2.748
1984	1509	0.111	0.063	88	0.102	0.070	1503	-2.751	-2.690	86	-2.942	-2.562
1985	1677	0.113	0.066	183	0.111	0.079	1665	-2.731	-2.645	176	-2.784	-2.368
1986	1817	0.121	0.071	309	0.119	0.088	1800	-2.655	-2.533	297	-2.606	-2.296
1987	3065	0.123	0.074	1463	0.122	0.085	3007	-2.668	-2.482	1413	-2.643	-2.310
1988	3744	0.116	0.069	2087	0.118	0.077	3668	-2.770	-2.557	2024	-2.739	-2.431
1989	4155	0.118	0.069	2523	0.119	0.076	4067	-2.786	-2.565	2445	-2.741	-2.443
1990	4360	0.111	0.062	2736	0.112	0.069	4248	-2.887	-2.653	2631	-2.844	-2.534
1991	4772	0.118	0.066	2996	0.110	0.070	4652	-2.835	-2.590	2888	-2.882	-2.537
1992	5025	0.119	0.068	3149	0.110	0.069	4904	-2.785	-2.575	3041	-2.836	-2.542
1993	5378	0.129	0.074	3370	0.118	0.077	5265	-2.696	-2.485	3276	-2.734	-2.427
1994	6422	0.136	0.080	3580	0.121	0.083	6301	-2.603	-2.402	3483	-2.647	-2.354
1995	7184	0.137	0.074	4035	0.117	0.077	7026	-2.624	-2.479	3914	-2.677	-2.442
1996	8047	0.152	0.076	4400	0.116	0.072	7914	-2.525	-2.448	4309	-2.698	-2.522
1997	8770	0.158	0.082	4559	0.117	0.073	8611	-2.469	-2.367	4448	-2.668	-2.499
1998	9676	0.166	0.077	4646	0.118	0.068	9466	-2.468	-2.428	4506	-2.708	-2.561
1999	9750	0.176	0.079	4777	0.125	0.072	9548	-2.389	-2.408	4634	-2.620	-2.508
2000	10861	0.180	0.093	6195	0.153	0.093	10679	-2.282	-2.242	6079	-2.337	-2.250
2001	11285	0.175	0.093	7132	0.150	0.088	11119	-2.302	-2.254	7011	-2.389	-2.302
2002	11156	0.176	0.101	7352	0.153	0.095	11005	-2.230	-2.164	7240	-2.314	-2.224
2003	10990	0.183	0.111	7447	0.157	0.102	10856	-2.139	-2.065	7338	-2.254	-2.159
2004	14444	0.189	0.117	10173	0.165	0.108	14305	-2.052	-2.009	10063	-2.169	-2.088
2005	14439	0.189	0.119	10288	0.165	0.110	14295	-2.050	-1.990	10174	-2.165	-2.072
2006	14748	0.181	0.110	10859	0.158	0.103	14629	-2.131	-2.076	10760	-2.242	-2.151
Total	178249	0.160	0.089	104435	0.141	0.089	175501	-2.394	-2.293	102324	-2.453	-2.288

Table 4: Summary Statistics and Correlations

This table reports the descriptive statistics as mean and median values of all variables (Panel A), and correlations among variables (Panel B and C). The sample period is from 1980 to 2006. Definitions of variables are given in Table 1. Low (High) Governance countries include countries with World Governance Index in the bottom (top) quartile.

Panel A: Descriptive statistics for all variables

	All Countries			Low Governance Countries			High Governance Countries		
	N	mean	median	N	mean	median	N	mean	Median
CASH (Definition 1)	178249	0.1600	0.0891	47911	0.1332	0.0936	46337	0.1417	0.0754
CASH (Definition 2)	175501	-2.3937	-2.2935	47781	-2.4267	-2.2653	44370	-2.5793	-2.4179
CR	178043	1.8249	1.0000	47791	2.0522	2.0000	46251	2.8779	3.0000
SR	178129	3.6509	3.0000	47791	3.9680	4.5000	46337	4.2094	4.0000
GOV	178249	1.2003	1.3848	47911	0.4826	0.6407	46337	1.6228	1.6105
STOCKCAP	161449	1.0498	0.9919	47404	0.6980	0.6297	43372	1.0223	1.0326
MB	167181	1.8000	1.2818	44673	1.4021	1.1000	43806	1.7298	1.3008
RSIZE	176856	5.2213	5.1849	46518	5.7434	5.7255	46337	4.9666	4.8472
NWC (Definition 1)	176324	0.0580	0.0454	47534	0.0172	0.0144	45680	0.0427	0.0293
NWC (Definition 2)	176324	0.0546	0.0555	47534	0.0176	0.0168	45680	0.0368	0.0351
CFLOW (Definition 1)	171399	0.0237	0.0565	45924	0.0486	0.0490	45455	0.0222	0.0541
CFLOW (Definition 2)	171399	-0.0181	0.0637	45924	0.0580	0.0562	45455	-0.0167	0.0602
R&D	175588	0.0718	0.0000	45250	0.0118	0.0000	46337	0.0633	0.0000
LEV	175753	0.2196	0.1946	47321	0.2562	0.2401	45522	0.2035	0.1815
AI	148716	0.0334	0.0259	40393	0.0274	0.0239	39196	0.0280	0.0221
OWN	145569	0.3873	0.3625	35611	0.4897	0.4773	37216	0.3783	0.3564
OWNSQ	145569	0.2213	0.1314	35611	0.2983	0.2278	37216	0.2138	0.1270

Panel B: Correlations among variables in regressions where the dependent variable is CASH (Definition 1)

	CASH	CR	SR	GOV	LOW GOV	LEV	IND ADJLEV	MB	RSIZE	NWC	CFLOW	R&D	AI	STOCK CAP	OWN	OWN SQ
CASH	1															
CR	-0.067	1														
SR	-0.071	0.7428	1													
GOV	0.0456	0.0355	-0.003	1												
LOW GOV	-0.0579	0.1212	0.2712	-0.7437	1											
LEV	-0.4146	-0.0496	-0.0183	-0.0996	0.1271	1										
INDADJLEV	-0.2745	-0.0167	-0.0202	0.0225	-0.0338	0.8405	1									
MB	0.3752	-0.1132	-0.1251	0.0909	-0.1641	-0.2404	-0.125	1								
RSIZE	-0.2443	-0.0865	-0.0068	-0.0744	0.2176	0.2761	0.1308	-0.206	1							
NWC	-0.1794	-0.1111	-0.1161	0.0834	-0.1386	-0.2032	-0.172	-0.0738	-0.0716	1						
CFLOW	-0.3086	0.0152	0.0395	-0.0592	0.0875	0.051	-0.0252	-0.2241	0.3538	0.22	1					
R&D	0.4005	-0.0751	-0.0817	0.0711	-0.1024	-0.1352	-0.052	0.2624	-0.1684	-0.0982	-0.4643	1				
AI	0.1719	-0.2082	-0.2078	0.044	-0.1723	-0.0115	0.0827	0.1471	-0.5194	-0.0978	-0.4087	0.1727	1			
STOCKCAP	0.1042	0.1974	0.1545	0.2063	-0.2921	-0.1061	0.0141	0.0882	-0.1503	-0.005	-0.0827	0.0508	0.15	1		
OWN	-0.0309	0.0883	0.1007	-0.2183	0.1814	0.0036	-0.0451	-0.0652	-0.1782	-0.0276	0.0191	-0.0873	0.0676	-0.014	1	
OWNSQ	-0.036	0.066	0.0661	-0.2025	0.1333	-0.0009	-0.0401	-0.0472	-0.1352	-0.0263	0.023	-0.0773	0.0598	-0.0169	0.9454	1

Panel C: Correlations among variables in regressions where the dependent variable is CASH (Definition 2)

	CASH	CR	SR	GOV	LOW GOV	LEV	IND ADJLEV	MB	RSIZE	NWC	CFLOW	R&D	AI	STOCK CAP	OWN	OWN SQ
CASH	1															
CR	-0.0378	1														
SR	-0.0222	0.7419	1													
GOV	-0.003	0.0335	-0.0068	1												
LOW GOV	0.0422	0.1242	0.2758	-0.7427	1											
LEV	-0.4071	-0.048	-0.0175	-0.1026	0.1304	1										
INDADJLEV	-0.2983	-0.0173	-0.0205	0.0211	-0.032	0.8401	1									
MB	0.3025	-0.1131	-0.1243	0.093	-0.1663	-0.2409	-0.1251	1								
RSIZE	-0.1541	-0.082	-0.0027	-0.0725	0.2166	0.2791	0.1343	-0.2069	1							
NWC	-0.1924	-0.0887	-0.0885	0.058	-0.0954	-0.1703	-0.1586	-0.1084	-0.0314	1						
CFLOW	-0.2947	0.0407	0.0589	-0.0712	0.1063	0.1019	0.026	-0.2705	0.2992	0.3345	1					
R&D	0.2838	-0.0751	-0.081	0.0728	-0.1039	-0.1352	-0.0517	0.2624	-0.1697	-0.1906	-0.5855	1				
AI	0.1027	-0.2079	-0.2067	0.0457	-0.174	-0.0138	0.0805	0.1468	-0.521	-0.1192	-0.3209	0.1733	1			
STOCKCAP	0.0727	0.1975	0.1545	0.2077	-0.2933	-0.107	0.0131	0.0887	-0.1496	-0.0157	-0.0757	0.051	0.1495	1		
OWN	-0.0185	0.0882	0.1019	-0.2191	0.1819	0.0034	-0.0458	-0.0662	-0.1785	-0.017	0.0421	-0.088	0.0677	-0.0144	1	
OWNSQ	-0.0284	0.066	0.067	-0.2031	0.1333	-0.001	-0.0407	-0.0481	-0.1356	-0.0171	0.0411	-0.0779	0.06	-0.0172	0.9454	1

This table reports the estimates of the OLS regressions for CASH level by using data from all sample countries. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. The first part of the panels (models from 1 to 8) reports the results when all independent variables are contemporary with respect to the dependent variable, and the second part (models from 9 to 11) reports the results when all independent variables are lagged with respect to the dependent variable. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: Dependent variable: CASH (Definition 1)

	Contemporaneous regressions								Lag regressions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Constant	0.257***	0.290***	0.206***	0.278***	0.279***	0.265***	0.278***	0.255***	0.236***	0.243***	0.243***
	[0.002]	[0.002]	[0.002]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
CR	-0.009***			-0.014***	-0.013***	-0.016***	-0.013***	-0.016***	-0.015***	-0.013***	-0.013***
	[0.000]			[0.000]	[0.001]	[0.000]	[0.001]	[0.000]	[0.000]	[0.001]	[0.001]
SR		-0.013***			0.000		-0.005***			-0.003***	-0.003***
		[0.000]			[0.001]		[0.001]			[0.001]	[0.001]
GOV			0.028***	-0.007***	-0.007***						
			[0.001]	[0.001]	[0.001]						
LOW GOV						-0.004	-0.003	-0.006*	0.001	0.002	0.002
						[0.003]	[0.003]	[0.003]	[0.004]	[0.004]	[0.004]
CR * LOW GOV						0.014***	0.014***	0.014***	0.012***	0.012***	0.012***
						[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]
MB				0.018***	0.018***	0.019***	0.019***	0.019***	0.018***	0.018***	0.018***
				[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]	[0.000]	[0.001]
RSIZE				-0.005***	-0.005***	-0.006***	-0.006***	-0.005***	-0.004***	-0.004***	-0.004***
				[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
NWC				-0.236***	-0.236***	-0.231***	-0.232***	-0.231***	-0.188***	-0.188***	-0.188***
				[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
CFLOW				-0.077***	-0.077***	-0.078***	-0.078***	-0.078***	-0.096***	-0.096***	-0.096***
				[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]	[0.006]
R&D				0.123***	0.123***	0.124***	0.124***	0.124***	0.120***	0.120***	0.120***
				[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
LEV				-0.370***	-0.370***	-0.371***	-0.372***	-0.372***	-0.327***	-0.327***	-0.327***
				[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
AI				-0.064**	-0.064**	-0.071**	-0.078**	-0.065**	0.237***	0.234***	0.233***
				[0.031]	[0.031]	[0.031]	[0.031]	[0.031]	[0.035]	[0.035]	[0.035]
STOCKCAP				0.013***	0.013***	0.019***	0.019***	0.018***	0.018***	0.018***	0.018***
				[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
OWN				0.000	0.000	-0.003*	-0.003*	0.049***	-0.002***	-0.002***	-0.003**
				[0.002]	[0.002]	[0.002]	[0.002]	[0.005]	[0.001]	[0.001]	[0.001]
OWNSQ								-0.057***			0.000
								[0.005]			[0.000]
Adjusted R-sq	0.099	0.1	0.102	0.414	0.414	0.416	0.416	0.417	0.384	0.384	0.384
Observations	176950	177036	177156	109925	109925	109925	109925	109925	95190	95190	95190

Panel B: Dependent variable: CASH (Definition 2)

Panel B	Contemporaneous regressions								Lag regressions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Constant	-1.599***	-1.409***	-1.899***	-1.474***	-1.682***	-1.809***	-1.783***	-1.922***	-2.052***	-2.085***	-2.078***
	[0.014]	[0.021]	[0.014]	[0.032]	[0.036]	[0.030]	[0.034]	[0.032]	[0.033]	[0.037]	[0.038]
CR	-0.054***			-0.063***	-0.108***	-0.104***	-0.098***	-0.104***	-0.092***	-0.099***	-0.099***
	[0.004]			[0.004]	[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]
SR		-0.078***			0.080***		-0.011*			0.014*	0.014*
		[0.004]			[0.006]		[0.006]			[0.007]	[0.007]
GOV			0.167***	-0.176***	-0.174***						
			[0.007]	[0.011]	[0.011]						
LOW GOV						0.321***	0.323***	0.301***	0.326***	0.322***	0.325***
						[0.036]	[0.036]	[0.036]	[0.040]	[0.040]	[0.040]
CR * LOW GOV						0.099***	0.100***	0.100***	0.096***	0.095***	0.094***
						[0.016]	[0.016]	[0.016]	[0.018]	[0.018]	[0.018]
MB				0.134***	0.135***	0.139***	0.139***	0.141***	0.142***	0.142***	0.142***
				[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.004]	[0.006]	[0.004]
RSIZE				0.035***	0.034***	0.017***	0.017***	0.022***	0.027***	0.027***	0.027***
				[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
NWC				-1.437***	-1.428***	-1.375***	-1.376***	-1.376***	-1.179***	-1.178***	-1.178***
				[0.023]	[0.023]	[0.023]	[0.023]	[0.023]	[0.025]	[0.025]	[0.025]
CFLOW				-0.401***	-0.403***	-0.407***	-0.407***	-0.407***	-0.280***	-0.280***	-0.280***
				[0.014]	[0.014]	[0.014]	[0.014]	[0.014]	[0.018]	[0.018]	[0.018]
R&D				0.427***	0.428***	0.444***	0.444***	0.446***	0.541***	0.541***	0.540***
				[0.018]	[0.018]	[0.018]	[0.018]	[0.018]	[0.022]	[0.022]	[0.022]
LEV				-3.629***	-3.627***	-3.651***	-3.652***	-3.662***	-3.350***	-3.349***	-3.349***
				[0.028]	[0.028]	[0.028]	[0.028]	[0.028]	[0.031]	[0.031]	[0.031]
AI				0.423	0.516*	0.429	0.416	0.502*	4.112***	4.127***	4.123***
				[0.276]	[0.277]	[0.277]	[0.277]	[0.277]	[0.321]	[0.321]	[0.321]
STOCKCAP				0.030***	0.026***	0.145***	0.147***	0.142***	0.123***	0.121***	0.120***
				[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.009]	[0.009]	[0.009]
OWN				0.052***	0.041**	-0.02	-0.02	0.576***	-0.015**	-0.016**	-0.028*
				[0.018]	[0.018]	[0.018]	[0.018]	[0.053]	[0.007]	[0.007]	[0.015]
OWNSQ								-0.653***			0.001
								[0.055]			[0.000]
Adjusted R-sq	0.089	0.089	0.09	0.332	0.333	0.343	0.343	0.344	0.307	0.307	0.307
Observations	174207	174293	174413	108560	108560	108560	108560	108560	94025	94025	94025

This table reports the estimates of the OLS regressions for CASH level by using data from all sample countries excluding the US. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. The first part of the panels (models from 1 to 8) reports the results when all independent variables are contemporary with respect to the dependent variable, and the second part (models from 9 to 11) reports the results when all independent variables are lagged with respect to the dependent variable. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: Dependent variable: CASH (Definition 1)

	Contemporaneous regressions								Lag regressions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Constant	0.192***	0.203***	0.185***	0.209***	0.207***	0.187***	0.198***	0.178***	0.167***	0.175***	0.174***
	[0.002]	[0.003]	[0.002]	[0.004]	[0.005]	[0.004]	[0.005]	[0.005]	[0.004]	[0.005]	[0.005]
CR	0.004***			-0.009***	-0.010***	-0.009***	-0.008***	-0.009***	-0.010***	-0.009***	-0.009***
	[0.000]			[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
SR		0.000			0.000		-0.004***			-0.003***	-0.003***
		[0.000]			[0.001]		[0.001]			[0.001]	[0.001]
GOV			0.017***	-0.008***	-0.008***						
			[0.001]	[0.001]	[0.001]						
LOW GOV						0.014***	0.013***	0.013***	0.015***	0.014***	0.014***
						[0.003]	[0.003]	[0.003]	[0.004]	[0.004]	[0.004]
CR * LOW GOV						0.008***	0.009***	0.008***	0.007***	0.008***	0.008***
						[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]
MB				0.022***	0.022***	0.023***	0.023***	0.023***	0.020***	0.020***	0.020***
				[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
RSIZE				0.001	0.001	-0.001**	-0.001**	-0.001*	0.000	0.000	0.001
				[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
NWC				-0.193***	-0.193***	-0.188***	-0.187***	-0.187***	-0.136***	-0.136***	-0.136***
				[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
CFLOW				-0.120***	-0.120***	-0.123***	-0.123***	-0.123***	-0.111***	-0.110***	-0.111***
				[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.009]	[0.009]	[0.009]
R&D				0.114***	0.114***	0.116***	0.116***	0.116***	0.113***	0.113***	0.113***
				[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]	[0.006]
LEV				-0.328***	-0.328***	-0.330***	-0.331***	-0.331***	-0.289***	-0.289***	-0.289***
				[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
AI				0.334***	0.333***	0.316***	0.317***	0.325***	0.602***	0.603***	0.602***
				[0.048]	[0.048]	[0.047]	[0.047]	[0.047]	[0.052]	[0.052]	[0.052]
STOCKCAP				0.012***	0.012***	0.017***	0.018***	0.016***	0.017***	0.018***	0.018***
				[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
OWN				0.004*	0.004*	0.002	0.001	0.041***	0.001	0.001	0.003
				[0.002]	[0.002]	[0.002]	[0.002]	[0.007]	[0.001]	[0.001]	[0.002]
OWNSQ								-0.041***			-0.000**
								[0.006]			[0.000]
Adjusted R-sq	0.099	0.1	0.102	0.414	0.334	0.416	0.341	0.341	0.384	0.291	0.291
Observations	104130	104216	104336	63980	63980	63980	63980	63980	54377	54377	54377

Panel B: Dependent variable: CASH (Definition 2)

	Contemporaneous regressions								Lag regressions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Constant	-1.864***	-1.681***	-2.105***	-1.997***	-1.987***	-2.271***	-2.080***	-2.365***	-2.467***	-2.326***	-2.320***
	[0.018]	[0.024]	[0.016]	[0.040]	[0.044]	[0.039]	[0.044]	[0.042]	[0.041]	[0.046]	[0.047]
CR	-0.034***			-0.156***	-0.155***	-0.159***	-0.140***	-0.157***	-0.162***	-0.147***	-0.147***
	[0.005]			[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.007]	[0.007]	[0.007]
SR		-0.064***			-0.003		-0.061***			-0.048***	-0.048***
		[0.005]			[0.007]		[0.007]			[0.008]	[0.008]
GOV			0.144***	-0.115***	-0.115***						
			[0.007]	[0.011]	[0.011]						
LOW GOV						0.056	0.034	0.049	0.027	0.012	0.013
						[0.038]	[0.038]	[0.038]	[0.042]	[0.042]	[0.042]
CR * LOW GOV						0.160***	0.178***	0.158***	0.166***	0.179***	0.179***
						[0.016]	[0.016]	[0.016]	[0.018]	[0.018]	[0.018]
MB				0.166***	0.166***	0.173***	0.174***	0.175***	0.164***	0.165***	0.165***
				[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]	[0.006]
RSIZE				0.099***	0.099***	0.081***	0.081***	0.083***	0.093***	0.093***	0.093***
				[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
NWC				-1.391***	-1.391***	-1.356***	-1.352***	-1.354***	-1.074***	-1.072***	-1.073***
				[0.031]	[0.031]	[0.031]	[0.031]	[0.031]	[0.035]	[0.035]	[0.035]
CFLOW				-0.545***	-0.545***	-0.568***	-0.567***	-0.567***	-0.400***	-0.400***	-0.399***
				[0.024]	[0.024]	[0.024]	[0.024]	[0.024]	[0.031]	[0.031]	[0.031]
R&D				0.401***	0.401***	0.419***	0.422***	0.423***	0.490***	0.493***	0.492***
				[0.028]	[0.028]	[0.029]	[0.029]	[0.029]	[0.038]	[0.038]	[0.038]
LEV				-3.259***	-3.259***	-3.297***	-3.302***	-3.301***	-3.025***	-3.028***	-3.028***
				[0.036]	[0.036]	[0.036]	[0.036]	[0.036]	[0.040]	[0.040]	[0.040]
AI				4.056***	4.059***	3.769***	3.778***	3.873***	6.954***	6.969***	6.973***
				[0.435]	[0.436]	[0.435]	[0.434]	[0.435]	[0.501]	[0.501]	[0.501]
STOCKCAP				0.139***	0.140***	0.197***	0.214***	0.194***	0.195***	0.209***	0.209***
				[0.008]	[0.008]	[0.008]	[0.009]	[0.008]	[0.010]	[0.010]	[0.010]
OWN				-0.028	-0.028	-0.045*	-0.056**	0.407***	-0.014	-0.016	-0.024
				[0.023]	[0.024]	[0.023]	[0.023]	[0.071]	[0.011]	[0.011]	[0.019]
OWNSQ								-0.471***			0.001
								[0.069]			[0.001]
Adjusted R-sq	0.089	0.089	0.09	0.332	0.263	0.343	0.276	0.276	0.307	0.24	0.24
Observations	102021	102107	102227	62990	62990	53540	62990	62990	53540	53540	53540

This table reports the estimates of the OLS regressions for CASH level by using data from countries with World Governance Index in the bottom quartile. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. The first part of the panels (models from 1 to 4) reports the results when all independent variables are contemporary with respect to the dependent variable, and the second part (models 5 and 6) reports the results when all independent variables are lagged with respect to the dependent variable. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	Panel A: Dependent variable: CASH (Definition 1)						*Panel B: Dependent variable: CASH (Definition 2)*					
	Contemporaneous regressions				Lag regressions		Contemporaneous regressions				Lag regressions	
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.150***	0.196***	0.174***	0.172***	0.153***	0.162***	-2.406***	-1.805***	-2.256***	-2.250***	-2.596***	-2.386***
	[0.003]	[0.003]	[0.007]	[0.007]	[0.006]	[0.007]	[0.029]	[0.029]	[0.069]	[0.074]	[0.068]	[0.069]
CR	0.011***		0.007***	0.011***	0.006***	0.009***	0.121***		0.096***	0.155***	0.107***	0.155***
	[0.001]		[0.001]	[0.002]	[0.002]	[0.002]	[0.010]		[0.015]	[0.016]	[0.017]	[0.018]
SR		-0.006***		-0.006***		-0.005***		-0.087***		-0.096***		-0.086***
		[0.001]		[0.001]		[0.001]		[0.005]		[0.008]		[0.009]
MB			0.024***	0.024***	0.024***	0.024***			0.129***	0.131***	0.126***	0.127***
			[0.001]	[0.001]	[0.001]	[0.001]			[0.009]	[0.009]	[0.011]	[0.011]
RSIZE			0.002***	0.002***	0.003***	0.003***			0.087***	0.094***	0.106***	0.111***
			[0.001]	[0.001]	[0.001]	[0.001]			[0.005]	[0.005]	[0.006]	[0.006]
NWC			-0.176***	-0.173***	-0.123***	-0.121***			-1.112***	-1.066***	-0.836***	-0.807***
			[0.005]	[0.005]	[0.006]	[0.006]			[0.047]	[0.047]	[0.050]	[0.050]
CFLOW			-0.019	-0.017	0.006	0.008			1.003***	1.017***	1.143***	1.162***
			[0.016]	[0.016]	[0.014]	[0.014]			[0.160]	[0.160]	[0.146]	[0.147]
R&D			0.224***	0.225***	0.297***	0.298***			1.915***	1.929***	2.444***	2.449***
			[0.041]	[0.041]	[0.040]	[0.041]			[0.298]	[0.301]	[0.342]	[0.345]
LEV			-0.292***	-0.290***	-0.261***	-0.260***			-2.631***	-2.605***	-2.503***	-2.503***
			[0.005]	[0.005]	[0.005]	[0.005]			[0.049]	[0.049]	[0.051]	[0.051]
AI			0.125*	0.158**	0.229***	0.249***			-1.003	-0.493	0.461	0.822
			[0.069]	[0.068]	[0.069]	[0.069]			[0.716]	[0.710]	[0.774]	[0.772]
STOCKCAP			-0.002	0.000	-0.001	0.000			-0.079***	-0.034	-0.061**	-0.036
			[0.002]	[0.002]	[0.002]	[0.002]			[0.024]	[0.024]	[0.027]	[0.027]
OWN			-0.009***	0.045***	-0.002*	-0.003			-0.233***	0.503***	-0.060***	-0.107***
			[0.003]	[0.010]	[0.001]	[0.002]			[0.034]	[0.111]	[0.019]	[0.025]
OWNSQ				-0.050***		0.000				-0.683***		0.005***
				[0.010]		[0.000]				[0.100]		[0.001]
Adjusted R-sq	0.071	0.07	0.284	0.286	0.269	0.270	0.078	0.08	0.254	0.259	0.25	0.253
Observations	47772	47772	27820	27820	23908	23908	47642	47642	27795	27795	23892	23892

This table reports the estimates of the OLS regressions for CASH level by using data from countries with World Governance Index in the top quartile. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. The first part of the panels (models from 1 to 4) reports the results when all independent variables are contemporary with respect to the dependent variable, and the second part (models 5 and 6) reports the results when all independent variables are lagged with respect to the dependent variable. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5% and 10% respectively.

| | *Panel A: Dependent variable: CASH (Definition 1)* | | | | | | *Panel B: Dependent variable: CASH (Definition 2)* | | | | | |
| | Contemporaneous regressions | | | | Lag regressions | | Contemporaneous regressions | | | | Lag regressions | |
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.231***	0.217***	0.262***	0.266***	0.222***	0.221***	-1.605***	-1.448***	-1.595***	-1.409***	-2.005***	-1.935***
	[0.004]	[0.005]	[0.008]	[0.009]	[0.008]	[0.009]	[0.034]	[0.051]	[0.068]	[0.084]	[0.071]	[0.088]
CR	-0.003***		-0.007***	-0.007***	-0.008***	-0.008***	-0.090***		-0.109***	-0.088***	-0.107***	-0.100***
	[0.001]		[0.001]	[0.001]	[0.001]	[0.001]	[0.007]		[0.009]	[0.011]	[0.010]	[0.013]
SR		0.001		-0.002		0.000		-0.101***		-0.061***		-0.021
		[0.001]		[0.001]		[0.002]		[0.011]		[0.017]		[0.020]
MB			0.023***	0.023***	0.019***	0.019***			0.190***	0.190***	0.178***	0.178***
			[0.001]	[0.001]	[0.001]	[0.001]			[0.007]	[0.007]	[0.008]	[0.008]
RSIZE			-0.005***	-0.005***	-0.003***	-0.003***			0.058***	0.055***	0.073***	0.071***
			[0.001]	[0.001]	[0.001]	[0.001]			[0.006]	[0.006]	[0.006]	[0.006]
NWC			-0.188***	-0.189***	-0.140***	-0.140***			-1.437***	-1.440***	-1.153***	-1.154***
			[0.006]	[0.006]	[0.006]	[0.006]			[0.048]	[0.048]	[0.055]	[0.055]
CFLOW			-0.139***	-0.139***	-0.131***	-0.131***			-0.625***	-0.623***	-0.452***	-0.451***
			[0.010]	[0.010]	[0.011]	[0.011]			[0.027]	[0.027]	[0.034]	[0.034]
R&D			0.105***	0.105***	0.103***	0.103***			0.271***	0.274***	0.346***	0.346***
			[0.005]	[0.005]	[0.006]	[0.006]			[0.030]	[0.030]	[0.040]	[0.040]
LEV			-0.366***	-0.366***	-0.303***	-0.303***			-4.045***	-4.042***	-3.553***	-3.554***
			[0.006]	[0.006]	[0.007]	[0.007]			[0.067]	[0.067]	[0.076]	[0.076]
AI			0.158**	0.157**	0.552***	0.552***			3.508***	3.416***	7.839***	7.809***
			[0.075]	[0.075]	[0.085]	[0.085]			[0.667]	[0.667]	[0.781]	[0.781]
STOCKCAP			-0.018***	-0.017***	-0.012***	-0.011***			-0.231***	-0.185***	-0.167***	-0.154***
			[0.002]	[0.002]	[0.002]	[0.003]			[0.023]	[0.025]	[0.026]	[0.030]
OWN			-0.007**	-0.008	0.000	0.001			-0.153***	-0.318***	-0.026	-0.056*
			[0.003]	[0.010]	[0.002]	[0.003]			[0.036]	[0.107]	[0.018]	[0.033]
OWNSQ				0.000		0.000				0.167		0.002
				[0.010]		[0.000]				[0.117]		[0.001]
Adjusted R-sq	0.09	0.09	0.408	0.408	0.338	0.338	0.088	0.086	0.324	0.324	0.261	0.261
Observations	46174	46260	29628	29628	25397	25397	44209	44295	28670	28670	24584	24584

This table reports the estimates of the OLS regressions for CASH levels where industry adjusted leverage and low leverage dummy are used. Panel A uses observations from all sample countries; Panel B and C use observations from low and high governance countries. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. The first part of the panels (models from 1 to 4) reports the results when all independent variables are contemporary with respect to the dependent variable, and the second part (models from 5 to 8) reports the results when all independent variables are lagged with respect to the dependent variable. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: All sample countries

	Contemporaneous regressions				Lag regressions			
	CASH (Definition 1)		CASH (Definition 2)		CASH (Definition 1)		CASH (Definition 2)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.215***	0.155***	-2.306***	-2.780***	0.184***	0.138***	-2.599***	-2.954***
	[0.004]	[0.004]	[0.037]	[0.036]	[0.004]	[0.004]	[0.039]	[0.038]
CR	-0.011***	-0.010***	-0.082***	-0.079***	-0.011***	-0.011***	-0.083***	-0.083***
	[0.001]	[0.001]	[0.006]	[0.005]	[0.001]	[0.001]	[0.006]	[0.006]
SR	-0.001**	-0.001*	0.069***	0.070***	0.001	0.001	0.088***	0.093***
	[0.001]	[0.001]	[0.007]	[0.007]	[0.001]	[0.001]	[0.007]	[0.007]
GOV	0.000	-0.002**	-0.101***	-0.125***	0.002	-0.001	-0.073***	-0.100***
	[0.001]	[0.001]	[0.011]	[0.011]	[0.001]	[0.001]	[0.012]	[0.011]
INDADJLEV	-0.316***		-3.260***		-0.275***		-2.971***	
	[0.003]		[0.030]		[0.003]		[0.033]	
LOWLEVDUM		0.169***		1.494***		0.143***		1.312***
		[0.001]		[0.010]		[0.001]		[0.012]
MB	0.021***	0.017***	0.160***	0.131***	0.021***	0.017***	0.163***	0.136***
	[0.000]	[0.000]	[0.003]	[0.003]	[0.001]	[0.000]	[0.004]	[0.004]
RSIZE	-0.008***	-0.005***	0.007**	0.021***	-0.006***	-0.004***	0.018***	0.025***
	[0.000]	[0.000]	[0.003]	[0.003]	[0.000]	[0.000]	[0.003]	[0.003]
NWC	-0.213***	-0.203***	-1.304***	-1.209***	-0.172***	-0.162***	-1.110***	-1.018***
	[0.003]	[0.003]	[0.023]	[0.022]	[0.003]	[0.003]	[0.026]	[0.025]
CFLOW	-0.077***	-0.071***	-0.415***	-0.393***	-0.096***	-0.086***	-0.285***	-0.260***
	[0.005]	[0.005]	[0.015]	[0.014]	[0.006]	[0.006]	[0.019]	[0.018]
R&D	0.130***	0.120***	0.492***	0.416***	0.126***	0.118***	0.588***	0.523***
	[0.003]	[0.003]	[0.018]	[0.018]	[0.003]	[0.003]	[0.023]	[0.022]
AI	-0.120***	-0.264***	0.036	-1.930***	0.193***	0.03	3.781***	1.518***
	[0.032]	[0.030]	[0.281]	[0.269]	[0.036]	[0.034]	[0.325]	[0.313]
STOCKCAP	0.021***	0.014***	0.109***	0.046***	0.020***	0.013***	0.087***	0.022**
	[0.001]	[0.001]	[0.008]	[0.008]	[0.001]	[0.001]	[0.009]	[0.009]
OWN	-0.005***	-0.005***	-0.014	0	-0.002***	-0.002***	-0.008	-0.006
	[0.002]	[0.002]	[0.019]	[0.018]	[0.001]	[0.001]	[0.007]	[0.008]
Adjusted R-sq	0.383	0.443	0.307	0.338	0.355	0.398	0.276	0.295
Observations	109925	110861	108560	109492	95190	95960	94025	94789

Panel B: Low governance countries

	Contemporaneous regressions				Lag regressions			
	CASH (Definition 1)		CASH (Definition 2)		CASH (Definition 1)		CASH (Definition 2)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.131***	0.116***	-2.553***	-2.664***	0.112***	0.102***	-2.891***	-2.940***
	[0.007]	[0.006]	[0.070]	[0.068]	[0.007]	[0.006]	[0.070]	[0.067]
CR	0.008***	0.008***	0.124***	0.130***	0.006***	0.007***	0.133***	0.140***
	[0.002]	[0.002]	[0.017]	[0.016]	[0.002]	[0.002]	[0.018]	[0.018]
SR	-0.006***	-0.008***	-0.100***	-0.111***	-0.006***	-0.007***	-0.096***	-0.105***
	[0.001]	[0.001]	[0.008]	[0.008]	[0.001]	[0.001]	[0.009]	[0.009]
INDADJLEV	-0.236***		-2.064***		-0.215***		-1.987***	
	[0.005]		[0.050]		[0.005]		[0.052]	
LOWLEVDUM		0.120***		0.976***		0.109***		0.907***
		[0.002]		[0.020]		[0.003]		[0.022]
MB	0.027***	0.023***	0.156***	0.127***	0.027***	0.022***	0.157***	0.127***
	[0.001]	[0.001]	[0.010]	[0.009]	[0.001]	[0.001]	[0.011]	[0.011]
RSIZE	0	0	0.072***	0.070***	0.002***	0.001**	0.095***	0.087***
	[0.001]	[0.001]	[0.006]	[0.005]	[0.001]	[0.001]	[0.006]	[0.006]
NWC	-0.139***	-0.104***	-0.818***	-0.543***	-0.092***	-0.059***	-0.565***	-0.280***
	[0.005]	[0.005]	[0.049]	[0.047]	[0.006]	[0.005]	[0.052]	[0.049]
CFLOW	-0.012	0.037**	1.120***	1.275***	0.01	0.065***	1.260***	1.467***
	[0.016]	[0.015]	[0.174]	[0.170]	[0.015]	[0.014]	[0.158]	[0.161]
R&D	0.245***	0.237***	2.150***	2.089***	0.317***	0.314***	2.686***	2.688***
	[0.042]	[0.041]	[0.317]	[0.318]	[0.042]	[0.042]	[0.365]	[0.366]
AI	-0.067	-0.208***	-2.746***	-4.355***	0.054	-0.125*	-1.232	-3.333***
	[0.070]	[0.065]	[0.730]	[0.708]	[0.069]	[0.065]	[0.782]	[0.760]
STOCKCAP	0.016***	0.007***	0.103***	0.028	0.017***	0.008***	0.125***	0.048*
	[0.002]	[0.002]	[0.025]	[0.025]	[0.002]	[0.002]	[0.028]	[0.028]
OWN	0.002	-0.001	-0.126***	-0.135***	0	-0.001	-0.031*	-0.039**
	[0.003]	[0.003]	[0.035]	[0.034]	[0.001]	[0.001]	[0.017]	[0.017]
Adjusted R-sq	0.243	0.278	0.219	0.233	0.235	0.261	0.217	0.223
Observations	27820	28054	27795	28028	23908	24105	23892	24089

Panel C: High governance countries

	Contemporaneous regressions				Lag regressions			
	CASH (Definition 1)		CASH (Definition 2)		CASH (Definition 1)		CASH (Definition 2)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.186***	0.152***	-2.309***	-2.625***	0.151***	0.127***	-2.785***	-3.001***
	[0.008]	[0.008]	[0.084]	[0.083]	[0.008]	[0.008]	[0.086]	[0.085]
CR	0.000	-0.005***	-0.019*	-0.068***	-0.002	-0.006***	-0.037***	-0.081***
	[0.001]	[0.001]	[0.012]	[0.011]	[0.001]	[0.001]	[0.013]	[0.013]
SR	0.001	-0.002*	-0.027	-0.068***	0.002	-0.001	0.012	-0.021
	[0.001]	[0.001]	[0.018]	[0.018]	[0.002]	[0.002]	[0.020]	[0.020]
INDADJLEV	-0.324***		-3.574***		-0.258***		-3.064***	
	[0.007]		[0.071]		[0.007]		[0.081]	
LOWLEVDUM		0.150***		1.499***		0.120***		1.255***
		[0.003]		[0.022]		[0.003]		[0.025]
MB	0.025***	0.022***	0.212***	0.183***	0.021***	0.019***	0.201***	0.175***
	[0.001]	[0.001]	[0.007]	[0.007]	[0.001]	[0.001]	[0.008]	[0.008]
RSIZE	-0.007***	-0.005***	0.029***	0.047***	-0.005***	-0.003***	0.050***	0.062***
	[0.001]	[0.001]	[0.006]	[0.006]	[0.001]	[0.001]	[0.006]	[0.006]
NWC	-0.176***	-0.164***	-1.356***	-1.235***	-0.129***	-0.119***	-1.069***	-0.959***
	[0.006]	[0.006]	[0.050]	[0.047]	[0.006]	[0.006]	[0.057]	[0.054]
CFLOW	-0.139***	-0.130***	-0.632***	-0.595***	-0.132***	-0.122***	-0.468***	-0.427***
	[0.010]	[0.009]	[0.027]	[0.026]	[0.011]	[0.011]	[0.036]	[0.034]
R&D	0.109***	0.098***	0.313***	0.234***	0.107***	0.098***	0.385***	0.320***
	[0.005]	[0.005]	[0.031]	[0.029]	[0.007]	[0.006]	[0.041]	[0.040]
AI	0.189**	-0.084	3.706***	0.591	0.560***	0.336***	7.898***	5.090***
	[0.076]	[0.073]	[0.681]	[0.654]	[0.086]	[0.083]	[0.796]	[0.766]
STOCKCAP	-0.013***	-0.008***	-0.143***	-0.092***	-0.007***	-0.003	-0.105***	-0.063**
	[0.002]	[0.002]	[0.026]	[0.025]	[0.003]	[0.003]	[0.030]	[0.030]
OWN	-0.014***	-0.014***	-0.240***	-0.235***	-0.001	-0.002	-0.040**	-0.051**
	[0.003]	[0.003]	[0.038]	[0.037]	[0.002]	[0.002]	[0.019]	[0.020]
Adjusted R-sq	0.384	0.434	0.296	0.331	0.317	0.356	0.237	0.262
Observations	29628	29970	28670	29009	25397	25678	24584	24860

Table 10: 2SLS Regressions Results

This table reports the estimates of the 2SLS regressions for CASH level. The definitions of all variables are given in Table 1. Samples for Low (High) Governance countries include countries with World Governance Index in the bottom (top) quartile. All regressions include industry and year fixed effects. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	CASH (Definition 1)			CASH (Definition 2)		
	All Countries	Low Governance	High Governance	All Countries	Low Governance	High Governance
Constant	0.189***	0.501***	0.148**	-2.436***	0.266	-2.402***
	[0.035]	[0.017]	[0.064]	[0.266]	[0.242]	[0.688]
LEV	0.119*	-0.552***	0.030	-1.015*	-6.742***	-2.279*
	[0.064]	[0.051]	[0.126]	[0.530]	[0.613]	[1.266]
CR	-0.011***	0.011***	-0.002	-0.100***	0.169***	-0.066***
	[0.001]	[0.002]	[0.002]	[0.006]	[0.019]	[0.015]
SR	0.001	-0.004***	-0.001	0.088***	-0.078***	-0.048***
	[0.001]	[0.001]	[0.002]	[0.007]	[0.009]	[0.018]
GOV	-0.003**			-0.158***		
	[0.001]			[0.013]		
MB	0.026***	0.016***	0.027***	0.169***	0.026*	0.198***
	[0.001]	[0.002]	[0.002]	[0.010]	[0.014]	[0.018]
RSIZE	-0.016***	0.007***	-0.013***	-0.023*	0.170***	0.026
	[0.002]	[0.001]	[0.003]	[0.013]	[0.013]	[0.029]
NWC	-0.145***	-0.291***	-0.135***	-1.046***	-2.507***	-1.296***
	[0.013]	[0.023]	[0.020]	[0.084]	[0.216]	[0.136]
CFLOW	-0.053***	-0.084***	-0.134***	-0.432***	0.068	-0.642***
	[0.006]	[0.021]	[0.010]	[0.017]	[0.174]	[0.033]
R&D	0.144***	0.175***	0.120***	0.510***	0.954***	0.319***
	[0.004]	[0.038]	[0.007]	[0.027]	[0.262]	[0.047]
AI	-0.693***	0.680***	-0.307**	-3.417***	8.429***	0.801
	[0.084]	[0.139]	[0.145]	[0.769]	[1.664]	[1.538]
STOCKCAP	0.019***	-0.006**	-0.009**	0.061***	-0.148***	-0.155***
	[0.001]	[0.003]	[0.004]	[0.010]	[0.031]	[0.036]
OWN	0	-0.025***	-0.009**	0.057***	-0.499***	-0.168***
	[0.002]	[0.005]	[0.004]	[0.019]	[0.058]	[0.038]
Adjusted R-sq	0.265	0.205	0.327	0.29	0.026	0.323
Observations	109914	27819	29623	108549	27794	28665