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The effects of country and firm-level governance on cash management ☆

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ABSTRACT

We examine the effects of both country and firm-level governance on cash holdings and the value of cash for a large international sample during the period 2002–2013. We find that both strong country and strong firm-level governance reduce the amount of cash holdings. We observe that a number of the components of both firm and country-level governance are significantly related to the decrease in cash holdings. We show that the value of cash increases as a result of good country-level governance and we provide mixed evidence that good firm-level governance also increases the value of cash. Our analysis also confirms that the payment of dividends adds to the value of cash.

1. Introduction

Cash management is an important task for corporate executives. Too much cash can result in firms earning too low a return on these assets compared to more productive assets. In addition, executives can use the excess cash to purchase perks, can invest in projects that offer low expected returns to their shareholders, or can tunnel corporate money to themselves. Too little cash, on the other hand, can cause managers to miss out on valuable investment opportunities because at the time these funds are needed, the cost of these funds may be very expensive or unavailable. The amount of funds tied up in cash or its equivalent is quite large. In our study the mean cash ratio (cash and short-term investments to the net book value of total assets) is 18.6 percent during the period 2002–2013 for our large sample of international firms.

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Since Opler et al. (1999), prior research has been largely devoted to the determinants of cash holdings. In their study of U. S. firms, Opler et al. found support for a static tradeoff model to explain cash levels. Dittmar et al. (2003) observe that shareholder protection is an important determinant of cash holdings for an international sample of firms. Since these studies, researchers have examined a wide variety of determinants of cash holdings. For example, Gao et al. (2013) highlight the differences in cash policies between public and private firms. Chen et al. (2017a) demonstrate the importance of debt capacity in determining cash levels.

Other researchers have explored the valuation consequences of governance. Dittmar and Mahrt-Smith (2007) show that value of cash is substantially higher in firms that have good corporate governance as compared to those with poor corporate governance (see also Kalcheva and Lins, 2007). Pinkowitz et al. (2006) demonstrate the importance of dividends in cash valuation in countries that have poor investor protection. Attig et al. (2013) show the importance of multiple large shareholders in cash valuation.

The purpose of our research is to first examine the influence of both country and firm-level governance on cash levels. Our measure of country-level governance is a broad one that encompasses many of the attributes that a country with good governance would be expected to have. We explicitly control for shareholder rights (protection of minority shareholders) in our empirical tests so that we can examine if there is an impact from country-level governance on cash holdings over and above the influence from shareholders rights. Our second inquiry concerns how country and firm-level governance affect the value of cash/firm.[1] If either or both firm and country governance mechanisms are effective in reducing the amount of cash managers hold and if managers are prone to waste cash resources, then it might be expected that a dollar of cash would be valued more under strong governance and that the value of the firm would be increased relative to weak governance.

We investigate the effects of corporate and country governance proxies on the level of cash and the value of cash for a large international sample of firms from 42 countries for the period 2002–2013. We find that cash holdings are negatively influenced by both country and firm-level governance, as well as, the components of these indices. Our results show that a broad measure of country-level governance impacts on the level of cash holdings after controlling for the influence of shareholder rights. Our second set of findings concerns governance and the value of cash holdings. We find strong evidence that country-level governance increases the value of cash. The evidence concerning firm-level governance is not as clear. The OLS regressions do not indicate a significant positive relationship between firm-level governance and the value of cash. However, after controlling for endogeneity between firm governance and firm performance we do observe a significant positive association. We also find that the payment of dividends results in an increase in the value of cash.

Our paper contributes to the literature by showing that it is both good firm as well as good country-level governance that contribute to reducing cash balances. Previous research has found a variety of relationships between both forms of governance and cash levels. We also demonstrate that good country-level governance is more than just protection of shareholder rights. Our findings concerning cash valuation indicate that both country (strong support) and firm-level governance (mixed support) are important in improving cash valuation.

The rest of the paper proceeds as follows. We give a brief review of the literature on agency issues, cash holdings, and cash valuation and also present our hypotheses in Section 2. In Section 3 we discuss our data and methodology. Section 4 contains our results and we present conclusions in Section 5.

2. Brief review of the literature and hypothesis

2.1. Cash holdings with an emphasis on agency issues/governance

There are studies that show little or no effect of agency issues on cash holdings. Harford (1999) and Opler et al. (1999) observe no significant association between cash holdings and firm-level corporate governance. Using an international sample of firms, Kalcheva and Lins (2007) find only weak evidence to support the link between firms with agency issues and high levels of cash holdings.[2]

On the other hand, research has sometimes found a significant link between agency problems and cash holdings. Using an international sample of firms, Dittmar et al. (2003) show that firms located in low shareholder protection countries hold up to twice the amount of cash than firms residing in high shareholder protection countries. The authors argue that shareholders in low protection countries cannot force executives to dispense the extra cash. Nikolov and Whited (2014) also find support for the positive association between agency issues and cash holdings. Using samples of both private and public firms, Gao et al. (2013) show the importance of agency issues on cash levels. On the other hand, Harford et al. (2008) find that poor governance firms hold less cash than firms with better firm governance for a sample of U.S. companies. The poorly governed U.S. firms tend to spend excess cash on capital expenditures and acquisitions rather than retain it.

Some studies examine the effects of both country and firm-level governance on cash holdings. Ammann et al. (2011) find that it is firm–level governance and not country-level governance that is important in explaining the negative relationship

[1] Ceteris paribus, an increase in the value of cash should cause an increase in the value of the firm. While a one dollar increase in cash, all things being equal, does not translate into a one dollar increase in firm value, it will translate into an increase in value.

[2] Mikkelson and Partch (2003) question the implicit assumption that too much cash leads to lower operating performance. They observe that the operating performance of firms that previously held a lot of cash was the same or better than firms matched by size and industry that held less cash. One benefit of having a lot of cash is that it reduces the underinvestment problem.

between governance and cash holdings. On the other hand, Doidge et al. (2007) stress the importance of country characteristics. They show that country characteristics account for a large percentage of firm-level corporate governance variation. In a very recent study, Chen et al. (2017b) show that country-level shareholder protection affects the relationship between state ownership, which would indicate a weaker firm-level governance, and both the level and value of cash holdings in newly privatized firms from 58 countries.

In summary, the evidence is far from conclusive as to the importance of agency issues on cash balances. Furthermore, even if we accept the view that agency issues are a primary driver determining cash holdings, is the driver primarily country or firm-level governance? There is support for both views.

2.2. Valuation of cash and governance

Dittmar and Mahrt-Smith (2007) show that better firm governance (measured by anti-takeover defenses and shareholder monitoring) has a positive effect on the value of excess cash and the value of total cash. The value of cash is approximately double in well governed firms as compared to poorer governed firms (see also Pinkowitz et al., 2006). Dittmar and Mahrt-Smith also find that poorly governed firms spend cash more quickly which lowers operating performance. They also conjecture that poorly governed firms may invest in more low return projects and also may be less vigilant in regards to controlling costs. Gompers et al. (2003), Cremers and Nair (2005) and Durnev and Kim (2005) also find a positive relationship between governance and firm value.

Chhaochharia and Laeven (2009) analyze the relationship between governance and the valuation of cash. They look at firm-level corporate governance and subtract the corporate governance practices that all firms do in a country to get measures of firm and country-level corporate governance. They observe that it is firms' improvements over country norms that matter for cash valuation, and not country norms. Ammann et al. (2011) also find a positive relationship between firm-level governance and firm valuation.

A number of studies have shown that the payment of dividends increases the value of cash, especially in countries with low investor protection (e.g., Pinkowitz et al., 2006).[3] Paying a dividend may suggest that firms are mindful of not wasting excess cash and also reduces the amount of cash that could be used for private benefits.

In summary, research shows that governance affects the value of cash and hence the value of the firm. Whether it is country governance, firm governance or both that influence valuation is still unclear.

2.3. Hypotheses

Our first hypothesis is that both good country and firm-level governance variables should negatively affect cash holdings. Managers who are not maximizing shareholder wealth should have a tendency to prefer more cash holdings to less cash holdings. Cash is probably the easiest asset to convert into private benefits (Myers and Rajan, 1998) and having more cash available makes it easier to convert it into private benefits when the time is right. In other words, having excess cash gives these managers the flexibility to spend money on perks or low return projects when they wish. Furthermore, the more cash that is available, the less often managers need to go to the financial markets, and hence they can avoid the required scrutiny to obtain cash.

Good governance should reduce average cash holdings. Good governance will discipline managers to spend wisely and encourage them to distribute excess cash to stockholders via dividends. Managers in these firms will not want to have too much cash earning relatively low returns when it can be earning higher expected returns in more productive assets.

Governance appears to be multidimensional and appears to be a function of both the country environment (laws protecting minority shareholders and the enforcement of those laws) as well as the actions employed by the firm. The total effect of the governance of a firm should be a function of both its country and firm governance. For example, poor firm governance will subtract from good country governance and vice versa. Our first hypothesis follows:

Hypothesis 1. Good country and good firm-level governance will both negatively affect corporate cash holdings.

On the other hand, in theory, there are many other possible relationships between firm and country-level governance and cash holdings. It is possible that there is no relationship between either type of governance and cash holdings or that only one form of governance really matters. It may be that various forms of governance matter only under specific circumstances.

Our second hypothesis involves the determinants of the value of cash and hence the value of the firm. Following Pinkowitz et al. (2006) and Gompers et al. (2003), both good firm-level and country-level governance will impact positively the value of cash. Good governance should reduce any misallocation of funds. Not only will funds be more likely returned to stockholders but the chances that funds will be used for perks or for other private benefits should be greatly reduced under good governance. Furthermore good governance should reduce the cost of funds as monitoring and auditing costs should be reduced. Additionally good governance should result in more funds being available as lenders and shareholders would believe that it is more likely they will be repaid.

[3] See Renneboog and Szilagyi (2015) for a discussion of the role of dividends in the Netherlands, a country with low shareholder protection. They find that dividend payouts are low, a fact they attribute to the use of anti- shareholder provisions and that dividends and shareholder control are complements in reducing agency problems.

Good governance does come with added direct and indirect costs to implement better governance (Aggarwal et al., 2009, Chhaochharia and Laeven, 2009; Bruno and Claessens, 2010). There are costs associated with increased disclosure, for example. Better governance should also reduce the private benefits to the controlling shareholders. However, in general, these added costs should be relatively little compared to the benefits. Thus, our second hypothesis follows:

Hypothesis 2. Both good country and good firm-level governance will positively interact with the value of cash.

Like the previous hypothesis, there are many other alternatives. One possibility is that the value of cash may not be positively affected by either form of governance. By considering the fact that country-level law and regulations dictate the firm-level governance, Aggarwal et al. (2009) show that country-level investor protection plays a crucial role in determining the intensity of firm-level governance.[4]

We also investigate one other issue. We examine the effect of the payment of dividends on the value of cash. There does not appear to be much controversy about the positive effect of dividends on cash valuation.

3. Data description, data sources, and models

3.1. Data

We investigate the effects of both firm-level and country-level governance variables on cash management for a large international sample of firms for the period 2002–2013. The firm-level accounting and financial data are collected from the Worldscope database provided by Thomson Reuters. Utilities and financial firms are excluded from the analysis due to possible regulatory influences. We winsorize our financial variables at the 1% and 99% levels.

Our measure of country governance is obtained from the World Bank. COUNTRY_GVSCORE is a broad measure and encompasses six dimensions: (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 (Kaufmann et al., 2009; page 6). We define the score for a particular country for a specific year as the average score of these six dimensions. This measure of country governance contains many attributes that should foster an environment conducive to good country governance.

Our firm governance variable, FIRM_GVSCORE, is from the ASSET4 Environmental, Social and Corporate Governance (ESG) database, which carries historical data for several key performance indicators on four pillars: economy, environment, social, and corporate governance. FIRM_GVSCORE is a corporate governance score for each firm for a particular year based on five categories: (1) functions of the board of directors, (2) structure of the board of directors, (3) compensation policy of the board of directors, (4) company vision and strategy, and (5) shareholder rights. No environmental and social information is included in our score for our corporate governance measure.

Our primary shareholder rights variable is the revised anti-director rights index (Djankov et al., 2008). This index classifies countries by their protection of minority shareholders. The index covers six areas: "(1) vote by mail; (2) obstacles to the actual exercise of the right to vote (i.e., the requirement that shares be deposited before the shareholders' meeting); (3) minority representation on the board of directors through cumulative voting or proportional representation; (4) an oppressed minority mechanism to seek redress in case of expropriation; (5) preemptive rights to subscribe to new securities issued by the company; and (6) the right to call a special shareholder meeting." (Djankov et al., 2008 pages 453–454). As a secondary measure of shareholder rights, we use the anti-self-dealing index (Djankov et al., 2008). The index addresses the protection of minority shareholders against expropriation by corporate insiders.

We gathered an initial sample consisting of 147,234 observations (24,758 firms) from 51 countries from Thompson Reuters' DataStream for the period 2002–2013. This sample does not include any financial firms or utilities. All these firms had complete (see below) accounting and financial data. A second sample of 25,135 observations (4378 firms) was extracted from Asset4 in DataStream that had firm-level corporate governance scores during the same period. After merging the two samples, our final sample is composed of 17,503 observations (2914 firms) from 42 countries. Appendix A reports by country the number of observations and firms in our initial sample as well as those in the final sample. It shows that while the number of observations in the final sample is much smaller than those in the initial sample, the firms in the final sample represent the largest (by market capitalization in 2013) companies in the sample countries.

3.2. Models

3.2.1. Cash holdings

Our cash holdings equation is as follows:

[4] For instance, Kim et al. (2015) find that the role of the monitoring function of active block investors is more effective in countries with stronger investor protection.

$$\begin{aligned}\text{CASH RATIO}_{it} = {} & b_0 + b_1\text{COUNTRY\_GVSCORE}_{jt} + b_2\text{FIRM\_GVSCORE}_{it} + b_3\text{ANTI-DIRECTOR RIGHTS}_j \\ & + b_4\text{SALES\_GROWTH}_{it} + b_5\text{SIZE}_{it} + b_6\text{NWC}_{it} + b_7\text{R\&D}_{it} + b_8\text{LEVERAGE}_{it} + b_9\text{CASH\_FLOW}_{it} \\ & + b_{10}\text{CAPEXP}_{it} + b_{11}\text{PAYER\_DUMMY}_{it} + b_{12}\text{ACQUISTIONS}_{it} + b_{13}\text{CLOSELY HELD SHARES}_{it} \\ & + b_{14}\text{CASH FLOW VOLATILITY}_{it} + b_{15}\text{PRIVATE CREDIT}(\%\text{GDP})_{jt} + \Sigma_t + \kappa_j + e_i \end{aligned} \quad (1)$$

where CASH RATIO_{it} is the ratio of cash and short-term investments to the book value of net total assets for firm i at time t where net total assets are total book assets minus cash and short-term investments,[5] $\text{COUNTRY\_GVSCORE}_{jt}$ is a measure of country governance for country j at time t, FIRM_GVSCORE_{it} is a measure of firm governance for firm i at time t, $\text{ANTI-DIRECTOR RIGHTS}_j$ is the score for the anti-director rights index for country j, SALES_GROWTH_{it} is the percentage change in sales for firm i from time $t-1$ to time t, SIZE_{it} is the natural logarithm of the book value of assets in U.S. dollars for firm i at time t, NWC_{it} is net working capital and is the ratio of current assets minus cash minus current liabilities to the book value of total assets for firm i at time t, $\text{R\&D}_{it}$ is the ratio of research and development expenses to the book value of total assets for firm i for time t,[6] LEVERAGE_{it} is the ratio of the sum of long-term and short-term debt to the book value of total assets for firm i at time t, CASH_FLOW_{it} is cash flow and equals the ratio of the sum of net income and depreciation to the book value of total assets for firm i at time t, CAPEXP_{it} is the ratio of capital expenditures to the book value of total assets for firm i at time t, PAYER_DUMMY_{it} is a dummy variable that equals 1 if firm i pays a dividend at time t, ACQUISITIONS_{it} is the ratio of net acquisitions to the book value of total assets for firm i at time t, $\text{CLOSELY HELD SHARES}_{it}$ is the ratio of shares held by insiders and individuals holding more than five percent of the stock to the total number of shares outstanding for firm i at time t, $\text{CASH FLOW VOLATILITY}_{it}$ is the standard deviation of cash flows for the previous three years for firm i at time t, $\text{PRIVATE CREDIT (\%GDP)}_{jt}$ is the ratio of private credit by money banks and other financial institutions to GDP for country j at time t, $\sum_t$ is a set of yearly dummies, and κ_j is a set of industry dummies. Standard errors are clustered at the firm-level.

The dependent variable, CASH RATIO, is the ratio of cash and short-term investments to net assets. Kalcheva and Lins (2007) use the same variable in their analysis. We also report an alternative cash holdings variable, namely the natural log of the CASH RATIO. Dittmar et al. (2003) employ this variable in their study.

In Eq. (1), we control for a number of factors. Like Opler et al. (1999), we control for firm size, net working capital, R&D, leverage, cash flow, capital expenditures, and whether a firm pays a dividend. Larger firms should have greater access to capital markets and thus should not need to stockpile cash and therefore can have lower cash balances. Net working capital can be regarded as a substitute for cash and hence should have a negative influence on cash holdings. R&D is a risky activity and firms are more likely to hold more cash to support this activity. Leverage should have a negative impact on cash holdings as interest payments to support the debt will reduce cash holdings. Cash flow will add to cash and thus have a positive influence on cash holdings. Capital expenditures, ceteris paribus, should reduce cash balances as they represent a cash outlay. If a firm pays a dividend, it will reduce the amount of cash holdings.

Harford et al. (2008) employ many of the same variables that Opler et al. (1999) use in their cash equation and in addition controls for firm cash volatility and acquisitions. Cash flow variability should increase the need for cash holdings as cash shortages become more likely and firms try to avoid that possibility. Like capital expenditures, acquisitions represent a use of funds and thus should reduce cash holdings. Kalcheva and Lins (2007) control for sales growth, arguing it is a measure of both current and future performance and should have a positive influence on cash holdings. These authors also examine the impact of managerial ownership on cash holdings. While we do not have access to their data, we employ a similar variable to measure ownership, CLOSELY HELD SHARES. To the extent that ownership (closely held shares) reflects alignment (as opposed to entrenchment) between executives and shareholders, one would expect a negative relationship between closely held shares and cash holdings. On the other hand, if this variable is more indicative of entrenchment, then we might expect a positive association. Dittmar et al. (2003) control for two other variables, private credit as a percent of GDP and shareholder rights. We follow their lead. High levels of private credit should have a negative influence on cash holdings as it may indicate that firms can easily find credit when they need it and thus do not have to stockpile credit. Dittmar et al. (2003) also show that greater shareholder rights negatively impacts cash holdings as managers in firms in countries with low shareholder rights have significantly more cash than firms with operating in high shareholder rights countries. Stockholders in low shareholder rights countries seem unable to force managers to reduce their cash. Our primary coefficients of interest are b_1 and b_2.

3.2.2. Governance and firm valuation

We use a two equation system to examine the effect of governance (country and firm) on firm valuation. The first equation in both approaches is the standard equation employed by Fama and French (1998) and used, for example, by Pinkowitz et al. (2006) for firm valuation with a couple of modifications necessary to test our hypotheses and the second equation explains the determinants of firm governance.[7,8] We also use a two equation system because the direction of causation between firm governance and firm performance is not clear (Claessens and Yurtoglu, 2013). We have previously hypothesized that good governance should positively influence firm valuation. It is also possible to argue that good performance should lead

[5] We also use the natural log of the cash ratio in our empirical tests.
[6] If the value for R&D is missing, the value is set equal to zero
[7] See Aggarwal et al. (2009) for a comparison of governance practices between U.S. and foreign firms.
[8] Relatively few papers model firm governance. Durnev and Kim (2005) is an exception.

to greater demand for capital which leads to better governance. The greater the need for capital the more pressure will occur to lower the cost of these funds and good governance can lower the cost of external capital. The two equation system follows:

$$\begin{aligned}\text{FIRM\_VALUE}_{it} = {} & b_0 + b_1\text{CASHRATIO}_{it} + b_2\text{COUNTRY\_GVSCORE}_{it} + b_3\text{FIRM\_GVSCORE}_{it} \\ & + b_4\text{CASH RATIO}^{*}_{it}\text{COUNTRY\_GVSCORE}_{it} + b_5\text{CASH RATIO}^{*}_{it}\text{FIRM\_GVSCORE}_{it} \\ & + b_6\text{ANTI-DIRECTOR RIGHTS}_{j} + b_7\text{EARNINGS}_{it} + b_8\text{dEARNINGS}_{it} + b_9\text{dEARNINGS}_{it+1} \\ & + b_{10}\text{dNET\_ASSET}_{it} + b_{11}\text{dNET\_ASSET}_{it+1} + b_{12}\text{R\&D}_{it} + b_{13}\text{dR\&D}_{it} + b_{14}\text{dR\&D}_{it+1} \\ & + b_{15}\text{INTEREST}_{it} + b_{16}\text{dINTEREST}_{it} + b_{17}\text{dINTEREST}_{it+1} + b_{18}\text{DIVIDEND}_{it} + b_{19}\text{dDIVIDEND}_{it} \\ & + b_{20}\text{dDIVIDEND}_{it+1} + b_{21}\text{dFIRM\_VALUE}_{it+1} + \Sigma_t + \kappa_j + e_{it} \end{aligned} \quad (2)$$

$$\begin{aligned}\text{FIRM\_GVSCOREit} = {} & b_0 + b_1\text{Size}_{it} + b_2\text{LEVERAGE}_{it} + b_3\text{CASH\_FLOW}_{it} + b_4\text{EXTERNAL\_FINANCE}_{it} \\ & + b_5\text{FIRM\_VALUE}_{it} + b_6\text{CLOSELY HELD SHARES}_{it} + b_7\text{COUNTRY\_GVSCORE}_{jt} + \Sigma_t + \kappa_j + e_{it} \end{aligned} \quad (3)$$

where FIRM_VALUE_{it} is defined as the sum of the book value of total assets plus the market value of common equity minus book value of common equity for firm i at time t, EARNINGS_{it} is earnings before interest and extraordinary items (after taxes and depreciation) for firm i at time t, NET_ASSET_{it} is net assets (total assets minus cash and equivalents) for firm i at time t,[9] R&D is research and development expenses and if R&D is missing it is set equal to zero, INTEREST_{it} is interest expense for firm i at time t, and DIVIDEND_{it} is dividends for firm i at time t. In Eq. (2), dX_t is the change in variable X from time $t-1$ to time t and dX_{t+1} is the change in variable X from time t to time $t+1$. The dX_{t+1} variables reflect expectations about future outcomes. All variables in Eq. (2) are scaled by book assets to control for heteroskedasticity. In Eq. (3) $\text{EXTERNAL\_FINANCE}_{it}$ is the need for external finance for firm i at time t and it is the difference between the growth in assets and the growth in return on equity. See Table 1 for definitions of all variables.

We estimate the system of equations using 3SLS to take advantage of the correlation in the error terms to arrive at more efficient estimates. Both firm value and firm governance are designated as endogenous variables. A predictive equation is used for firm value in Eq. (3) using all the exogenous variables in the two equations, and in cases where firm governance is used in Eq. (2), a first stage regression is used to develop estimates for firm governance in Eq. (2). If firm governance is not a variable in one of our specifications for Eq. (2), then we simply estimate Eq. (2) using OLS.

4. Results

4.1. Descriptive statistics

Table 2 provides descriptive statistics for our key variables both overall (Panel A) as well by country (Panel B). Panel A indicates that the mean (median) firm CASH RATIO in our sample is 0.186 (0.109). Means for Switzerland, Ireland, Hong Kong and Norway[10] are over 0.25 and firms in Belgium, Canada, Chile, Denmark, Greece, Hungary, New Zealand, Portugal, and Russia, and have means all under 0.11. In results not reported, the mean cash holdings (the ratio of cash and short-term investments to total book assets) for firms in our sample are smaller than the mean for all the firms in the Worldscope database for the years 2002–2013 (our sample period). In fact, in each of the years of our sample period, the mean cash holdings of the firms in our sample are smaller than the mean cash holdings of all the firms in the Worldscope database. Having a corporate governance rating is associated with lower cash holdings. In terms of country governance statistics, the overall governance statistic (COUNTRY_GVSCORE) from the World Bank range from -0.728 (Russia) to 1.879 (Finland) with a mean of 1.234.

We also examined whether both firm and country governance scores have improved over time. In unreported results,[11] we observe that country-level scores have generally decreased over time while firm governance scores have improved from 2002 to 2013.

In terms of correlations, with one exception all of our variables in our cash holdings equation have a significant correlation with the CASH RATIO. In unreported results, SALES_GROWTH, CASH FLOW, CASH FLOW VOLATILITY, CLOSELY HELD SHARES, PRIVATE CREDIT (%GDP), and R&D are positively related and the rest of the variables are negatively related with the CASH RATIO. The one exception is COUNTRY_GVSCORE which has a negative but insignificant correlation. PRIVATE CREDIT (%GDP) has the opposite correlation than was expected and the positive correlation between CLOSELY HELD SHARES and the CASH RATIO may indicate that the variable CLOSELY HELD SHARES is more indicative of managerial entrenchment than alignment.

[9] Since we are testing hypotheses about the value of cash and the value of the firm, we subdivide assets into cash and net assets (total assets minus cash and its equivalents).

[10] It should be pointed out that that some countries have a very small sample size and hence statistics from these countries should be viewed cautiously.

[11] We looked at all the firms in our sample regardless of the number of years a particular firm was in the sample. We also studied the subset of firms that had observations for all the years of our sample.

Table 1
Definitions of variables.

Variables	Definitions
CASH RATIO	The ratio of cash and short-term investments to book value of net total assets
Ln(CASH RATIO)	The natural logarithm of CASH RATIO
FIRM_VALUE	The ratio of (Book value of total assets + market value of common equity − book value of common equity) to book value of total assets
COUNTRY_GVSCORE	Average of six World Bank Governance Indicators (WGI): (1) Voice and Accountability (2) Political Stability and Absence of Violence/Terrorism (3) Government Effectiveness, Regulatory Quality (4) Rule of Law (5) Control of Corruption
FIRM_GVSCORE	Firm-level corporate governance scores from ASSET4 with following components: (1) Board Functions (2) Board Structure (3) Compensation Policy (4) Vision and Strategy (5) Shareholder Rights
ANTI-DIRECTOR RIGHTS	Revised Anti-Director Rights Index (Djankov et al., 2008) with following components: (1) vote by mail (2) shares not blocked or deposited (3) cumulative voting (4) oppressed minority (5) pre-emptive rights (6) capital to call a meeting
ANTI-SELF DEALING	Average of ex-ante and ex-post indices created for private enforcement (private control of self-dealing) mechanisms, such as disclosure, approval, and litigation, governing a specific self-dealing transaction (Djankov et al., 2008)
SALES_GROWTH	Percentage change in sales from t − 1 to t
SIZE	The natural logarithm of book value of assets in USD
NET_ASSETS	Total assets - (cash + short-term investments)
NWC	Net Working Capital, which is the ratio of [(current assets – cash) – current liabilities] to book value of total assets
R&D	The ratio of Research & Development Expenditures to book value of total assets
LEVERAGE	The ratio of (book value of total long-term debt + short-term debt) to book value of total assets
CASH_FLOW	The ratio of (net income + depreciation) to book value of total assets
CAPEXP	The ratio of capital expenditures to book value of total assets
DIVIDEND	The amount of cash dividends paid
PAYER_DUMMY	Dummy variable taking the value of 1 if common dividends are paid, otherwise 0
ACQUISITIONS	The ratio of net assets from acquisitions to book value of total assets
CLOSELY HELD SHARES	Percentage of shares held by insiders and also by individuals that own 5% or more
CASH FLOW VOLATILITY	Standard deviation of CASH_FLOW over the last three years
PRIVATE CREDIT (%GDP)	Private credit by deposit money banks and other financial institutions to GDP (%)
EXTERNAL_FINANCE	The difference between growth in assets and growth in return on equity
EARNINGS	Net income excluding interest, extraordinary items and deferred income and taxes.
INTEREST	The amount of annual interest expense

4.2. Regression analysis

4.2.1. Cash holdings

Table 3 presents our main findings for our cash holdings equation. We present two panels that use different definitions for the CASH RATIO. Panel A gives regression results using the ratio of cash and short-term investments to the book value of net assets. In Panel B we use the natural logarithm of the cash ratio.

Each panel contains three regression results (1) the only governance variable is a country one, (2) only a firm governance variable is used, and finally (3) both a firm and country governance variables are employed. Our approach allows us to see whether firm and country governance variables individually impact cash holdings and whether one of these governance variables appears to explain cash holdings more than the other variable.

Our results from both panels indicate that corporate governance, whether defined at the country-level or firm-level has a negative influence on the amount of cash holdings. In all of our OLS regressions, the coefficients on both corporate governance variables are significantly negative. This is true whether we look at the effects of firm-level or country governance separately or put both variables together in the same regression. Presumably good corporate governance puts a check on management from holding too much cash. In summary, our findings are consistent with Hypothesis 1.

It is important to note that our results concerning the importance of corporate governance in reducing cash holdings occur after explicitly controlling for a shareholder rights variable ANTI-DIRECTOR RIGHTS, which has a significant negative impact on cash holdings, indicating that strong shareholder rights is associated with smaller cash holdings. In unreported findings we find the same results when the anti-self-dealing index is used instead of the ANTI-DIRECTOR RIGHTS variable.

Table 2
Sample statistics.

Panel A: Descriptive statistics

	Mean	Median	StdDev.
CASH RATIO EQUATION (N = 17,503)			
CASH RATIO	0.186	0.109	0.218
Ln(CASH RATIO)	−2.287	−2.207	1.220
SALES_GROWTH	0.118	0.069	0.414
SIZE	15.411	15.340	1.406
NWC	0.005	0.003	0.151
R&D	0.019	0.000	0.041
LEVERAGE	0.351	0.341	0.239
CASH_FLOW	0.098	0.096	0.110
CAPEXP	0.056	0.041	0.054
PAYER_DUMMY	0.760	1.000	0.427
ACQUISITIONS	0.021	0.001	0.050
CLOSELY HELD SHARES	0.247	0.179	0.233
CASH FLOW VOLATILITY	0.037	0.019	0.070
PRIVATE CREDIT (%GDP)	1.510	1.720	0.417
COUNTRY_GVSCORE	1.234	1.285	0.461
FIRM_CGVSCORE	0.549	0.636	0.297
FIRM_CGVSCORE (Board Functions)	0.544	0.628	0.299
FIRM_CGVSCORE (Board Structure)	0.539	0.651	0.302
FIRM_CGVSCORE (Compensation Pol.)	0.548	0.635	0.294
FIRM_CGVSCORE (Vision and Strategy)	0.504	0.453	0.315
FIRM_CGVSCORE (Shareholder Rights)	0.530	0.533	0.300
FIRM_VALUE EQUATION (N = 17,263)			
$FIRM\_VALUE_t$	1.893	1.461	1.763
$EARNINGS_t$	0.078	0.080	0.108
$dEARNINGS_t$	0.008	0.009	0.106
$dEARNINGS_{t+1}$	0.011	0.008	0.115
$dNET\_ASSETS_t$	0.050	0.042	0.185
$dNET\_ASSETS_{t+1}$	0.090	0.042	0.302
$R\&D_t$	0.019	0.000	0.039
$dR\&D_t$	0.000	0.000	0.011
$dR\&D_{t+1}$	0.000	0.000	0.011
$INTEREST_t$	0.012	0.010	0.012
$dINTEREST_t$	0.000	0.000	0.007
$dINTEREST_{t+1}$	0.001	0.000	0.008
$DIVIDEND_t$	0.023	0.013	0.030
$dDIVIDEND_t$	0.002	0.001	0.015
$dDIVIDEND_{t+1}$	0.002	0.001	0.016
$dFIRM\_VALUE_{t+1}$	0.170	0.071	1.016
$EXTERNAL\_FINANCE_t$	−0.182	−0.107	0.749

Panel B: Sample countries and selected variables

	N	CASH RATIO	FIRM GVSCORE	COUNTRY GVSCORE	PRIVATE CREDIT (%GDP)	Voice and Account.	Political Stability	Govern. Effectiv.	Regul. Quality	Rule of Law	Control of Corrupt.	ANTI-DIRECTOR RIGHTS
Australia	1130	0.185	0.637	1.603	1.251	1.459	0.933	1.713	1.764	1.753	1.997	4
Austria	90	0.178	0.339	1.599	0.926	1.413	1.190	1.759	1.548	1.864	1.819	2.5
Belgium	115	0.104	0.482	1.329	0.596	1.383	0.832	1.669	1.307	1.341	1.442	3
Brazil	107	0.192	0.265	0.030	0.625	0.450	−0.127	−0.094	0.110	−0.122	−0.036	5
Canada	411	0.101	0.755	1.595	1.553	1.467	0.942	1.843	1.606	1.761	1.951	4
Chile	51	0.096	0.081	1.184	0.966	1.069	0.474	1.249	1.490	1.332	1.488	4
China	231	0.246	0.246	−0.538	1.195	−1.608	−0.564	0.075	−0.222	−0.395	−0.518	1
Colombia	11	0.124	0.320	−0.308	0.438	−0.115	−1.366	0.028	0.357	−0.365	−0.389	3
Denmark	154	0.109	0.328	1.848	1.779	1.635	1.064	2.176	1.826	1.931	2.454	4
Finland	204	0.119	0.587	1.879	0.773	1.573	1.467	2.170	1.764	1.946	2.352	3.5
France	568	0.154	0.520	1.223	0.877	1.256	0.515	1.531	1.211	1.428	1.400	3.5
Germany	469	0.151	0.311	1.464	0.955	1.378	0.855	1.567	1.541	1.660	1.780	3.5
Greece	53	0.106	0.221	0.500	0.932	0.865	0.123	0.578	0.731	0.646	0.056	2
Hong Kong	427	0.251	0.315	1.429	1.648	0.549	0.979	1.757	1.910	1.536	1.843	5
Hungary	13	0.103	0.486	0.705	0.581	0.844	0.689	0.668	1.015	0.708	0.303	2
India	217	0.175	0.293	−0.312	0.470	0.419	−1.238	−0.069	−0.394	−0.058	−0.530	5
Indonesia	76	0.220	0.214	−0.423	0.281	−0.024	−0.706	−0.223	−0.300	−0.598	−0.684	4
Ireland	139	0.276	0.621	1.494	1.269	1.388	1.086	1.517	1.682	1.686	1.602	5
Israel	37	0.185	0.439	0.588	0.805	0.617	−1.269	1.290	1.176	0.923	0.789	4
Italy	186	0.130	0.411	0.599	0.788	1.007	0.474	0.491	0.911	0.460	0.249	2
Japan	2192	0.204	0.124	1.206	1.824	1.006	0.948	1.455	1.136	1.308	1.384	4.5

Korea, Rep.	315	0.170	0.144	0.766	0.955	0.709	0.308	1.191	0.934	0.983	0.469	4.5
Luxembourg	27	0.133	0.367	1.688	0.838	1.564	1.392	1.678	1.722	1.788	1.985	2
Malaysia	97	0.232	0.406	0.316	1.058	−0.414	0.056	1.038	0.560	0.500	0.159	5
Mexico	37	0.141	0.182	−0.154	0.247	0.101	−0.706	0.288	0.366	−0.573	−0.402	3
Netherlands	218	0.143	0.628	1.676	1.142	1.578	0.988	1.840	1.757	1.777	2.117	2.5
New Zealand	42	0.048	0.568	1.746	1.281	1.558	1.198	1.752	1.755	1.854	2.360	4
Norway	60	0.282	0.469	1.690	0.848	1.603	1.252	1.946	1.343	1.926	2.071	3.5
Peru	7	0.145	0.295	−0.228	0.264	0.069	−0.818	−0.142	0.478	−0.610	−0.344	4.5
Philippines	25	0.188	0.200	−0.432	0.305	−0.039	−1.346	0.070	−0.133	−0.518	−0.623	4
Poland	28	0.151	0.206	0.801	0.493	1.008	0.987	0.641	0.971	0.714	0.488	2
Portugal	55	0.102	0.474	1.037	1.394	1.205	0.879	1.051	1.004	1.064	1.021	2.5
Russia	98	0.092	0.274	−0.728	0.422	−0.915	−0.861	−0.401	−0.358	−0.810	−1.024	4
Singapore	225	0.220	0.470	1.501	0.983	−0.147	1.204	2.205	1.842	1.693	2.209	5
South Africa	234	0.126	0.624	0.236	1.452	0.575	−0.019	0.405	0.399	0.112	−0.054	5
Spain	133	0.154	0.402	0.922	1.457	1.111	−0.094	1.171	1.151	1.117	1.075	5
Sweden	355	0.119	0.509	1.763	1.104	1.590	1.212	1.984	1.664	1.899	2.231	3.5
Switzerland	383	0.273	0.451	1.730	1.526	1.593	1.274	1.952	1.627	1.824	2.112	3
Thailand	58	0.207	0.449	−0.295	1.246	−0.436	−1.283	0.224	0.222	−0.177	−0.319	4
Turkey	46	0.206	0.211	−0.053	0.467	−0.166	−1.036	0.345	0.364	0.087	0.086	3
United Kingdom	2217	0.143	0.716	1.419	1.661	1.361	0.367	1.647	1.725	1.678	1.737	5
United States	5962	0.213	0.749	1.266	1.807	1.158	0.376	1.584	1.479	1.568	1.432	3
Total	17,503	0.186	0.549	1.234	1.510	1.099	0.546	1.501	1.387	1.432	1.441	3.76

This table reports the mean, median and standard deviation of variables used in Eq. (1) and in Eqs. (2) and (3) (Panel A), mean values of cash ratio and country level variables by country (Panel B). The sample period is from 2002 to 2013. Definitions of the variables are given in Table 1. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

We also observe that our results concerning the importance of both firm and country governance variables in reducing cash holdings also occur if we eliminate the ANTI-DIRECTOR RIGHTS from the regression equation.

In terms of economic impact, using the coefficients from Eqs. (1) and (2) from Panel A of Table 3, a one standard deviation increase in country governance (0.461) is associated with a decrease in the CASH RATIO of 0.00876 (-0.019×0.461) which represents a decrease of about 5% of the mean value of the CASH RATIO (0.186). The corresponding numbers for firm governance are a decrease of 0.01634 (-0.055×0.297) which equates to a decrease of about 9%.

The other control variables behave as expected in Panels A-B of Table 3 with two exceptions. R&D, cash flow volatility, sales growth, and cash flow have a positive effect on the amount of cash holdings. Capital expenditures, whether a firm pays a dividend, leverage, net working capital, size, and acquisitions have a negative effect. The two exceptions on the control variable are the coefficients on PRIVATE CREDIT (%GDP) and CLOSELY HELD SHARES. The coefficients on CLOSELY HELD SHARES are always positive but often insignificant. Kalcheva and Lins (2007) also found that many of their coefficients on their management ownership variables were also insignificant. The coefficients on PRIVATE CREDIT (%GDP) are significantly positive (similar to Dittmar et al. 2003) when the dependent variable is the CASH RATIO but not significantly positive when the dependent variable is the natural log of this ratio.

4.2.1.1. Components of country and firm governance. We examine the components of both firm and country governance to see which of these influences the CASH RATIO. To save space, we report only in Table 4 (Panels A and B) the coefficients for the firm and country governance variables or their components and the ANTI-DIRECTOR RIGHTS while still using all of the independent variables in Eq. (1) in the regressions. In Panel A of Table 4, we analyze the components of country governance and find first that all of the components have a negative impact on the CASH RATIO and that for four of the six components (Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption) the influence is significant. In all of the regressions in Panel A the coefficients for FIRM_GVSCORE and ANTI-DIRECTOR RIGHTS remain significantly negative. Overall, our results suggest that not only does the aggregate score for country-level governance negatively impact the CASH RATIO but so do the components.

In terms of the components of firm-level governance (Panel B), all of the components of the FIRM_GVSCORE except shareholder rights have a significant negative impact on the CASH RATIO. It should be noted that the shareholder rights component of FIRM_GVSCORE and ANTI-DIRECTOR RIGHTS variable should be positively correlated so getting significant coefficients on both the shareholder rights component and the ANTI-DIRECTOR Rights could be difficult due to multicollinearity[12]. Our findings suggest that that the overall index for firm governance as well as its components have a negative relationship with the CASH RATIO.

4.2.1.2. Results by changing sample composition. It is possible that our findings are driven by firms from a particular country. As a result, we run four more sets of regressions, excluding firms first from the U.S., then excluding only companies from

[12] If we eliminate the variable ANTI-DIRECTOR RIGHTS from the equation in Panel B, then the variable SHAREHOLDER RIGHTS (component of FIRM_GVSCORE) has a significant negative coefficient.

Table 3
Firm and country-level governance and cash holdings.

	Panel A: The dependent variable: CASH RATIO			Panel B: The dependent variable: Ln(CASH RATIO)		
COUNTRY_GVSCORE	−0.019***		−0.013**	−0.121***		−0.086**
	[0.006]		[0.006]	[0.035]		[0.036]
FIRM_GVSCORE		−0.055***	−0.051***		−0.360***	−0.336***
		[0.011]	[0.011]		[0.062]	[0.062]
ANTI-DIRECTOR RIGHTS	−0.014***	−0.017***	−0.017***	−0.024	−0.048**	−0.043**
	[0.003]	[0.003]	[0.003]	[0.020]	[0.020]	[0.020]
SALES_GROWTH	0.014**	0.013**	0.013**	0.056**	0.051*	0.050*
	[0.006]	[0.006]	[0.006]	[0.026]	[0.026]	[0.026]
SIZE	−0.017***	−0.015***	−0.016***	−0.038***	−0.028*	−0.032**
	[0.003]	[0.003]	[0.003]	[0.014]	[0.014]	[0.014]
NWC	−0.357***	−0.358***	−0.357***	−1.672***	−1.678***	−1.667***
	[0.029]	[0.029]	[0.029]	[0.147]	[0.147]	[0.147]
R&D	1.162***	1.168***	1.171***	4.781***	4.819***	4.837***
	[0.136]	[0.135]	[0.135]	[0.565]	[0.559]	[0.561]
LEVERAGE	−0.241***	−0.238***	−0.238***	−1.225***	−1.205***	−1.203***
	[0.016]	[0.016]	[0.016]	[0.078]	[0.078]	[0.078]
CFLOW	0.266***	0.286***	0.283***	1.384***	1.516***	1.498***
	[0.036]	[0.037]	[0.037]	[0.169]	[0.171]	[0.172]
CAPEXP	−0.576***	−0.580***	−0.584***	−3.101***	−3.127***	−3.154***
	[0.053]	[0.053]	[0.053]	[0.359]	[0.357]	[0.358]
PAYER_DUMMY	−0.046***	−0.049***	−0.049***	−0.196***	−0.221***	−0.218***
	[0.007]	[0.007]	[0.007]	[0.037]	[0.038]	[0.038]
ACQUISITIONS	−0.433***	−0.419***	−0.416***	−2.519***	−2.428***	−2.409***
	[0.030]	[0.029]	[0.029]	[0.180]	[0.179]	[0.179]
CLOSELY HELD SHARES	0.040***	0.018	0.015	0.253***	0.113	0.094
	[0.013]	[0.013]	[0.013]	[0.074]	[0.077]	[0.078]
CASH FLOW VOLATILITY	0.410***	0.423***	0.424***	1.735***	1.822***	1.829***
	[0.050]	[0.051]	[0.051]	[0.245]	[0.250]	[0.251]
PRIVATE CREDIT(%GDP)	0.027***	0.026***	0.030***	0.02	0.015	0.036
	[0.007]	[0.007]	[0.007]	[0.042]	[0.041]	[0.042]
CONSTANT	0.487***	0.502***	0.515***	−1.434***	−1.335**	−1.250**
	[0.079]	[0.080]	[0.082]	[0.520]	[0.529]	[0.543]
Adjusted R-sq	0.377	0.38	0.38	0.319	0.323	0.324
Observations	17,503	17,503	17,503	17,503	17,503	17,503

This table reports pooled time-series cross-sectional estimates for the CASH RATIO and the natural logarithm of CASH RATIO. Country level governance is measured by the average of six World Bank Governance Indicators (COUNTRY_GVSCORE). The sample period is from 2002 to 2013. All regressions include year and industry fixed effects. Standard errors reported in brackets are clustered at the firm-level. Definitions of all variables are given in Table 1.
*** Statistical significance at the 1% level, respectively.
** Statistical significance at the 5% level, respectively.
* Statistical significance at the 10% level, respectively.

Japan, and excluding only firms from the U.K., and finally excluding all these three countries together. These are the countries with the most number of observations (see Panel B in Table 2). Panels A and B of Table 5 display our findings with the dependent variable CASH RATIO and the natural logarithm of CASH RATIO, respectively. In both panels, the estimated coefficients for firm governance are always negative and statistically significant at the 1 per cent level while the estimated coefficients on country-level governance are always negative but only statistically significant in the samples that excludes firms from U.K. and the one that excludes Japanese companies when we use CASH RATIO as the dependent variable. In the results with the LN (CASH RATIO) in Panel B, in addition to the samples excluding the UK and Japan, the country level governance has a significant negative coefficient when all three countries are excluded together.

4.2.2. Valuation effects

We next examine the effect of governance on firm valuation. In particular we ask whether both types of governance affect the value of the firm and whether the payment of dividends increases the value of the firm.

In Table 6 we present our basic valuation regressions. In Panel A, we report the results of Eq. (2) using OLS while in Panel B we give our 3SLS findings. In the first part (firm value equation) of Panels A and B we report the findings of four equations, all employing the basic Fama and French (1998) methodology. In all of our regressions we explicitly control for ANTI-DIRECTOR RIGHTS.[13] In the first equation we add two more variables to the Fama and French equation – (1) the country governance variable and (2) the interactive variable between country governance and cash holdings. In the second equation we replace the country governance variable with a firm governance variable. The third equation contains both governance variables and their interactions with cash. The forth equation simply adds one more variable to the Fama and French method, namely the interac-

[13] Our important results do not change if we exclude this variable from our regressions.

Table 4
The effects of components of country-level governance and firm-level governance on cash holdings.

Panel A: Components of country-level governance and cash holdings

	VOICE AND ACCOUNTIBILITY	POL.STABILITY/ABSENCE OF VIOLENCE/TERRORISM	GOVERNMENT EFFECTIVINESS	REGULATORY QUAILTY	RULE OF LAW	CONTROL OF CORRUPTION
Components of COUNTRY_GVSCORE	−0.021***	−0.004	−0.008	−0.013*	−0.010*	−0.010**
	[0.006]	[0.005]	[0.006]	[0.007]	[0.006]	[0.004]
FIRM_GVSCORE	−0.048***	−0.056***	−0.053***	−0.049***	−0.051***	−0.051***
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
ANTI-DIRECTOR RIGHTS	−0.016***	−0.017***	−0.017***	−0.016***	−0.017***	−0.016***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Adjusted R-sq	0.381	0.38	0.38	0.38	0.38	0.38
Observations	17,503	17,503	17,503	17,503	17,503	17,503

Panel B: Components of firm-level governance and cash holdings

	BOARD FUNCTIONS	BOARD STRUCTURE	COMPENSATION POLICY	VISION AND STRATEGY	SHAREHOLDER RIGHTS
COUNTRY_GVSCORE	−0.016***	−0.015**	−0.014**	−0.016***	−0.018***
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
Components of FIRM_GVSCORE	−0.035***	−0.041***	−0.030***	−0.045***	−0.012
	[0.010]	[0.010]	[0.010]	[0.009]	[0.008]
ANTI-DIRECTOR RIGHTS	−0.016***	−0.017***	−0.015***	−0.010***	−0.014***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Adjusted R-sq	0.378	0.379	0.378	0.38	0.377
Observations	17,503	17,503	17,503	17,503	17,503

This table reports pooled time-series cross-sectional estimates for CASH RATIO against six World Bank Governance Indicators (COUNTRY_GVSCORE) in Panel A and five different components of the firm-level governance score (FIRM_GVSCORE) in Panel B separately. The sample period is from 2002 to 2013. All regressions include all other control variables, which are used in Table 3 but their estimated coefficients are not reported, and year and industry fixed effects. Standard errors reported in brackets are clustered at the firm-level. Definitions of all variables are given in Table 1.

*** Statistical significance at the 1% level, respectively.
** Statistical significance at the 5% level, respectively.
* Statistical significance at the 10% level, respectively.

Table 5
Robustness: Alternative sample compositions.

	Excluding US	Excluding UK	Excluding Japan	Excluding US, UK, Japan
Panel A: The dependent variable is CASH RATIO				
COUNTRY_GVSCORE	−0.003	−0.015**	−0.014**	−0.009
	[0.007]	[0.006]	[0.006]	[0.007]
FIRM_GVSCORE	−0.081***	−0.034***	−0.049***	−0.067***
	[0.012]	[0.012]	[0.013]	[0.016]
ANTI-DIRECTOR RIGHTS	−0.004	−0.007*	−0.017***	0.00
	[0.004]	[0.004]	[0.003]	[0.004]
SALES_GROWTH	0.00	0.014**	0.013**	−0.001
	[0.006]	[0.006]	[0.006]	[0.006]
SIZE	−0.011***	−0.019***	−0.017***	−0.015***
	[0.003]	[0.003]	[0.003]	[0.003]
NWC	−0.316***	−0.403***	−0.359***	−0.355***
	[0.029]	[0.030]	[0.032]	[0.038]
R&D	0.709***	1.367***	1.244***	1.187***
	[0.170]	[0.127]	[0.145]	[0.248]
LEVERAGE	−0.260***	−0.251***	−0.214***	−0.249***
	[0.020]	[0.017]	[0.016]	[0.024]
CFLOW	0.248***	0.288***	0.281***	0.237***
	[0.043]	[0.040]	[0.037]	[0.050]
CAPEXP	−0.538***	−0.618***	−0.526***	−0.480***
	[0.061]	[0.056]	[0.053]	[0.067]
PAYER_DUMMY	−0.029***	−0.047***	−0.051***	−0.033***
	[0.008]	[0.008]	[0.008]	[0.010]
ACQUISITIONS	−0.337***	−0.421***	−0.422***	−0.325***
	[0.036]	[0.032]	[0.029]	[0.040]
CLOSELY HELD SHARES	0.015	0.006	0.012	−0.011
	[0.014]	[0.013]	[0.013]	[0.016]
CASH FLOW VOLATILITY	0.407***	0.414***	0.401***	0.326***
	[0.080]	[0.051]	[0.051]	[0.087]

(*continued on next page*)

Table 5 (*continued*)

	Excluding US	Excluding UK	Excluding Japan	Excluding US, UK, Japan
PRIVATE CREDIT(%GDP)	0.007	0.032***	0.028***	0.016
	[0.009]	[0.007]	[0.008]	[0.012]
CONSTANT	0.413***	0.512***	0.525***	0.437***
	[0.087]	[0.085]	[0.082]	[0.091]
Adjusted R-sq	0.304	0.401	0.388	0.3
Observations	11,541	15,286	15,311	7132
Panel B: The dependent variable is Ln(CASH RATIO)				
COUNTRY_GVSCORE	−0.06	−0.093***	−0.083**	−0.071*
	[0.037]	[0.036]	[0.036]	[0.039]
FIRM_GVSCORE	−0.498***	−0.264***	−0.264***	−0.439***
	[0.073]	[0.067]	[0.077]	[0.094]
ANTI-DIRECTOR RIGHTS	−0.014	−0.003	−0.054**	0.001
	[0.024]	[0.023]	[0.021]	[0.026]
SALES_GROWTH	0.007	0.065**	0.053*	0.028
	[0.026]	[0.026]	[0.027]	[0.028]
SIZE	−0.006	−0.040***	−0.041***	−0.018
	[0.016]	[0.015]	[0.015]	[0.020]
NWC	−1.573***	−1.697***	−1.767***	−1.687***
	[0.164]	[0.141]	[0.161]	[0.194]
R&D	3.415***	5.677***	4.966***	5.177***
	[0.741]	[0.518]	[0.611]	[0.859]
LEVERAGE	−1.258***	−1.279***	−1.065***	−1.170***
	[0.101]	[0.083]	[0.082]	[0.131]
CFLOW	1.326***	1.447***	1.585***	1.297***
	[0.216]	[0.184]	[0.177]	[0.258]
CAPEXP	−2.591***	−3.133***	−3.056***	−2.123***
	[0.414]	[0.359]	[0.370]	[0.429]
PAYER_DUMMY	−0.131***	−0.209***	−0.235***	−0.137**
	[0.046]	[0.040]	[0.039]	[0.056]
ACQUISITIONS	−1.844***	−2.436***	−2.439***	−1.755***
	[0.228]	[0.195]	[0.182]	[0.290]
CLOSELY HELD SHARES	0.08	0.033	0.09	−0.068
	[0.083]	[0.080]	[0.082]	[0.094]
CASH FLOW VOLATILITY	1.615***	1.723***	1.807***	1.183**
	[0.412]	[0.261]	[0.248]	[0.491]
PRIVATE CREDIT(%GDP)	0.003	0.047	−0.003	0.02
	[0.050]	[0.043]	[0.049]	[0.073]
CONSTANT	−1.666***	−1.341**	−1.076**	−1.604***
	[0.566]	[0.553]	[0.545]	[0.596]
Adjusted R-sq	0.252	0.349	0.318	0.234
Observations	11,541	15,286	15,311	7132

This table reports pooled time-series cross-sectional estimates for the alternative proxies of cash holdings using alternative samples, which are created excluding three countries having the highest number of observations. The sample period is from 2002 to 2013. All regressions include year and industry fixed effects. Standard errors reported in brackets are clustered at the firm-level. Definitions of all variables are given in Table 1.

*** Statistical significance at the 1% level, respectively.

** Statistical significance at the 5% level, respectively.

* Statistical significance at the 10% level, respectively.

tive variable between cash holdings and dividend payments. For the second part of Panel B we provide the regression results for the firm governance equation.

We first examine the firm value equation in Panels A and B. We focus on the interactive variables (CASH∗COUNTRY_GVSCORE and CASH∗FIRM_GVSCORE). The interactive variable, CASH∗COUNTRY_GVSCORE is significantly positive whether we estimate the equation using OLS or 3SLS. On the other hand, we find no evidence that good firm governance increases the value of cash in OLS estimation. However, the interactive variable, CASH∗FIRM_GVSCORE is positively associated with the firm value once we control the endogeneity problem with 3SLS estimation.

We next look at the interactive variable CASH∗DIVIDENDS in Panels A and B. This variable is always positive and significant in Panels A and B. The payout of dividends should increase the value of cash since less cash is available to managers to possibly misappropriate.

Turning to the corporate governance equation, our main result is that the relationship between firm value and firm governance is positive. It may be that firms with high value may invest in more governance because they believe high governance may lead to additional sources of funds that may be critical for the firm's long-term success. We also find that the need for external funding increases the level of firm governance. Presumably the more that firms need external funding the more they will increase their firm governance so as to reduce the cost of this financing.

Table 6
Firm and country-level governance and the value of cash.

Panel A: OLS estimation				
The dependent variable: FIRM_VALUE				
CASH RATIO$_t$	0.764**	1.829***	0.819**	1.767***
	[0.307]	[0.289]	[0.353]	[0.130]
COUNTRY_GVSCORE$_t$	−0.151***		−0.166***	
	[0.042]		[0.045]	
CASH RATIO$_t$*COUNTRY_GVSCORE$_t$	0.837***		0.868***	
	[0.225]		[0.235]	
FIRM_GVSCORE$_t$		0.028	0.078	
		[0.068]	[0.073]	
CASH RATIO$_t$*FIRM_GVSCORE$_t$		0.043	−0.186	
		[0.449]	[0.462]	
CASH RATIO$_t$*DIVIDEND$_t$				1.962*
				[1.031]
ANTI-DIRECTOR RIGHTS$_t$	−0.042**	−0.037**	−0.039**	−0.040**
	[0.017]	[0.017]	[0.018]	[0.017]
EARNINGS$_t$	1.397***	1.346***	1.377***	1.339***
	[0.405]	[0.406]	[0.404]	[0.405]
dEARNINGS$_t$	0.216	0.223	0.222	0.173
	[0.404]	[0.404]	[0.403]	[0.405]
dEARNINGS$_{t+1}$	1.370**	1.344**	1.366**	1.347**
	[0.595]	[0.594]	[0.594]	[0.593]
dNET_ASSETS$_t$	0.744***	0.744***	0.743***	0.780***
	[0.101]	[0.100]	[0.100]	[0.099]
dNET_ASSETS$_{t+1}$	0.477***	0.487***	0.479***	0.494***
	[0.177]	[0.178]	[0.177]	[0.176]
R&D$_t$	5.408***	5.407***	5.419***	5.576***
	[1.052]	[1.099]	[1.100]	[1.041]
dR&D$_t$	−6.170**	−6.272**	−6.202**	−6.030**
	[2.762]	[2.831]	[2.820]	[2.799]
dR&D$_{t+1}$	−3.891	−3.94	−3.875	−3.843
	[2.681]	[2.651]	[2.639]	[2.691]
INTEREST$_t$	7.431***	7.284***	7.183***	7.101***
	[1.595]	[1.690]	[1.703]	[1.642]
dINTEREST$_t$	−11.029***	−11.050***	−10.931***	−10.720***
	[3.969]	[3.999]	[3.982]	[4.003]
dINTEREST$_{t+1}$	−3.815	−3.889	−3.893	−4.443
	[3.829]	[3.820]	[3.818]	[3.824]
DIVIDEND$_t$	14.858***	14.734***	14.825***	14.031***
	[0.918]	[0.943]	[0.941]	[0.937]
dDIVIDEND$_t$	1.153	1.27	1.174	1.155
	[1.404]	[1.397]	[1.395]	[1.376]
dDIVIDEND$_{t+1}$	11.529***	11.484***	11.523***	11.673***
	[1.643]	[1.640]	[1.641]	[1.662]
dFIRM_VALUE$_{t+1}$	0.210**	0.211**	0.210**	0.210**
	[0.106]	[0.106]	[0.106]	[0.106]
CONSTANT	0.899***	0.730***	0.869***	0.785***
	[0.165]	[0.167]	[0.166]	[0.162]
Adjusted R-sq	0.315	0.313	0.315	0.315
Observations	17,263	17,263	17,263	17,263
Panel B: 3SLS estimation				
FIRM_VALUE equation				
CASH RATIO$_t$	0.727***	0.232	−0.061	1.704***
	[0.190]	[0.144]	[0.207]	[0.062]
COUNTRY_GVSCORE$_t$	−0.06		0.045	
	[0.039]		[0.043]	
CASH RATIO$_t$*COUNTRY_GVSCORE$_t$	0.807***		0.332**	
	[0.139]		[0.148]	
FIRM_GVSCORE$_t$	−0.452***	−0.925***	−1.007***	−0.351***
	[0.076]	[0.102]	[0.119]	[0.067]
CASH RATIO$_t$*FIRM_GVSCORE$_t$		3.050***	2.808***	
		[0.257]	[0.287]	
CASH RATIO$_t$*DIVIDEND$_t$				1.673***
				[0.376]
ANTI-DIRECTOR RIGHTS$_t$	−0.094***	−0.089***	−0.093***	−0.086***
	[0.014]	[0.014]	[0.014]	[0.014]
EARNINGS$_t$	1.698***	1.713***	1.737***	1.606***
	[0.142]	[0.141]	[0.143]	[0.141]

(*continued on next page*)

Table 6 (*continued*)

Panel B: 3SLS estimation				
$dEARNINGS_t$	0.1	0.074	0.083	0.07
	[0.119]	[0.119]	[0.120]	[0.119]
$dEARNINGS_{t+1}$	1.453***	1.445***	1.453***	1.424***
	[0.114]	[0.113]	[0.114]	[0.113]
$dNET\_ASSETS_t$	0.678***	0.614***	0.664***	0.690***
	[0.070]	[0.070]	[0.070]	[0.070]
$dNET\_ASSETS_{t+1}$	0.447***	0.424***	0.427***	0.463***
	[0.045]	[0.045]	[0.045]	[0.045]
$R\&D_t$	6.045***	5.284***	5.303***	6.179***
	[0.379]	[0.376]	[0.378]	[0.378]
$dR\&D_t$	−6.363***	−5.289***	−5.416***	−6.232***
	[1.023]	[1.022]	[1.027]	[1.023]
$dR\&D_{t+1}$	−3.547***	−4.015***	−4.010***	−3.525***
	[1.075]	[1.072]	[1.078]	[1.073]
$INTEREST_t$	10.923***	11.434***	11.501***	10.293***
	[1.136]	[1.119]	[1.141]	[1.123]
$dINTEREST_t$	−12.390***	−13.011***	−12.809***	−12.132***
	[1.769]	[1.765]	[1.775]	[1.768]
$dINTEREST_{t+1}$	−2.581	−2.661*	−2.54	−3.312**
	[1.617]	[1.609]	[1.620]	[1.617]
$DIVIDEND_t$	14.926***	15.420***	15.406***	14.229***
	[0.447]	[0.448]	[0.451]	[0.465]
$dDIVIDEND_t$	1.191	0.832	0.854	1.178
	[0.836]	[0.834]	[0.839]	[0.835]
$dDIVIDEND_{t+1}$	11.716***	11.626***	11.666***	11.818***
	[0.726]	[0.724]	[0.727]	[0.725]
$dFIRM\_VALUE_{t+1}$	0.209***	0.206***	0.208***	0.209***
	[0.012]	[0.012]	[0.012]	[0.012]
CONSTANT	1.201***	1.312***	1.329***	1.090**
	[0.466]	[0.468]	[0.468]	[0.465]
FIRM_GVSCORE equation				
$SIZE_t$	0.036***	0.036***	0.037***	0.035***
	[0.002]	[0.002]	[0.002]	[0.002]
$LEVERAGE_t$	0.049***	0.050***	0.050***	0.049***
	[0.009]	[0.009]	[0.009]	[0.009]
$CASH\_FLOW_t$	0.236***	0.209***	0.218***	0.240***
	[0.025]	[0.025]	[0.025]	[0.025]
$EXTERNAL\_FINANCE_t$	0.145***	0.145***	0.145***	0.145***
	[0.003]	[0.003]	[0.003]	[0.003]
$FIRM\_VALUE_t$	0.027***	0.034***	0.032***	0.026***
	[0.003]	[0.003]	[0.003]	[0.003]
$CLOSELY\ HELD\ SHARES_t$	−0.460***	−0.462***	−0.462***	−0.460***
	[0.009]	[0.009]	[0.009]	[0.009]
$COUNTRY\_GVSCORE_t$	0.075***	0.077***	0.076***	0.075***
	[0.005]	[0.005]	[0.005]	[0.005]
CONSTANT	0.133	0.113	0.112	0.145*
	[0.083]	[0.083]	[0.083]	[0.082]
Observations	17,263	17,263	17,263	17,263

This table reports the results from OLS estimation in Panel A and 3SLS estimation for simultaneous equation system in panel B to measure the value effects of cash holdings along with country (COUNTRY_GVSCORE) and firm level (FIRM_GVSCORE) governance scores. FIRM_VALUE is measured by the ratio of (book value of total assets + market value of common equity − book value of common equity) to book value of total assets. Country level governance is measured by the average of six World Bank Governance Indicators. The sample period is from 2002 to 2013. Definitions of all variables are given in Table 1.

*** Statistical significance at the 1% level, respectively.

** Statistical significance at the 5% level, respectively.

* Statistical significance at the 10% level, respectively.

5. Conclusions

Our paper investigates the impact of agency costs and governance on cash management. Specifically our paper examines the role of both country and firm-level governance in (1) influencing cash levels and (2) the value of cash. Previous research have often produced conflicting results. We use a broad measure of corporate governance and control explicitly for shareholder rights in our empirical tests.

We find that both good country and firm-level governance negatively affect cash holdings. It is not just one form of governance that matters but both are important. Good country (firm) governance can be more effective when it is combined with good firm-level (country) governance. Presumably good governance "forces" managers to act more in shareholders'

interests and one of the ways managers can do this is to limit the amount of money they have at their control that could potentially be used for private benefits. We also observe that good country-level and firm-level governance influence positively the value of cash.

Appendix A. Sample construction

Number of firm/year observations by country based on availability of the firm level governance score.

	# of Observations			# of Firms			Total MarketCap. (milUS$) in 2013		
	Potential	Final	%	Potential	Final	%	Potential	Final	%
Australia	8037	1130	14	1244	257	21	657,301	594,487	90
Austria	331	90	27	57	13	23	46,669	37,653	81
Belgium	490	115	23	91	19	21	259,567	244,481	94
Brazil	656	107	16	192	44	23	264,021	200,075	76
Canada	2739	411	15	826	160	19	956,764	757,917	79
Chile	759	51	7	99	11	11	120,604	56,041	46
China	5238	231	4	1483	57	4	1,540,045	129,031	8
Colombia	123	11	9	20	3	15	26,756	19,286	72
Denmark	695	154	22	109	20	18	75,260	57,382	76
Finland	881	204	23	118	24	20	142,686	123,070	86
France	3075	568	18	541	78	14	1,565,263	1,428,458	91
Germany	2866	469	16	526	70	13	815,920	694,257	85
Greece	392	53	14	137	13	9	46,485	16,589	36
Hong Kong	7370	427	6	798	70	9	960,867	754,458	79
Hungary	149	13	9	26	3	12	13,257	12,339	93
India	11,054	217	2	1835	56	3	630,591	444,478	70
Indonesia	2300	76	3	285	22	8	195,585	117,969	60
Ireland	465	139	30	67	17	25	80,388	69,787	87
Israel	661	37	6	118	11	9	105,825	77,973	74
Italy	1178	186	16	216	26	12	275,221	203,517	74
Japan	13,614	2192	16	2111	322	15	645,287	501,949	78
Korea, Rep.	5739	315	5	962	75	8	881,490	633,099	72
Luxembourg	73	27	37	13	5	38	55,151	28,431	52
Malaysia	6293	97	2	872	26	3	226,079	140,486	62
Mexico	272	37	14	86	16	19	205,436	162,066	79
Netherlands	882	218	25	136	34	25	234,371	213,875	91
New Zealand	406	42	10	65	7	11	27,687	12,122	44
Norway	372	60	16	103	16	16	201,487	165,060	82
Peru	190	7	4	45	2	4	21,310	1133	5
Philippines	1056	25	2	137	8	6	86,538	47,565	55
Poland	507	28	6	155	8	5	54,343	17,623	32
Portugal	258	55	21	41	8	20	47,621	35,725	75
Russia	308	98	32	74	27	36	527,664	362,323	69
Singapore	4306	225	5	549	30	5	212,300	158,883	75
South Africa	1563	234	15	232	89	38	264,002	250,078	95
Spain	418	133	32	101	30	30	235,503	212,774	90
Sweden	1415	355	25	222	42	19	320,931	272,676	85
Switzerland	1295	383	30	188	53	28	583,488	543,156	93
Thailand	2880	58	2	384	16	4	201,597	99,049	49
Turkey	782	46	6	154	13	8	86,949	63,725	73
United Kingdom	12,348	2217	18	1983	287	14	2,115,083	2,022,581	96
United States	42,798	5962	14	7357	826	11	15,600,000	13,300,000	85
Total	1,47,234	17,503	12	24,758	2914	12	31,613,390	25,283,629	80

References

Aggarwal, R., Erel, I., Williamson, R., 2009. Differences in governance practices between U.S. and foreign firms: Measurement, causes, and consequences. Rev. Financ. Stud. 22, 3131–3169.

Ammann, M., Oesch, D., Schmid, M., 2011. Corporate governance and firm value: International evidence. J. Empirical Financ. 18, 36–55.
Attig, N., El Ghoul, S., Guedham, O., Rizeanu, S., 2013. The governance role of multiple large shareholders: evidence from the valuation of cash holdings. J. Manage. Governance 17, 419–451.
Bruno, V., Claessens, S., 2010. Corporate governance and regulation: Can there be too much of a good thing? J. Financ. Intermed. 19, 461–482.
Chen, T., Harford, J., Lin, C., 2017a. Financial flexibility and corporate cash policy. Hong Kong Institute for Monetary Research, Working paper no.05/2017.
Chen, R., El Ghoul, S., Guedhami, O., Nash, R., 2017b. State ownership and corporate cash holdings: Evidence from privatization. J. Financ. Quantit. Anal. (forthcoming).
Chhaochharia, V., Laeven, L., 2009. Corporate governance norms and practices. J. Financ. Intermed. 18, 405–431.
Claessens, S., Yurtoglu, B.B., 2013. Corporate governance in emerging markets: A survey. Emerg. Markets Rev. 15, 1–33.
Cremers, K.J.M., Nair, V., 2005. Governance mechanisms and equity prices. J. Financ. 60, 2859–2894.
Dittmar, A., Mahrt-Smith, J., 2007. Corporate governance and the value of cash holdings. J. Financ. Econ. 83, 599–634.
Dittmar, A., Mahrt-Smith, J., Servaes, H., 2003. International corporate governance and corporate cash holdings. J. Financ. Quantit. Anal. 38, 111–133.
Djankov, S., La Porta, R., Lopez-de-Silanes, F.R., Shleifer, A., 2008. The law and economics of self-dealing. J. Financ. Econ. 88, 430–465.
Doidge, C., Karolyi, G.A., Stulz, R., 2007. Why do countries matter so much for corporate governance? J. Financ. Econ. 86, 1–39.
Durnev, A., Kim, E.H., 2005. To steal or not to steal: Firm attributes, legal environment, and valuation. J. Financ. 60, 1461–1493.
Fama, E., French, K., 1998. Taxes, financing decisions, and firm value. J. Financ. 53, 819–843.
Gao, H., Harford, J., Li, K., 2013. Determinants of corporate cash policy; Insights from private firms. J. Financ. Econ. 109, 623–639.
Gompers, P., Ishii, J., Metrick, A., 2003. Corporate governance and equity prices. Quart. J. Econ. 118, 107–156.
Harford, J., 1999. Corporate cash reserves and acquisitions. J. Financ. 54, 1969–1997.
Harford, J., Mansi, S., Maxwell, W., 2008. Corporate governance and firm cash holdings in the US. J. Financ. Econ. 87, 535–555.
Kalcheva, I., Lins, K., 2007. International evidence on cash holdings and expected managerial agency problems. Rev. Financ. Stud. 20, 1087–1112.
Kaufmann, D., Kraay, A., Mastruzzi, M., 2009. Governance matters VIII: Aggregate and individual governance indicators, 1996-2008. World Bank Policy Research Working Paper 4978.
Kim, H., Liao, R.C., Wang, Y., 2015. Active block investors and corporate governance around the world. J. Int. Financ. Markets, Instit. Money 39, 181–194.
Mikkelson, W., Partch, M., 2003. Do persistent large cash reserves hinder performance? J. Financ. Quantit. Anal. 38, 275–294.
Myers, S., Rajan, R., 1998. The paradox of liquidity. Quart. J. Econ. 108, 733–771.
Nikolov, B., Whited, T., 2014. Agency conflicts and cash: Estimates from a dynamic Model. J. Financ. 69, 1883–1921.
Opler, T., Pinkowitz, L., Stulz, R., Williamson, R., 1999. The determinants and implications of corporate cash holdings. J. Financ. Econ. 52, 3–46.
Pinkowitz, L., Stulz, R., Williamson, R., 2006. Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis. J. Financ. 61, 2725–2751.
Renneboog, L., Szilagyi, P.G., 2015. How relevant is dividend policy under low shareholder protection? J. Int. Financ. Markets, Instit. Money (forthcoming) 10.1016/j.intfin.