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Creditor Rights, Country Governance, and Corporate Cash Holdings

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KOÇ UNIVERSITY-TÜSİAD ECONOMIC RESEARCH FORUM
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**CREDITOR RIGHTS, COUNTRY GOVERNANCE,
AND CORPORATE CASH HOLDINGS**

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Working Paper 1214
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Creditor Rights, Country Governance, and Corporate Cash Holdings

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Creditor Rights, Country Governance, and Corporate Cash Holdings

Abstract

This study examines the impact of creditor rights on cash holdings using a sample of firms from 48 countries. We argue that creditor rights affect the willingness of lenders to provide credit, which in turn affects the need for internal liquidity and cash holdings. Consistent with this, we find that corporate cash holdings decline with the strength of creditor rights. We also find that this relation depends on the quality of country governance. Among well-governed countries, firms hold less cash as creditor rights strengthen. In contrast, cash holdings increase with creditor rights in poorly governed countries. In these countries, it appears that the fear of expropriation motivates creditors with stronger rights to require higher levels of cash holding by borrowers.

JEL classification: G34; G32; G15

Keywords: Corporate governance; Cash levels; Creditor rights; International markets.

1. Introduction

At the end of 2010, the 413 non-financial firms in the S&P 500 held \$1.10 trillion in cash and cash equivalents, which amounted to 11% of their combined total assets. This sizable level of cash holdings is hardly unique to American firms. In our sample of firms from 48 countries, cash holdings averaged 17% of total assets, exceeding 20% in three countries, namely, Egypt, Hong Kong, and Israel. While substantial liquidity seems to be the universal norm, there are significant cross-country differences in corporate cash holdings. Among countries with at least 400 firm-year observations in our sample, average cash holdings as a percentage of total assets range from 6.6% in Chile to 22.7% in Hong Kong. Our goal is to extend the literature that seeks to explain these differences by focusing on disparities in creditor rights and governance quality.

This paper focuses on the effects of creditors rather than shareholders on corporate cash holdings. A number of researchers have studied the association between minority shareholder rights and cash holdings and have concluded that greater shareholder rights are associated with smaller corporate cash levels and/or increased value of cash [Kalcheva and Lins (2007), Dittmar et al. (2003), and Pinkowitz et al. (2006)]. Creditors are different than shareholders as they have different goals and perspectives on risk and thus the relationship between creditor rights and cash levels may not be the same as the association between shareholder rights and cash holdings.

Creditors supply funds to firms on the expectation that those funds will be repaid with interest. In virtually all legal regimes, failure to meet this expectation typically results in the bankruptcy of the borrower. However, the ramifications of a bankruptcy as well as other consequences of defaulting vary from one country to another. Prior research has demonstrated that these differences in creditor rights have significant effects on corporate decisions, including investment decisions (Nini, Smith & Sufi, 2009), capital structure choices (Roberts & Sufi,

2009), shareholder payouts (Brockman & Unlu, 2009) and corporate innovation (Acharya & Subramanian, 2009). In particular, Djankov, McLiesh & Shleifer (2007) show that stronger creditor rights facilitate an increase in the supply of credit by ameliorating the dead-weight cost attributable to creditor–debtor agency conflicts. As a result, stronger creditor rights can reduce the need for internal liquidity. Thus, we hypothesize a negative relation between the strength of creditor rights and corporate cash holdings.

Furthermore, we expect this relation to depend on the quality of country-level governance. In well-governed countries, creditors in general have little or no reasons to fear expropriation via strategic default or other opportunistic behavior by corporate insiders because strong country governance increases the ability of creditors to enforce their rights through the court system. Thus, differences in creditor rights are more meaningful in well-governed jurisdictions and stronger creditor rights in this instance would facilitate even greater credit availability and a lesser need for internal liquidity. For these reasons, we expect the negative association between corporate cash holdings and creditor rights to be stronger among well-governed countries.

In contrast, lending in poorly governed countries potentially exposes creditors to significant expropriation risk. Thus, rational lenders would restrict the supply of credit in such jurisdictions. Consistent with this, Jappelli, Pagano & Bianco (2005) show that credit availability is lower in jurisdictions with poorer judicial efficiency. Similarly, Fabbri (2002) shows that judicial efficiency is positively related with the flow and stock of corporate debt. This suggests that the need for internal liquidity is higher in poorly governed countries, which would imply higher cash holdings on average. Nevertheless, when creditors do lend in poorly governed countries, it is plausible to expect them to impose conditions and encourage corporate strategies

that increase the likelihood of repayment in light of the higher expropriation risks. One such strategy would be to encourage or require higher cash holdings, but the ability of creditors to demand and the willingness of management to acquiesce to such conditions would depend on the strength of creditor rights. Even in poorly governed countries, the consequences to management of a failure to pay back creditors are most likely worse when creditor rights are strong. Thus, we expect a positive association between creditor rights and cash levels in countries with poor governance. Alternatively, if country governance dominates creditor rights so that strong creditor rights are meaningless in poorly governed countries, then we should find no effect for creditor rights on cash holdings in countries with weak governance.

We test these hypotheses on a sample of over 19,000 unique firms from 48 countries over 1996–2006. For the full sample, we find that corporate cash holdings decline significantly with the strength of creditor rights. In particular, an increase of one standard deviation in creditor rights is associated with a reduction of 1.2 percentage points in the ratio of cash and cash equivalents to total assets after controlling for other firm- and country-level determinants of corporate liquidity. Since the unconditional average cash ratio is 17.3%, this is economically non-trivial.

Next, we classify the sample into two groups based on the strength of country-level governance, i.e., well-governed and poorly governed countries, and perform separate analysis for each group. As expected, we find a strong negative relation between corporate cash holdings and the strength of creditor rights in well-governed countries. Thus, good governance appears to make creditor rights more valuable, which in turn reduces the need for corporate cash holdings as creditors maintain an ample supply of credit. When country governance is poor, however, we find a positive relation between cash holdings and creditor rights. This is consistent with our

hypothesis that in this environment, creditors are concerned about expropriation and would rationally restrict the supply of credit, forcing greater internal liquidity. Nevertheless, if creditors possess sufficient rights, creditors and corporate insiders will agree that it is in their best interests for the firm to hold more cash.

Our results also indicate that higher shareholder rights are generally associated with lower levels of cash holdings, as previous researchers have found. In a new result, we show that this effect is more pronounced when country governance is weak. Shareholders in these settings appear to use their powers to “force” management to hold less cash. In contrast, when country governance is strong other mechanisms limit management from holding excess cash and strong shareholder rights do not appear to make a difference.

These results extend the literature on cash holdings by further illustrating the significance of country-level institutional differences in explaining corporate cash holdings, over and above the effects of firm-specific variables. Invariably, managers must consider the environments in which their firms operate when making policy choices. Our results suggest that the strength of creditor rights and country level governance constitute an important dimension of these considerations in corporate liquidity decisions.

The rest of the paper proceeds as follows. We present a brief review of the relevant literature in Section 2, and discuss our data and methodology in Section 3. Section 4 contains our tests and results, while Section 5 concludes with a brief summary.

2. A brief review of relevant literature

In this section, we review two streams of literature: (1) the determinants of cash holdings, with an emphasis on agency costs and the role of governance in reducing these costs, and (2) the influence of creditor rights on corporate decision-making.

2.1. Cash holdings

The tradeoff model provides a useful way to examine the determinants of corporate cash holdings.¹ In this model, the optimal level of cash holdings occurs at the point when the marginal cost of holding the next dollar of cash equals its marginal benefit. The costs of holding cash consist of the lower return on cash relative to other assets and the possibility that managers will use cash unwisely. For example, managers could spend cash on unnecessary perks, negative net present value projects, or simply expropriate it. As Myers & Rajan (1998) point out, cash can disappear more easily than physical assets such as plant and equipment. The benefits of holding cash are the savings on transaction costs if the firm would have to raise funds or liquidate assets in order to make payments. In addition, firms benefit when they have liquid assets to finance investments if the alternative would involve raising funds at a high cost.

Based on these considerations, the trade-off model suggests a number of factors as potential determinants of corporate cash holdings. These factors motivate our control variables. We discuss them below:

Asymmetric information: Firms that are subject to a higher degree of information asymmetry would be expected to have higher cash holdings because it is more costly for them to raise funds externally.² As a result, firms that invest more in research and development (R&D) or whose activities are not very transparent to investors would hold more cash. Dittmar, Mahrt-Smith & Servaes (2003) report evidence consistent with this argument.

¹ See also Opler et al. (1999) and Dittmar et al. (2003) for additional details.

² See Drobetz, Gruninger & Hirschvogl (2010) for a discussion of information asymmetry and the value of cash.

Cash flow riskiness: In a similar vein, firms with more volatile cash flows should hold more cash since these firms are more likely to have shortfalls in cash and holding more cash would reduce the probability of going to the markets to acquire it. Opler, Pinkowitz, Stulz & Williamson (1999) and Dittmar et al. (2003) report evidence supporting this conjecture.

Firm size: Larger firms would hold relatively less cash since they have better access to the capital markets and on average are able to obtain funds more cheaply than smaller firms due to the economies of scale in raising funds. Dittmar et al. (2003) report international evidence that larger firms in fact, hold less cash while Opler et al. (1999) show the same for U.S. firms.

Investment opportunities: Firms with more investment opportunities should hold more cash because the loss to them of not being able to take advantage of these opportunities is greater than for firms with fewer investment opportunities. Firms with higher market-to-book ratios are generally assumed to have more investment opportunities. Opler et al. (1999) show that firms with more growth opportunities hold more cash as does Dittmar et al. (2003).

Substitutes for cash: Firms with close substitutes for 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 & Lins (2007) and Dittmar et al. (2003) find support for this hypothesis.

Cash flows: Firms with higher cash flow are in a position to have lower cash holdings. All things being equal, these firms are less likely to need to raise cash to pay for future expenses because of their higher cash flow. On the other hand, if increased cash flow is not spent or paid out, then higher cash flows would be associated with increased cash holdings. Opler et al. (1999), Kalcheva & Lins (2007), and Dittmar et al. (2003) find evidence consistent with the second hypothesis, i.e., higher cash flows are associated with greater cash holdings.

Access to cheap funds: If firms can easily obtain funds at a reasonable cost, then it is rational for them to hold less cash. Thus, access to low cost funds would reduce the level of corporate cash holdings. Opler et al. (1999) find evidence consistent with this expectation.

Agency issues and corporate governance: Managers who are not guided by shareholder maximization are inclined to waste company resources on perks and projects with negative net present values and to divert company resources to themselves. As Pinkowitz et al. (2006) point out, it would be expected that these managers would maintain above average cash levels. Having high cash levels makes it easier and provides greater flexibility for managers to spend unwisely or divert funds. These managers can also avoid the scrutiny of going to the capital markets for additional resources. Also having excess cash reduces the problems from adverse shocks.

Dittmar et al. (2003) find that companies in countries with poor shareholder protection and hence substantial agency issues do, in fact, hold almost twice as much cash as firms operating in countries with strong shareholder protection.³ Harford, Mansi & Maxwell (2008) find evidence to the contrary, namely that firms with weak corporate governance hold smaller amounts of cash. Dittmar et al. (2003) posit, however, that it is difficult to find a relationship between agency issues and cash levels using just US data because firms in the US have good overall protection.

Other studies have compared the value of cash in well-governed companies with the value in companies with poor governance. Dittmar and Mahrt-Smith (2007) observe that the value of cash in well-governed companies is approximately double the value in poorly governed companies. This result is consistent with the fact that investors in poorly governed countries worry that their cash may be expropriated or used unwisely. The fact that the value of cash in

³ See also Kusnadi and Wei (2011) for a study of shareholder rights and changes in cash

poorly governed countries is almost half of what is it in well-governed countries implies that expropriation of funds is a real and powerful concern for investors in countries with poor shareholder protection. These authors also show that poorly governed firms spend (in some cases on acquisitions⁴) excess cash quicker than well-governed firms. These expenditures lead to poor operating performance. Furthermore, Pinkowitz et al. (2006) show that cash is worth considerably more in countries with good investor protection than in countries with poor investor protection. They 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. Similarly, Fresard and Salva (2010) observe that investors place a higher value on excess cash for foreign companies that list on the US exchanges than for similar firms that list only in their home country. These findings suggest that minority investors are concerned about the possibility of firms expropriating their funds in poorly governed countries and that dividend payments reduce the possible amount of expropriation.

In summary, prior research has shown that agency issues are likely a determinant of cash holdings for firms and that governance quality is important both for the level of cash holdings and for cash valuation. Later in the paper we will explore whether governance influences the relationship between creditor rights and cash holdings.

2.2. *Creditor rights*

Traditionally, the emphasis in finance has been on the powers of creditors during bankruptcy or during periods of financial distress. Recent evidence, however, shows that creditors do use their powers in many instances where financial distress is not an immediate

⁴ See Hartford et al. (2008) for more evidence on poor governance firms spending on acquisitions.

issue. Brockman & Unlu (2009) observe, for example, that creditor rights play an important role in dividend decisions. They show that when creditor rights are weak, creditors seek and managers agree to pay less dividends, consistent with a substitution model. In this case, less dividends substitute for weak creditor rights and the agency costs of debt are reduced.

Creditors may have significant influence on corporate policies especially for firms that have private credit agreements as opposed to firms that 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 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 firms with private credit agreements with banks reduce investments. They show that 32% of their private credit agreements have restrictions on future investments while Billett, King & Mauer (2007) show that only 5% of public bond indentures have similar restrictions. Nini et al. (2009) also indicate that following violations there is an increase in CEO turnover, reduction in corporate payouts (repurchases and dividends), and an increase in cash balances. Acharya, Amihud & Litov (2011) observe that stronger creditor rights result in more diversifying acquisitions, and Acharya & Subramanian (2009) show that strong creditor rights are associated with less innovation.

Given these results and the finding by Djankov et al. (2007) that creditor rights are positively associated with the supply of credit, we expect creditor rights to affect corporate liquidity through their effect on the availability and cost of external finance. When creditor rights are strong, lenders are more willing to supply credit, which reduces the benefits to firms of

holding cash internally. Thus, stronger creditor rights would be associated with lower cash holdings. We summarize this in a formal hypothesis as follows, stated in the alternative form:

Hypothesis 1. Corporate cash holdings are negatively related with the strength of country-level creditor rights.

Ferreira and Vilela (2004) and Guney et al. (2007) find evidence consistent with Hypothesis 1. Ferreira and Vilela examine EMU countries while the Guney et al. study firms in France, Germany, Japan, UK, and US. However, neither study examined the role of governance in influencing the relationship between creditor rights and cash levels.

Strong country governance increases the value of creditor rights, which suggests that the expected negative relation between creditor rights and cash holdings would strengthen among well-governed countries. In contrast, weak country governance raises the risk of expropriation by corporate insiders, which lenders would seek to mitigate. In this regard, strong creditor rights can empower lenders in poorly governed countries to demand higher cash reserves as protection against expropriation. Thus, we hypothesize a positive relation between creditor rights and cash holdings in poorly governed countries. Alternatively, poor country governance can render creditor rights meaningless, in which case we expect no relation between creditor rights and cash holdings in poorly governed countries. We formalize these hypotheses below:

Hypothesis 2. Strong country governance magnifies the negative relation between corporate cash holdings and creditor rights.

Hypothesis 3a. Corporate cash holdings are positively related with the strength of creditor rights in poorly governed countries.

Hypothesis 3b. Corporate cash holdings are not related with the strength of creditor rights in poorly governed countries.

3. Data Sources and Methodology

3.1. Data sources

We obtain data on creditor rights from Djankov et al. (2007). They rate the powers of secured lenders during bankruptcy, scoring countries on 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 bankrupt firm; and (4) whether an administrator, and not management, is responsible for running the business during reorganization” (Djankov et al., 2007: 302). These data are available for 1996–2003. For years subsequent to 2003, we assume that the level of creditor rights remain unchanged from 2003. This allows us to extend our analysis beyond 2003 without compromising the integrity of our results since the index of creditor rights exhibits very little time series variation. In fact, only three of the 48 countries in our sample (Indonesia, Japan, and Thailand) experienced any movement in the index of creditor rights between 1996 and 2003 and the change is a one-unit change in each case. As a robustness check, we also estimate (unreported) regressions where our sample is restricted to years with actual observations for creditor rights and obtain virtually identical results.

We use a broad definition of country governance based on data from the World Bank.⁵ 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;

⁵ See Kaufmann, Kraay & Mastruzzi (2009).

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). With the exception of 1997, 1999, and 2001, we define each country’s governance score for each year as the average of its scores on these six dimensions. The World Bank does not have data for the aforementioned years. As a result, we use scores for the immediately preceding year for each of these years in order to prevent a significant data loss.

We also include a variable for shareholder rights in our models since Dittmar et al. (2003) show that shareholder rights significantly impact corporate cash holdings. This variable measures the legal protection afforded to minority shareholders against expropriation by corporate insiders and comes from La Porta, Lopez-de-Silanes, Shleifer & Vishny (1997) for 1996–2002 and Djankov, La Porta, Lopez-de-Silanes, & Shleifer, (2008) for 2003–2006.

Our firm-level accounting and stock return data come from *Worldscope* and *Datastream*, respectively. We exclude utilities and financial firms due to possible regulatory influences. Finally, we obtain stock market capitalization data from a World Bank study by Beck, Demirguc-Kunt & Levine (2010). Based on the intersection of these various datasets, our full sample consists of 87,295 firm-year observations for 19,084 unique firms in 48 countries over 1996–2006. We winsorize all financial data at the 1st and 99th percentiles to reduce the influence of potential outliers.

3.2. *Basic model*

The following regression equation is our basic model to examine the impact of creditor rights on cash levels. The precise definitions for all the variables are given in Table 1.

$$\text{CASH}_{it} = b_0 + b_1 \text{CR}_{jt} + b_2 \text{SR}_{jt} + b_3 \text{GOV}_{jt} + b_4 \text{MB}_{it} + b_5 \text{RSIZE}_{it} + b_6 \text{NWC}_{it} + b_7 \text{CFLOW}_{it} + b_8 \text{R\&D}_{it} \\ + b_9 \text{LEV}_{it} + b_{10} \text{AI}_{it} + b_{11} \text{STOCKCAP}_{jt} + b_{12} \text{OWN}_{it} + b_{12} \text{OWNSQ}_{it} + \sum b \text{ YEAR} + \sum c \text{ IND} + e_t$$

In this model, country level variables for country j in year t are creditor rights (CR_{jt}) from Djankov et al. (2007), shareholder rights (SR_{jt}) from Djankov et al. (2008), and governance scores (GOV_{jt}) from Kaufmann et al. (2009). Stock market capitalization (STOCKCAP_{jt}) is an annual country level variable. Firm-level variables (denoted by the subscript i and t for firm and time, respectively) are cash holdings as a percentage of total assets (CASH_{it}), market-to-book ratio (MB_{it}), real size (RSIZE_{it}), net working capital (NWC_{it}), cash flow (CFLOW_{it}), research and development expenditures ($\text{R\&D}_{it}$), leverage (LEV_{it}), asymmetric information (AI_{it}), ownership (OWN_{it}), and ownership squared (OWNSQ_{it}). YEAR indicates a set of year dummies and IND is a set of industry dummies based on 2-digit SIC codes.

Insert Table 1 about here

We include two variables in this basic model that were not discussed in the literature section. The first is ownership (OWN_{it}), defined as the ownership structure at time t for firm i , that is, the percentage of shares held by insiders and outsiders that own at least 5 percent of the stock.⁶ Ownership structure may influence cash holdings in several ways. At lower levels of ownership, increased ownership by 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 value maximization suggests a lower amount of cash than if firms were run by managers dominated by self-interest. At higher ownership levels, however, increased

⁶ We recognize that insiders and outside block holders potentially have differing incentives and/or objectives, which would suggest using separate variables that capture each group's ownership level. However, we are limited by data constraints since Worldscope only provides the combined equity ownership of insiders and outsider block owners.

managerial ownership may lead to entrenchment and management may increase the percentage of cash holdings to preserve the private benefits of control. On the other hand, this variable may capture ownership of large shareholders with a high level of ownership indicating an increase in monitoring activities. The increase in monitoring activities should act to reduce cash holdings. We include the square of ownership to capture the two possible effects (increased alignment and entrenchment) of the ownership variable.

The second variable is leverage (LEV_{it}), which we define as the ratio of short- and long-term debt to total assets. As Opler et al. (1999) point out, there is no clear prediction on how firm-level leverage should affect cash holdings under the tradeoff model. On one hand, it is possible to argue that more debt increases the odds of bankruptcy and therefore highly levered firms should hold more cash as a cushion. On the other hand, increased debt may result in less cash if debt acts to reduce agency issues. Moreover, debt and cash can be substitutes as Opler et al. (1999) demonstrate. In this case, firms can use lines of credits to substitute for costly cash holdings. Empirically, debt appears to negatively affect the level of cash as shown in Opler et al. (1999).

We estimate our initial model using ordinary least squares (OLS) with standard errors clustered at the firm level. We repeat our analysis based on an alternative definition of cash (as well as some of the explanatory variables) to see if our main findings are robust to different definitions of cash holdings. In some regressions, we control for potential endogeneity by using lagged values of independent variables. Later, we discuss results using an instrumental variable approach.

4. Results

4.1. Descriptive statistics: cash holdings

Table 2 provides descriptive statistics for cash, governance index, creditor rights, and shareholder rights by country. The number of observations for Japan, U.K., and the U.S. represents 62% of the sample and the U.S. itself accounts for over 39% of the total. The mean and median values of the ratio of cash and short-term investments to total assets are 17.3% and 10.0% for our sample countries. Thus, on average, one sixth of total assets are held in cash and short-term investments. Cash levels of our sample firms in Australia, China, Denmark, Ireland, Japan, Jordan, Morocco, Norway, Pakistan, Singapore, Sweden, Switzerland, Taiwan, and United Kingdom are between 15% and 20%, indicating that higher cash holdings are fairly common in many parts of the world. For some countries, i.e., Egypt, Hong Kong, Israel, and the U.S., average cash levels exceeds 20% of total assets, while companies in Argentina, Chile, Colombia, Greece, India, Mexico, New Zealand, Peru, The Philippines, Russia, Spain, Sri Lanka, Thailand, and Venezuela have averages below 10%.⁷

Governance scores range from -0.931 for Pakistan to 1.863 for Finland with a mean of 1.272 for all sample countries. Denmark, Luxembourg, Netherlands, New Zealand, Norway, Sweden, and Switzerland have particularly high scores. Indonesia, Pakistan, Russia, and Venezuela have very low scores. The U.S. score is 1.441, which is just a little above average.

Scores for creditor rights range from zero (weakest) to four (strongest). Colombia, France, Mexico and Peru have the lowest score (0) while Hong Kong, New Zealand and the U.K. have the highest score (4). The U.S. has a score of one. Scores for shareholder rights range from one to five, with higher scores indicating better rights for minority shareholders. Highest scoring

⁷ The number of observations for some of these countries is relatively small so for these countries the findings should be viewed as tentative.

countries are Chile, Hong Kong, India, Ireland, Malaysia, Singapore, South Africa, the U.K. and Spain. Venezuela, China, and Jordan have the lowest score while the U.S. has a score of four.

Insert Table 2 about here

Table 3 presents cash holding descriptive statistics by year for all sample countries, the U.S., and all countries excluding the U.S. in different panels. As the table shows, cash holdings have increased steadily over time. For the entire sample, the cash ratio was 15.6% in 1996, rising to 18.2% in 2006 after peaking at 18.4% in 2004 and 2005. Similar results obtain when we split the sample into U.S. and non-U.S. companies, although the increase in cash levels is greater for the former, with cash holdings increasing from 18.3% of assets in 1996 to 23.1% in 2006. This is similar to Bates, Kathleen & Stulz (2009) who report a big increase in average cash holdings for U.S. firms.

Insert Table 3 about here

4.2. *Descriptive statistics and correlations: other variables*

Panel A of Table 4 provides descriptive statistics for the variables in our model for five different samples: (1) all countries, (2) low creditor rights countries, (3) high creditor rights countries, (4) poorly governed countries, and (5) well-governed countries. We define low creditor rights countries as those with creditor rights scores of 2 or lower and high creditor rights countries as those that score above 2. We define poorly governed countries as those scoring at or below the first quartile on the World Bank country governance index and well-governed

countries as those scoring at or above the third quartile. We also provide statistical comparisons of the variables for low vs. high creditor rights countries as well as poorly governed vs. well-governed countries.

As Table 4 shows, firms in countries with fewer creditor rights hold significantly more cash than those in countries with more creditor rights, which is consistent with **H1**. Specifically, the average cash ratio of 18.0% for firms in low creditor rights countries is significantly higher than the 15.8% observed among firms in countries with more creditor rights. The medians depict a similar pattern.

Table 4 also shows that countries with fewer creditor rights have fewer shareholder rights and poorer quality country governance. In addition, firms in these countries are larger, have more growth opportunities, invest more in R&D, and generate more cash from operations. They also are exposed to a higher degree of information asymmetry, use more debt, and have lower ownership concentrations. Furthermore, the univariate comparisons reveal that firms in poorly governed countries hold more cash (at the median) than those in well-governed countries, although the means suggest the opposite. In addition, firms in poorly governed countries are larger, have fewer growth opportunities, use more debt, invest less in R&D, and have higher ownership by insiders and significant outsiders.

Panel B of Table 4 presents pair-wise correlations for the variables used in our regressions. The correlation between creditor rights and cash holdings is negative while shareholder rights and cash holdings are positively correlated. Similarly, governance and cash holdings are positively correlated, as are shareholder rights and creditor rights. As in previous studies, we find a strong positive correlation between market-to-book ratios and cash holdings, which suggests that the greater are the investments opportunities, the more cash is held. In

addition, real size and cash holdings are negatively correlated, indicating that larger firms generally hold less cash. Net working capital has a negative correlation with cash holdings, suggesting that these assets can be more easily substituted for cash than can fixed assets. R&D has a positive correlation with cash, which suggests that firms that invest more in R&D prefer to hold more cash. The correlation between asymmetric information and cash is positive and suggests that firm with more asymmetric information hold more cash, as would be expected. Cash flow has a negative relationship with cash as does leverage. Finally, ownership has a small negative correlation with cash. Next, we examine these relations in a multivariate setting by estimating regression models of equation (1) above.

Insert Table 4 about here

4.3. *Basic regression results*

Table 5 presents our initial regression findings based on the full sample. Models (1) – (5) report the results of models where all variables are contemporaneous, while Models (6) – (8) show results of regressions that employ lagged independent variables as an initial step in addressing potential endogeneity issues, especially between leverage and cash holdings.

Creditor Rights

As Table 5 shows, creditor rights (CR) has a reliably negative coefficient in all models. This is true regardless of whether or not shareholder rights (SR) and/or the governance index (GOV) are included. In no instance does the inclusion of these two variables in the regressions change the sign or significance of CR. Our findings suggest that greater creditor rights are associated with lower corporate cash holdings. In Model (2), which controls for shareholder

rights and country-level governance, the coefficient of CR is -0.011. Since the standard deviation of CR is 1.13, this implies that an increase of one standard deviation in creditor rights is associated with a reduction of 1.2 percentage points in cash holdings. Compared to the full sample average cash ratio of 17.3%, this amounts to an economically significant reduction of 6.9% in corporate cash holdings.

This result is consistent with hypothesis **H1**, which states that stronger creditor rights facilitate a reduced need for internal corporate liquidity by enhancing the supply of credit. The result also suggests that 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 it is generally better for management in the long-run to pursue a value maximization strategy that may involve holding less cash.

Next, we test hypotheses **H2**, **H3a**, **H3b** on how country-level governance mediates the effect of creditor rights on corporate cash holdings. Models (4) and (7) include an indicator variable for well-governed countries (i.e., those scoring at or above the third quartile on the governance index) and the interaction of this variable with creditor rights. As argued earlier, we expect the interaction variable to be negative and significant under **H2**. As Table 5 shows, the results are consistent with our hypothesis, with the interaction term negative and significant at the 1% level in each model.

Similarly, Models (3) and (6) include an indicator variable that equals one for poorly governed countries, that is, those that scored at or below the first quartile on the World Bank governance index, as well as an additional variable that interacts this indicator variable and creditor rights. We expect this interaction variable to be positive if stronger rights allow creditors to demand higher cash holdings in poorly governed countries to safeguard against higher

expropriation risks as stated in **H3a**. In contrast, the interaction term would be insignificant if weak governance dominates any potential benefits of stronger creditor rights as stated in **H3b**. As Table 5 shows, the interaction term is positive and statistically significant at the 1% level in each regression, which is consistent with the former hypothesis.

We investigate these results further by estimating separate regressions for poorly governed and well-governed countries. The primary advantage of this approach over using interaction variables is that it does not constrain other variables in the model to have the same effects on corporate cash holdings in poorly governed and well-governed countries. We present results in Table 6. As the table shows, results are consistent with those obtained in Table 5 using interaction variables. Specifically, the coefficient for creditor rights is positive and significant in each regression for poorly governed countries. In contrast, the relation is significantly negative in well-governed countries. These results do not change regardless of whether we use contemporaneous or lagged independent variables.

Other Variables

Our results for other variables are largely consistent with prior research and/or expectations. We discuss these results in two parts, focusing first on country-level variables. As Table 5 shows, country-level governance is consistently negatively related with corporate cash holdings. Thus, companies located in well-governed countries tend to hold less cash, which is consistent with the argument that strong governance ameliorates potential agency problems between corporate insiders and outside investors (creditors and shareholders). Similarly, we find a negative relation between shareholder rights and cash holdings, which is consistent with Dittmar et al. (2003).

In a surprising result, we find a positive and significant impact for stock market capitalization (STOCKCAP), which suggests that firms in countries that have larger stock markets hold more cash. This is contrary to our expectation of a negative relation based on the argument that a larger stock market is indicative of a developed capital market, which should facilitate access to external finance and reduce the need for internal liquidity. A potential explanation for this result is that STOCKCAP measures stock market size relative to the GDP. Since countries with smaller stock markets also tend to have smaller GDPs, cross-sectional differences in STOCKCAP may not capture differences in capital market accessibility.

Our results for firm-specific variables are in line with prior studies such as Opler et al. (1999) and Dittmar et al. (2003). Table 5 shows a positive relation between market-to-book ratio and cash holdings, suggesting that firms with more investment opportunities generally hold more cash. Real firm size (RSIZE) has a negative and significant coefficient, which is consistent with the argument that larger firms can access capital markets more easily and thus do not need to hold as much cash. Net working capital (NWC) has a negative sign indicating that these assets can act as substitutes for cash since they can be sold or liquidated rather easily. R&D has a positive relation with cash holdings. Firms that invest more in R&D may need to hold more cash because they are constrained in raising external funds due to a higher degree of information asymmetry. Like Opler et al. (1999), we find that leverage (LEV) has a significantly negative effect on cash holdings. Surprisingly, however, we also find that cash flow (CFLOW) is negatively related with cash holdings. It could be the case that high cash flow firms decrease their cash holdings because they feel confident that their stockpile can be easily replenished.

Insert Tables 5 and 6 about here

Our results are not clear concerning ownership, especially when we lag the independent variables. Using contemporaneous values in Table 5, OWN has a positive and significant effect, and the coefficient of the square of the ownership variable (OWNSQ) is negative and significant. However, these two variables have just the opposite effects in regressions using lagged values.

4.3.1. Regression results for non-U.S. firms

Since U.S. firms constitute almost 40% of our sample, it is important to check that our results are not driven by U.S. observations. Table 7 reports results of our basic regression models when U.S. firms are excluded from the sample. Results are generally similar to those obtained for the full sample in Table 5, although the negative effect of creditor rights on cash holdings is a little weaker when U.S. firms are excluded. Nevertheless, the moderating role of country-level governance on the relation between creditor rights and cash holdings remains very comparable to that obtained for the full sample.

With one exception, other results also remain unchanged when we exclude U.S. firms. Specifically, we find a positive relation between cash holdings and information asymmetry among non-U.S. firms, which is consistent with our prior expectations. Asymmetric information problems may have severe impact on firms outside the U.S., and therefore firms subject to this problem hold more cash.

In unreported results, we also examine if our findings were driven by either U.K. firms or Japanese companies (second and third largest number of observations). Banks in Japan during the early years of our study exerted influence on Japanese firms to hold large cash balances [Iskandar-Datta and Jia (2012) and Pinkowitz and Williamson (2001)] and this possibly could

have affected our overall results. Our main findings do not change when either U.K. firms or Japanese firms are excluded.

Insert Table 7 about here

4.3.2. Robustness results with alternative measure of cash

We repeat our regression analysis by employing an alternative measure of cash holdings used in the literature. In calculating this measure, we scale cash and short-term investments by net assets (i.e., total assets less cash and short-term investments) and do the same for net working capital and cash flow. Table 8 contains results of these regressions for the full sample and when U.S. firms are excluded. Table 9 presents results for poorly governed and well-governed countries. As these tables show, there are no meaningful changes in the effects of either the major variables or the control variables. In particular, we continue to find the same patterns of relation between creditor rights and cash holdings.

Insert Table 8 and 9 about here

4.3.3. Joint determination of cash levels and debt

It is likely that debt and cash levels are jointly determined, in which case it would be inappropriate to use OLS to estimate equation (1). To address this problem we employ an instrumental variable for leverage. A major difficulty in finding an appropriate instrument for leverage is that variables that affect leverage are also very likely to affect cash holdings. An instrument for leverage should be correlated with leverage and be uncorrelated with the error

term in equation 1. We use the tangibility of the firm's assets as our instrument. In a regression with leverage as the dependent variable and using all of the exogenous variables in equation 1 plus the variable tangibility (computed as the ratio of net fixed assets to total assets) as independent variables, the coefficient for tangibility is significant at the one percent level. Hence tangibility satisfies the first criteria for an instrument. Unfortunately the second criteria for an instrument cannot be tested (see Woolridge (2000), chapter 15) but we are unaware of any model that postulates tangibility as a determinant of corporate cash holdings.

Table 10 presents our regressions using tangibility as the instrument for leverage and using both definitions for cash. Our results remain intact. Specifically with one exception, we continue to find a negative relation between creditor rights and cash holdings in the full sample as well as in the sample of well-governed countries. Also as before, we continue to find that cash holdings increase with creditor rights in poorly governed countries.

Insert Table 10 about here

5. Conclusions

This paper seeks to explain differences in corporate cash holdings by investigating the role of creditor rights. We hypothesize that strong creditor rights reduce corporate cash holdings by ameliorating the costs of creditor–borrower agency problems, which reduces the need for internal liquidity by expanding the supply of credit. We also hypothesize differences in these effects depending on the strength of country-level governance. We expect creditor rights to be more negatively related to cash holdings in well-governed countries since those rights are presumably more valuable in such jurisdictions. In contrast, borrowers in poorly governed

countries may hold more cash to assuage creditors' expropriation fears, especially when creditor rights are strong.

Our results support these hypotheses. We find a significant negative relation between creditor rights and cash holdings in the full sample. However, when the sample is broken down into well-governed and poorly governed countries, we find a negative and significant effect for creditor rights on cash holdings in the former and a positive relation in the latter group. These results are robust to alternative definitions of cash holdings, different country subsamples, and concerns about endogeneity. In particular, our results for creditor rights hold whether we use OLS with robust standard errors or employ instrumental variable regressions.

These results illustrate the importance of country-level variables in explaining differences in corporate cash holdings. High levels of corporate liquidity have attracted significant academic and public policy attentions in recent times. We contribute to these discussions by showing that firms respond to macro-level institutional factors in their liquidity decisions.

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Table 1: Definitions of variables

Dependent variable

CASH =	Cash ratio, with two different definitions
Definition 1 =	Cash and Short-term Investments / Total Assets
Definition 2 =	$\ln(\text{Cash and Short-term Investments} / \text{Net Assets})$
Net Assets =	Total Assets – Cash and Short-term Investments

Independent variables

1. Country level variables:

CR =	Creditor Rights for the period 1996-2006 [Djankov et al. (2007)], 2003 CR data is used for years after 2003
SR =	Shareholder Rights [La Porta et al. (1997) for the period 1996-2002, and Djankov et al. (2008) for 2003-2006]
GOV =	World Governance Index, World Bank [Kaufmann et al., (2009)] Annual average score of the mean of six governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, control of corruption) for the period 1996-2006 (For years 1997, 1999, and 2001, when data index is not available, we take the index in the previous year.)
LOW GOV=	Poorly Governed Countries (Dummy variable being 1 for countries with governance index in the bottom quartile, otherwise 0)
HIGH GOV=	Well-Governed Countries (Dummy variable being 1 for countries with governance index in the top quartile, otherwise 0)
STOCKCAP =	Annual Stock Market Capitalization [Beck et al. (2010)] Value of listed shares to GDP, deflated by CPI (Consumer Price Index)

2. Firm level variables:

MB =	Market to Book Ratio $[(\text{Total Debt} + \text{Market Value of Equity}) / \text{Total Assets}]$
RSIZE =	$\ln$ of Real Total Assets in U.S.\$
NWC =	Net Working Capital $[(\text{Current Assets} - \text{Cash and Short-term Investments} - \text{Current Liabilities}) / \text{Total Assets}]$ When alternative measure of CASH is used, this variable is scaled by Net Assets
CFLOW =	Cash Flow $[(\text{Operating Income} + \text{Depreciation and amortization} - \text{Interest} - \text{Taxes} - \text{Cash Dividends}) / \text{Total Assets}]$ When alternative measure of CASH is used, this variable is scaled by Net Assets
R&D =	Research and Development Expenses $(\text{Research and Development Expenses} / \text{Sales})$
LEV =	Leverage $[(\text{Short-term Debt} + \text{Long-term Debt}) / \text{Total Assets}]$
INDADJLEV =	Leverage adjusted by the industry median leverage at country level.
LOWLEV DUM =	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 (Percent of shares held by insiders and people who own at least five percent of the outstanding stock.)
OWNSQ =	Ownership Squared

Instrument for leverage

Tangibility =	$(\text{Net Fixed Assets} / \text{Total Assets})$
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Table 2: Cash holdings by country

The data for sample countries is collected for 1996–2006 from Worldscope. The definitions of variables CASH (*Cash/Assets*), GOV, CR, and SR are given in Table 1.

	CASH			GOV	CR	SR
Country	N	Mean	Median	Governance Index	Creditor Rights	Shareholder Rights
ARGENTINA	52	0.062	0.050	-0.020	1	3
AUSTRALIA	4568	0.163	0.079	1.612	3	4
AUSTRIA	180	0.127	0.085	1.613	3	2.25
BELGIUM	271	0.119	0.062	1.381	2	1.5
CANADA	2113	0.142	0.051	1.640	1	4.5
CHILE	460	0.066	0.039	1.113	2	5
CHINA	717	0.185	0.149	-0.524	2	1
COLOMBIA	27	0.076	0.062	-0.520	0	3
CZECH REPUBLIC	12	0.121	0.039	0.833	3	4
DENMARK	536	0.160	0.093	1.765	3	3
EGYPT	21	0.210	0.173	-0.544	2	3
FINLAND	483	0.129	0.071	1.863	1	3.25
FRANCE	1928	0.136	0.103	1.228	0	3.25
GERMANY	1725	0.142	0.077	1.546	3	2.25
GREECE	87	0.069	0.040	0.723	1	2
HONG KONG	1949	0.227	0.181	1.304	4	5
HUNGARY	42	0.139	0.081	0.928	1	2
INDIA	1351	0.088	0.041	-0.163	2	5
INDONESIA	355	0.130	0.091	-0.652	2.18	3
IRELAND	421	0.170	0.111	1.516	1	4.5
ISRAEL	232	0.237	0.178	0.548	3	3.5
ITALY	400	0.133	0.097	0.683	2	1.5
JAPAN	10324	0.162	0.128	1.136	2.36	4.25
JORDAN	15	0.172	0.119	0.036	1	1
KOREA, SOUTH	3192	0.137	0.094	0.623	3	3.25
MALAYSIA	1971	0.123	0.073	0.408	3	4.5
MEXICO	91	0.073	0.046	-0.030	0	2
MOROCCO	11	0.179	0.100	-0.249	1	2
NETHERLANDS	932	0.106	0.056	1.754	3	2.25
NEW ZEALAND	236	0.077	0.027	1.781	4	4
NORWAY	677	0.183	0.115	1.718	2	3.75
PAKISTAN	215	0.167	0.114	-0.931	1	4.5
PERU	45	0.048	0.023	-0.322	0	3.25
PHILIPPINES	484	0.096	0.054	-0.331	1	3.5
POLAND	185	0.112	0.077	0.521	1	2
RUSSIA	58	0.086	0.060	-0.660	1	4
SINGAPORE	1415	0.176	0.133	1.517	3	4.5
SOUTH AFRICA	866	0.130	0.100	0.340	3	5
SPAIN	320	0.086	0.051	1.161	2	4.5
SRI LANKA	69	0.089	0.074	-0.319	2	3.5
SWEDEN	817	0.163	0.096	1.738	1	3.25
SWITZERLAND	267	0.151	0.112	1.787	1	2.5
TAIWAN	2750	0.158	0.121	0.885	2	3
THAILAND	221	0.084	0.050	0.193	2.27	3
TURKEY	216	0.106	0.073	-0.205	2	2.5
UNITED KINGDOM	9611	0.162	0.087	1.585	4	5
UNITED STATES	34365	0.205	0.100	1.441	1	4
VENEZUELA	12	0.060	0.048	-0.604	3	1
TOTAL	87295	0.173	0.100	1.272	1.96	3

Table 3: Cash holdings by year

This table reports mean and median values of CASH (*Cash/Assets*) by year for all sample countries and for all countries excluding the U.S., separately. The sample period is from 1996 to 2006.

	CASH								
	<i>Panel A: All Countries</i>			<i>Panel B: The U.S.</i>			<i>Panel C: All Countries excluding the U.S.</i>		
Year	N	Mean	Median	N	Mean	Median	N	Mean	Median
1996	5401	0.156	0.080	2889	0.183	0.076	2512	0.124	0.082
1997	5514	0.156	0.085	2959	0.184	0.083	2555	0.125	0.085
1998	6062	0.152	0.075	3425	0.174	0.074	2637	0.124	0.076
1999	6142	0.165	0.073	3620	0.193	0.074	2522	0.124	0.073
2000	6809	0.175	0.093	3128	0.198	0.080	3681	0.155	0.102
2001	7757	0.173	0.091	3175	0.207	0.093	4582	0.149	0.091
2002	8308	0.171	0.098	3091	0.204	0.105	5217	0.151	0.096
2003	8312	0.177	0.109	2848	0.219	0.126	5464	0.155	0.103
2004	10679	0.184	0.115	3163	0.235	0.139	7516	0.163	0.109
2005	11067	0.184	0.118	3114	0.234	0.143	7953	0.164	0.112
2006	11244	0.182	0.115	2953	0.231	0.133	8291	0.164	0.111
Total	87295	0.173	0.100	34365	0.205	0.100	52930	0.152	0.100

Table 4: Summary statistics and correlations

This table reports the mean and median values of all variables (Panel A) and correlations (Panel B). The sample period is from 1996 to 2006. Definitions of the variables are given in Table 1. Poorly (Well) governed countries include countries with World Governance Index in the bottom (top) quartile. ***, ** and * denote significance at 1%, 5% and 10% respectively.

Panel A: Descriptive statistics for all variables

	All Countries (N = 87295)		0 ≤ Creditor rights ≤ 2 Low CR (N = 58609)		2 < Creditor rights ≤ 4 High CR (N = 28686)		Poorly governed Countries (N = 18104)		Well-governed Countries (N = 17124)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CASH (<i>Cash/Assets</i>)	0.173	0.100	0.180	0.102	0.158***	0.096***	0.140	0.102	0.149***	0.077***
CR	1.962	2.000	1.253	1.000	3.411***	3.000***	2.344	2.000	2.881***	3.000***
SR	4.130	4.500	4.083	4.500	4.227***	5.000***	3.660	4.000	3.992***	4.000***
GOV	1.272	1.431	1.255	1.368	1.307***	1.553***	0.525	0.673	1.659***	1.649***
MB	1.880	1.309	1.999	1.367	1.637***	1.208***	1.374	1.046	1.847***	1.342***
RSIZE	5.221	5.198	5.390	5.423	4.877***	4.732***	5.643	5.542	4.841***	4.724***
NWC	0.045	0.033	0.054	0.043	0.026***	0.014***	0.014	0.013	0.036***	0.020***
CFLOW	0.015	0.055	0.016	0.060	0.013*	0.046***	0.048	0.050	0.008***	0.052***
R&D	0.083	0.000	0.097	0.000	0.053***	0.000***	0.013	0.000	0.073***	0.000*
LEV	0.209	0.182	0.214	0.186	0.200***	0.173***	0.253	0.237	0.193***	0.172***
AI	0.036	0.028	0.038	0.029	0.031***	0.025***	0.030	0.026	0.031***	0.025***
STOCKCAP	1.208	1.207	1.135	1.202	1.357***	1.291***	0.858	0.669	1.168***	1.098***
OWN	0.395	0.371	0.375	0.345	0.434***	0.428***	0.474	0.457	0.384***	0.360***
OWNSQ	0.222	0.137	0.206	0.119	0.255***	0.183***	0.286	0.209	0.216***	0.130***

Panel B: Correlations among variables in regressions

	CASH	CR	SR	GOV	MB	RSIZE	NWC	CFLOW	R&D	LEV	AI	STOCK CAP	OWN	OWNSQ
CASH	1													
CR	-0.0635***	1												
SR	0.0097***	0.1243***	1											
GOV	0.0694***	-0.0213***	0.2723***	1										
MB	0.3742***	-0.1212***	0.0289***	0.1139***	1									
RSIZE	-0.2531***	-0.0573***	-0.1198***	-0.0861***	-0.2100***	1								
NWC	-0.1666***	-0.0961***	0.0567***	0.0806***	-0.0765***	-0.0510***	1							
CFLOW	-0.3167***	0.0247***	-0.0334***	-0.0865***	-0.2422***	0.3856***	0.2233***	1						
R&D	0.4051***	-0.0767***	0.0253***	0.0861***	0.2604***	-0.1732***	-0.0985***	-0.4656***	1					
LEV	-0.4268***	-0.0292***	-0.0610***	-0.0999***	-0.2351***	0.2715***	-0.2075***	0.0711***	-0.1387***	1				
AI	0.1614***	-0.2035***	0.1187***	0.1108***	0.1520***	-0.5334***	-0.1050***	-0.4146***	0.1657***	-0.0177***	1			
STOCKCAP	0.0853***	0.1716***	0.3541***	0.2990***	0.0767***	-0.1308***	0.0413***	-0.0592***	0.0363***	-0.0997***	0.1190***	1		
OWN	-0.0485***	0.1019***	-0.0581***	-0.2105***	-0.0729***	-0.1672***	-0.0125***	0.0352***	-0.0999***	0.0057	0.0538***	-0.0300***	1	
OWNSQ	-0.0486***	0.0740***	-0.0619***	-0.1913***	-0.0510***	-0.1309***	-0.0131***	0.0355***	-0.0862***	0.0024	0.0527***	-0.0259***	0.9470***	1

Table 5: Full sample regression results

This table reports the estimates of the OLS regressions for CASH 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. Standard errors reported in brackets below the estimated coefficients are clustered at the firm level. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	Contemporaneous regressions					Lag regressions		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.266*** [0.007]	0.285*** [0.007]	0.286*** [0.007]	0.291*** [0.007]	0.300*** [0.007]	0.278*** [0.008]	0.274*** [0.007]	0.288*** [0.008]
CR	-0.011*** [0.001]	-0.011*** [0.001]	-0.013*** [0.001]	-0.004*** [0.001]	-0.005*** [0.001]	-0.012*** [0.001]	-0.005*** [0.001]	-0.005*** [0.001]
SR		-0.004*** [0.001]	-0.004*** [0.001]	-0.007*** [0.001]	-0.007*** [0.001]	-0.006*** [0.001]	-0.007*** [0.001]	-0.008*** [0.001]
GOV		-0.005*** [0.002]						
LOW GOV			-0.046*** [0.006]		-0.048*** [0.006]	-0.052*** [0.007]		-0.052*** [0.007]
CR * LOW GOV			0.024*** [0.003]		0.018*** [0.003]	0.023*** [0.003]		0.017*** [0.003]
HIGH GOV				-0.012** [0.005]	-0.017*** [0.006]		-0.011** [0.005]	-0.014*** [0.005]
CR * HIGH GOV				-0.008*** [0.002]	-0.006*** [0.002]		-0.007*** [0.002]	-0.007*** [0.002]
MB	0.018*** [0.001]	0.018*** [0.001]	0.018*** [0.001]	0.018*** [0.001]	0.018*** [0.001]	0.018*** [0.001]	0.018*** [0.001]	0.018*** [0.001]
RSIZE	-0.005*** [0.001]	-0.005*** [0.001]	-0.005*** [0.001]	-0.006*** [0.001]	-0.006*** [0.001]	-0.005*** [0.001]	-0.005*** [0.001]	-0.006*** [0.001]
NWC	-0.231*** [0.006]	-0.229*** [0.006]	-0.230*** [0.006]	-0.227*** [0.006]	-0.229*** [0.006]	-0.190*** [0.006]	-0.185*** [0.006]	-0.188*** [0.006]
CFLOW	-0.070*** [0.008]	-0.070*** [0.008]	-0.071*** [0.008]	-0.071*** [0.008]	-0.070*** [0.008]	-0.085*** [0.010]	-0.087*** [0.010]	-0.085*** [0.010]
R&D	0.122*** [0.004]	0.123*** [0.004]	0.122*** [0.004]	0.123*** [0.004]	0.122*** [0.004]	0.117*** [0.005]	0.118*** [0.005]	0.117*** [0.005]
LEV	-0.384*** [0.006]	-0.385*** [0.006]	-0.385*** [0.006]	-0.386*** [0.006]	-0.386*** [0.006]	-0.342*** [0.006]	-0.342*** [0.006]	-0.341*** [0.006]
AI	-0.106** [0.045]	-0.101** [0.045]	-0.130*** [0.045]	-0.153*** [0.045]	-0.179*** [0.045]	0.076 [0.055]	0.078 [0.055]	0.041 [0.055]
STOCKCAP	0.012*** [0.001]	0.015*** [0.002]	0.014*** [0.002]	0.013*** [0.002]	0.011*** [0.002]	0.015*** [0.002]	0.014*** [0.002]	0.012*** [0.002]
OWN	0.051*** [0.010]	0.050*** [0.010]	0.048*** [0.010]	0.040*** [0.010]	0.041*** [0.010]	-0.004 [0.003]	-0.007*** [0.003]	-0.006** [0.003]
OWNSQ	-0.059*** [0.010]	-0.060*** [0.010]	-0.057*** [0.010]	-0.053*** [0.010]	-0.053*** [0.010]	0 [0.000]	0.000** [0.000]	0 [0.000]
Adjusted R-sq	0.417	0.418	0.419	0.421	0.421	0.386	0.387	0.388
Observations	87291	87291	87291	87291	87291	58810	58810	58810

Table 6: Regression results for poorly and well-governed countries

This table reports the estimates of the OLS regressions for CASH by using data from low (bottom quartile) and high (top quartile) governance countries. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. Standard errors reported in brackets below the estimated coefficients are clustered at the firm level. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	<i>Panel A: Poorly governed countries</i>				<i>Panel B: Well-governed countries</i>			
	Contemporaneous regressions		Lag regressions		Contemporaneous regressions		Lag regressions	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Constant	0.160*** [0.012]	0.184*** [0.013]	0.157*** [0.012]	0.181*** [0.013]	0.256*** [0.015]	0.261*** [0.015]	0.260*** [0.014]	0.259*** [0.014]
CR	0.017*** [0.003]	0.020*** [0.003]	0.012*** [0.003]	0.018*** [0.003]	-0.008*** [0.002]	-0.007*** [0.002]	-0.010*** [0.002]	-0.010*** [0.002]
SR		-0.011*** [0.001]		-0.012*** [0.002]		-0.002 [0.002]		0.001 [0.002]
MB	0.021*** [0.002]	0.022*** [0.002]	0.022*** [0.002]	0.023*** [0.002]	0.023*** [0.001]	0.023*** [0.001]	0.019*** [0.001]	0.019*** [0.001]
RSIZE	0.001 [0.001]	0.001 [0.001]	0 [0.001]	0 [0.001]	-0.006*** [0.001]	-0.006*** [0.001]	-0.007*** [0.001]	-0.007*** [0.001]
NWC	-0.161*** [0.010]	-0.152*** [0.010]	-0.104*** [0.012]	-0.096*** [0.012]	-0.182*** [0.012]	-0.182*** [0.012]	-0.140*** [0.011]	-0.140*** [0.011]
CFLOW	0.002 [0.020]	0.002 [0.020]	0.026 [0.024]	0.03 [0.023]	-0.134*** [0.014]	-0.134*** [0.014]	-0.100*** [0.014]	-0.100*** [0.014]
R&D	0.153*** [0.041]	0.152*** [0.041]	0.237*** [0.054]	0.233*** [0.052]	0.102*** [0.009]	0.103*** [0.009]	0.093*** [0.008]	0.093*** [0.008]
LEV	-0.299*** [0.009]	-0.297*** [0.009]	-0.274*** [0.010]	-0.274*** [0.010]	-0.372*** [0.013]	-0.372*** [0.013]	-0.314*** [0.011]	-0.314*** [0.011]
AI	-0.057 [0.103]	-0.085 [0.102]	-0.04 [0.111]	0.017 [0.110]	0.183* [0.108]	0.179* [0.108]	0.147 [0.093]	0.146 [0.093]
STOCKCAP	-0.001 [0.004]	0.007* [0.004]	0.001 [0.004]	0.009** [0.004]	-0.014*** [0.004]	-0.011** [0.005]	-0.009** [0.004]	-0.010* [0.005]
OWN	-0.006 [0.019]	0.012 [0.019]	-0.008* [0.004]	-0.005 [0.004]	0.008 [0.019]	0.008 [0.019]	-0.007 [0.006]	-0.007 [0.006]
OWNSQ	-0.004 [0.017]	-0.016 [0.017]	0 [0.000]	0 [0.000]	-0.018 [0.019]	-0.019 [0.019]	0 [0.000]	0 [0.000]
Adjusted R-sq	0.278	0.285	0.268	0.277	0.428	0.428	0.385	0.385
Observations	18104	18104	11535	11535	17120	17120	14221	14221

Table 7: Regression results excluding U.S. firms

This table reports the estimates of the OLS regressions for CASH 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. Standard errors reported in brackets below the estimated coefficients are clustered at the firm level. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	<i>Panel A: Contemporaneous regressions</i>					<i>Panel B: Lag regressions</i>		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.195*** [0.008]	0.222*** [0.009]	0.219*** [0.009]	0.228*** [0.009]	0.240*** [0.009]	0.212*** [0.009]	0.214*** [0.008]	0.237*** [0.009]
CR	-0.004*** [0.001]	-0.002** [0.001]	-0.005*** [0.001]	0.003* [0.001]	-0.001 [0.002]	-0.007*** [0.001]	-0.001 [0.001]	-0.004** [0.002]
SR		-0.005*** [0.001]	-0.005*** [0.001]	-0.007*** [0.001]	-0.007*** [0.001]	-0.005*** [0.001]	-0.006*** [0.001]	-0.008*** [0.001]
GOV		-0.008*** [0.002]						
LOW GOV			-0.027*** [0.006]		-0.034*** [0.007]	-0.035*** [0.007]		-0.045*** [0.008]
CR * LOW GOV			0.018*** [0.003]		0.014*** [0.003]	0.017*** [0.003]		0.015*** [0.003]
HIGH GOV				-0.006 [0.006]	-0.015** [0.006]		-0.014** [0.006]	-0.027*** [0.007]
CR * HIGH GOV				-0.010*** [0.002]	-0.006*** [0.002]		-0.006*** [0.002]	-0.003 [0.002]
MB	0.022*** [0.001]	0.022*** [0.001]	0.022*** [0.001]	0.022*** [0.001]	0.023*** [0.001]	0.019*** [0.001]	0.020*** [0.001]	0.020*** [0.001]
RSIZE	-0.001* [0.001]	-0.001* [0.001]	-0.002** [0.001]	-0.003*** [0.001]	-0.003*** [0.001]	0 [0.001]	-0.001* [0.001]	-0.002** [0.001]
NWC	-0.188*** [0.007]	-0.187*** [0.007]	-0.187*** [0.007]	-0.183*** [0.007]	-0.184*** [0.007]	-0.135*** [0.007]	-0.130*** [0.007]	-0.131*** [0.007]
CFLOW	-0.105*** [0.011]	-0.107*** [0.011]	-0.108*** [0.011]	-0.109*** [0.011]	-0.108*** [0.011]	-0.087*** [0.013]	-0.090*** [0.013]	-0.087*** [0.013]
R&D	0.113*** [0.008]	0.114*** [0.008]	0.115*** [0.008]	0.115*** [0.008]	0.115*** [0.008]	0.111*** [0.009]	0.112*** [0.009]	0.112*** [0.009]
LEV	-0.341*** [0.007]	-0.344*** [0.007]	-0.346*** [0.007]	-0.344*** [0.007]	-0.344*** [0.007]	-0.307*** [0.007]	-0.307*** [0.007]	-0.305*** [0.007]
AI	0.324*** [0.066]	0.283*** [0.066]	0.243*** [0.066]	0.231*** [0.066]	0.211*** [0.066]	0.531*** [0.077]	0.520*** [0.077]	0.500*** [0.077]
STOCKCAP	0.007*** [0.002]	0.011*** [0.002]	0.011*** [0.002]	0.009*** [0.002]	0.009*** [0.002]	0.013*** [0.002]	0.012*** [0.002]	0.012*** [0.002]
OWN	0.062*** [0.012]	0.059*** [0.012]	0.056*** [0.012]	0.041*** [0.012]	0.039*** [0.012]	0.005 [0.003]	0 [0.003]	0 [0.003]
OWNSQ	-0.056*** [0.012]	-0.059*** [0.012]	-0.054*** [0.012]	-0.045*** [0.012]	-0.043*** [0.012]	-0.000** [0.000]	0 [0.000]	0 [0.000]
Adjusted R-sq	0.35	0.351	0.354	0.358	0.359	0.303	0.308	0.31
Observations	52926	52926	52926	52926	52926	36537	36537	36537

Table 8: Regression results with alternative cash measure

This table reports the estimates of the OLS regressions for the alternative measure of CASH by using data from all sample countries with and excluding the US. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. Standard errors reported in brackets below the estimated coefficients are clustered at the firm level. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	<i>Panel A: All Countries</i>				<i>Panel B: All Countries excluding the US</i>			
	Contemporaneous regressions		Lag regressions		Contemporaneous regressions		Lag regressions	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Constant	-1.423*** [0.064]	-1.472*** [0.064]	-1.567*** [0.065]	-1.539*** [0.066]	-1.867*** [0.080]	-1.541*** [0.086]	-1.936*** [0.080]	-1.478*** [0.089]
CR	-0.023** [0.009]	0.061*** [0.012]	-0.015 [0.010]	0.078*** [0.013]	-0.071*** [0.012]	-0.066*** [0.015]	-0.093*** [0.013]	-0.094*** [0.016]
SR	-0.071*** [0.008]	-0.099*** [0.008]	-0.058*** [0.008]	-0.091*** [0.008]	-0.074*** [0.011]	-0.101*** [0.011]	-0.058*** [0.012]	-0.106*** [0.012]
GOV	-0.149*** [0.021]		-0.120*** [0.022]		-0.108*** [0.021]		-0.074*** [0.023]	
LOW GOV		-0.178*** [0.067]		-0.311*** [0.078]		-0.531*** [0.070]		-0.752*** [0.084]
CR * LOW GOV		0.118*** [0.027]		0.117*** [0.032]		0.218*** [0.029]		0.260*** [0.034]
HIGH GOV		0.156*** [0.055]		0.047 [0.045]		-0.358*** [0.063]		-0.479*** [0.068]
CR * HIGH GOV		-0.190*** [0.020]		-0.167*** [0.017]		-0.041* [0.021]		-0.003 [0.022]
MB	0.128*** [0.005]	0.130*** [0.005]	0.129*** [0.006]	0.130*** [0.006]	0.156*** [0.007]	0.166*** [0.007]	0.144*** [0.009]	0.155*** [0.009]
RSIZE	0.028*** [0.006]	0.015*** [0.006]	0.030*** [0.006]	0.016** [0.006]	0.071*** [0.007]	0.047*** [0.007]	0.079*** [0.007]	0.051*** [0.007]
NWC	-1.355*** [0.041]	-1.348*** [0.040]	-1.193*** [0.045]	-1.197*** [0.045]	-1.282*** [0.053]	-1.254*** [0.053]	-0.994*** [0.060]	-0.969*** [0.060]
CFLOW	-0.425*** [0.021]	-0.427*** [0.021]	-0.271*** [0.028]	-0.269*** [0.028]	-0.533*** [0.032]	-0.554*** [0.032]	-0.347*** [0.043]	-0.356*** [0.043]
R&D	0.413*** [0.027]	0.412*** [0.027]	0.500*** [0.033]	0.497*** [0.033]	0.408*** [0.040]	0.412*** [0.041]	0.474*** [0.052]	0.484*** [0.052]
LEV	-3.636*** [0.054]	-3.657*** [0.053]	-3.320*** [0.059]	-3.331*** [0.058]	-3.282*** [0.066]	-3.287*** [0.065]	-3.051*** [0.072]	-3.043*** [0.070]
AI	-0.332 [0.414]	-1.023** [0.414]	2.479*** [0.502]	1.752*** [0.502]	2.984*** [0.614]	2.022*** [0.605]	5.921*** [0.720]	5.071*** [0.711]
STOCKCAP	0.084*** [0.013]	0.050*** [0.013]	0.090*** [0.015]	0.035** [0.014]	0.136*** [0.013]	0.121*** [0.014]	0.160*** [0.015]	0.144*** [0.015]
OWN	0.814*** [0.103]	0.672*** [0.102]	-0.01 [0.026]	-0.023 [0.026]	0.848*** [0.130]	0.527*** [0.128]	0.015 [0.034]	-0.043 [0.034]
OWNSQ	-0.873*** [0.106]	-0.748*** [0.105]	0 [0.001]	0 [0.001]	-0.882*** [0.129]	-0.638*** [0.127]	-0.001 [0.002]	0.001 [0.001]
Adjusted R-sq	0.352	0.36	0.315	0.322	0.282	0.299	0.248	0.264
Observations	86275	86275	58177	58177	52204	52204	36090	36090

Table 9: Regression results for poorly and well-governed countries using alternative cash measure

This table reports the estimates of the OLS regressions for alternative measure of CASH by using data from low (bottom quartile) and high (top quartile) governance countries. All regressions include industry and year fixed effects. The definitions of all variables are given in Table 1. Standard errors reported in brackets below the estimated coefficients are clustered at the firm level. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	<i>Panel A: Poorly governed countries</i>				<i>Panel B: Well-governed countries</i>			
	Contemporaneous regressions		Lag regressions		Contemporaneous regressions		Lag regressions	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Constant	-2.557*** [0.124]	-2.240*** [0.126]	-2.596*** [0.132]	-2.255*** [0.132]	-1.651*** [0.134]	-1.511*** [0.143]	-1.571*** [0.122]	-1.460*** [0.134]
CR	0.205*** [0.029]	0.244*** [0.030]	0.175*** [0.032]	0.261*** [0.034]	-0.108*** [0.019]	-0.099*** [0.019]	-0.093*** [0.017]	-0.090*** [0.017]
SR		-0.147*** [0.013]		-0.171*** [0.015]		-0.055*** [0.020]		-0.044** [0.021]
MB	0.133*** [0.015]	0.141*** [0.015]	0.141*** [0.019]	0.151*** [0.018]	0.177*** [0.011]	0.177*** [0.011]	0.142*** [0.009]	0.142*** [0.009]
RSIZE	0.086*** [0.011]	0.084*** [0.010]	0.094*** [0.013]	0.088*** [0.013]	0.021* [0.012]	0.016 [0.012]	-0.008 [0.011]	-0.011 [0.011]
NWC	-0.952*** [0.089]	-0.870*** [0.089]	-0.617*** [0.107]	-0.534*** [0.108]	-1.355*** [0.092]	-1.370*** [0.092]	-1.074*** [0.079]	-1.078*** [0.079]
CFLOW	0.703*** [0.177]	0.692*** [0.173]	0.837*** [0.198]	0.846*** [0.196]	-0.591*** [0.041]	-0.587*** [0.041]	-0.323*** [0.039]	-0.321*** [0.039]
R&D	1.233*** [0.292]	1.210*** [0.288]	1.722*** [0.412]	1.656*** [0.379]	0.288*** [0.045]	0.292*** [0.045]	0.367*** [0.045]	0.369*** [0.045]
LEV	-2.820*** [0.092]	-2.807*** [0.092]	-2.874*** [0.109]	-2.883*** [0.109]	-3.805*** [0.131]	-3.798*** [0.131]	-3.394*** [0.114]	-3.388*** [0.114]
AI	-2.885*** [1.098]	-3.297*** [1.070]	-2.565** [1.262]	-1.838 [1.229]	3.304*** [0.984]	3.197*** [0.983]	3.703*** [0.834]	3.724*** [0.835]
STOCKCAP	-0.034 [0.033]	0.070** [0.034]	-0.032 [0.043]	0.071 [0.043]	-0.168*** [0.043]	-0.101** [0.047]	-0.153*** [0.048]	-0.096* [0.054]
OWN	-0.109 [0.195]	0.131 [0.195]	-0.154*** [0.050]	-0.111** [0.048]	0.054 [0.213]	0.04 [0.214]	0.014 [0.061]	-0.002 [0.062]
OWNSQ	-0.109 [0.176]	-0.274 [0.176]	0.007*** [0.002]	0.005** [0.002]	-0.109 [0.229]	-0.134 [0.230]	-0.001 [0.003]	-0.001 [0.003]
Adjusted R-sq	0.258	0.27	0.261	0.276	0.354	0.354	0.331	0.331
Observations	18079	18079	11529	11529	16542	16542	13826	13826

Table 10: Cash holdings and leverage in a simultaneous equation framework

This table reports the estimates for the cash equations only for the 2SLS regressions with cash and leverage as the dependent variables. The definitions of all variables are given in Table 1. Tangibility is the instrument for leverage. All regressions include industry and year fixed effects. Standard errors reported in brackets below the estimated coefficients are clustered at the firm level. ***, ** and * denote significance at 1%, 5% and 10% respectively.

	<i>Panel A: Cash/Assets</i>				<i>Panel B: Cash/Net assets</i>			
	All Countries	All Countries	Poorly Governed	Well-governed	All Countries	All Countries	Poorly Governed	Well-governed
Constant	0.414*** [0.013]	0.405*** [0.013]	0.491*** [0.042]	0.396*** [0.027]	-0.484*** [0.110]	-0.747*** [0.105]	0.572 [0.388]	-0.322 [0.254]
LEV	-1.743*** [0.057]	-1.730*** [0.056]	-2.048*** [0.168]	-1.688*** [0.115]	-14.267*** [0.467]	-14.219*** [0.465]	-19.430*** [1.571]	-16.552*** [1.140]
CR	-0.018*** [0.002]	-0.013*** [0.002]	0.019** [0.008]	-0.015*** [0.004]	-0.058*** [0.015]	0.02 [0.019]	0.250*** [0.073]	-0.138*** [0.035]
SR	-0.008*** [0.002]	-0.011*** [0.002]	-0.007* [0.004]	0.004 [0.004]	-0.108*** [0.014]	-0.134*** [0.014]	-0.119*** [0.034]	-0.017 [0.036]
GOV	-0.023*** [0.004]				-0.312*** [0.036]			
LOW GOV		-0.038*** [0.014]				-0.054 [0.115]		
CR * LOW		0.024*** [0.006]				0.155*** [0.048]		
HIGH GOV		-0.007 [0.010]				0.209** [0.089]		
CR * HIGH		-0.010*** [0.004]				-0.219*** [0.031]		
MB	-0.007*** [0.001]	-0.006*** [0.001]	-0.016*** [0.005]	0.002 [0.003]	-0.062*** [0.010]	-0.057*** [0.010]	-0.204*** [0.041]	-0.014 [0.022]
RSIZE	0.026*** [0.002]	0.025*** [0.002]	0.036*** [0.004]	0.026*** [0.004]	0.276*** [0.015]	0.260*** [0.015]	0.431*** [0.042]	0.336*** [0.036]
NWC	-0.528*** [0.017]	-0.524*** [0.016]	-0.843*** [0.072]	-0.414*** [0.029]	-3.038*** [0.096]	-3.017*** [0.096]	-6.109*** [0.547]	-2.921*** [0.205]
CFLOW	-0.101*** [0.010]	-0.101*** [0.010]	-0.401*** [0.060]	-0.126*** [0.018]	-0.218*** [0.031]	-0.223*** [0.031]	-2.167*** [0.418]	-0.287*** [0.064]
R&D	0.062*** [0.006]	0.062*** [0.006]	-0.115** [0.046]	0.059*** [0.010]	0.03 [0.042]	0.032 [0.042]	-1.684*** [0.392]	-0.026 [0.077]
AI	1.285*** [0.101]	1.190*** [0.101]	3.237*** [0.427]	0.932*** [0.200]	12.156*** [0.891]	11.359*** [0.886]	29.544*** [4.124]	12.201*** [1.988]
STOCKCAP	0.004 [0.003]	0 [0.003]	-0.050*** [0.010]	-0.056*** [0.010]	-0.011 [0.023]	-0.045* [0.023]	-0.475*** [0.096]	-0.511*** [0.098]
OWN	0.128*** [0.020]	0.116*** [0.020]	-0.238*** [0.057]	0.104*** [0.036]	1.418*** [0.172]	1.243*** [0.170]	-2.378*** [0.553]	0.977*** [0.378]
OWNSQ	-0.136*** [0.021]	-0.123*** [0.021]	0.113** [0.048]	-0.119*** [0.039]	-1.483*** [0.183]	-1.309*** [0.179]	1.035** [0.470]	-1.132*** [0.417]
Observations	86475	86475	17942	16832	85463	85463	17918	16257