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Democracy, rule of law, and corporate governance—a liquidity perspective

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Abstract This study examines whether and how democracy and rule of law—two overarching country-level governance variables—influence corporate governance. Given that corporate liquidity (cash holdings) is a good channel for examining the quality of corporate governance, the effects of democracy and rule of law on corporate governance can be identified using the liquidity approach. A review of 67 countries from 1996 to 2010 demonstrates that democracy and rule of law indeed have bearings on corporate governance. More specifically, results indicate that firms are more inclined to hoard cash to take advantage of growth opportunities when the level of democracy is higher or rule of law is stronger, suggesting that agency costs are lower and interests of managers and shareholders are more aligned under such circumstances. In addition, the negative effect of debt issuance and dividend payment on cash is more pronounced when the level of democracy is higher or rule of law is stronger, suggesting that these two approaches become more effective in reducing agency costs and transitively cash holdings under such circumstances. Moreover, the positive effect of democracy and rule of law on corporate governance appears to be reinforced when rule of law is stronger and the level of democracy is higher, respectively. Furthermore, higher level of economic development helps reap the benefit of democracy and rule of law in terms of improving corporate governance and reducing agency costs.

Keywords Democracy · Rule of law · Corporate governance · Corporate liquidity · Cash holding

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1 Introduction

Numerous studies have explored how to improve corporate governance effectively. Although improving governance mechanisms at the firm level is imperative to mitigating agency problems within the firm, improving the governance mechanism at the national level first can be more effective and efficient in achieving the goal of enhancing corporate governance. Intuitively, large settings, such as nations, state laws and institutions, are more likely to affect smaller counterparts, such as firms and their governance mechanisms, instead of the other way around. This is because all the units inside the former cannot be isolated from their external environments. In fact, laws that deal with investor protection, such as securities, bankruptcy and company laws, serve as the foundation for corporate governance (La Porta et al. 1997, 1998). Existing studies have also empirically shown that country-specific variables such as institutional and legal environments prevailing in a given country have an overriding effect on organizational activities such as corporate governance in that country (La Porta et al. 1998, 1999, 2000b, 2006; Edwards and Fischer 1994; Gorton and Schmid 2000; Kuipers et al. 2009; de Tocqueville 2000; Licht et al. 2005; Doidge et al. 2007; Mijiyawa 2013). Given the established effect of institutional and legal environment on corporate governance as well as the worldwide thrust for democratic development, whether and how other country-level variables such as democracy and rule of law also influence corporate governance is worthy of investigation. This is mainly due to the emergence of public awareness concerning corporate governance, especially after the recent global financial crisis. Surprisingly, this research question has remained unexplored. It is for this reason that the study is conducted.

Essentially, democracy and corporate governance both aim to mitigate agency problems and reduce agency costs at the national and firm levels, respectively. More specifically, democracy is a political system, in which a governor (i.e., agent) is elected to run a country on behalf of and for the benefits of national citizens (i.e., principals). Similarly, corporate governance is a mechanism in which a manager (i.e., agent) is appointed to run a company to minimize the conflict of interests between the management and the shareholders (i.e., principals) as well as to maximize the value of shareholders. A higher level of democracy corresponds to a greater probability that national citizens can benefit from the country they reside in. In the same manner, corporate governance with better quality implies a greater possibility that shareholders can benefit from the firm they invest in.

Given the same spirit shared by democracy and corporate governance and the superiority of country-level governance mechanism over its firm-level counterpart (Dittmar et al. 2003), whether democracy (a country-level governance variable) influences corporate governance in a given country is worthy of deeper investigation. As far as we know, the current study is the first to empirically test Tocqueville's well known hypothesis that democracy serves as the model of all governance mechanisms that will eventually spread to every corner of the world. Intuitively, external environments or institutions have an overriding effect on internal organizations or units, as in the

case of corporations. In a more democratic country, people can voice their opinions more freely and the elected officers are held with greater accountability to the citizens. Such spirit of democracy is ubiquitous such that it is felt in every sector of society, including firms. Hence, firms should be more democratic and practice better corporate governance when the level of democracy is higher in a given country.

In addition to democracy, rule of law—another country-level governance variable—should also influence corporate governance. This assumption is partly due to the fact that rule of law is often mentioned in connection with democracy, such that it is inappropriate to explore the effect of democracy on corporate governance without considering rule of law. More importantly, although democratic development is an unstoppable trend, democracy is likely to be crippled and end up with mob rule without the backing of rule of law. The recent uprising in the Arab world provides a good example. Although the country citizens successfully overthrew their dictatorship regime, their democracy is still premature and in such a perilous state because of the lack of effective rule of law. Therefore, democracy must be coupled with rule of law so that citizens can freely voice their opinions without causing social disorder and rulers can be held accountable to their subordinates without engaging in corruption. Without these pre-conditions, tyranny of the majority is likely to emerge. In accordance with the abovementioned relationship between rule of law and democracy as well as that between democracy and corporate governance, rule of law should influence corporate governance through the democracy channel. In fact, rule of law should have a standalone effect on corporate governance as well, given the established positive relationship between investor protection and corporate governance (La Porta et al. 2000b) as well as the investor protection being granted by the law. In sum, rule of law should also play a role in shaping corporate governance either directly or indirectly.

Prior studies have linked corporate governance to democracy and rule of law. However, they provide mere arguments without formalizing hypotheses and conducting tests to empirically support such relationship.[1] The current study contributes to the existing literature by examining the effects of democracy and rule of law on the sensitivity of corporate liquidity (cash) to growth opportunity and agency cost variables to infer whether and how democracy and rule of law influence corporate governance. The logic behind this research problem is that given the overriding effect of country-level variables and the documented relationship between corporate governance and liquidity, factors that may affect corporate governance such as democracy and rule of law should influence corporate liquidity (Dennis and McConnell 2003).

Using comprehensive data on 67 countries from 1996 to 2010, results indicate that democracy and rule of law help improve corporate governance and reduce agency costs of firms. More specifically, the sensitivity of cash to growth opportunities is higher when level of democracy is higher or when rule of law is stronger, suggesting that interests of managers and shareholders are more aligned such that firms are inclined to hoard cash to take advantage of greater growth opportunities under such circumstances. Results concur with the finding of Dittmar et al. (2003). In addition, democracy and

[1] According to Fligstein and Choo (2005), "the political system of a particular society (i.e., democracy vs. dictatorship) and the existence of the rule of law are important pre-conditions for understanding corporate governance structures."

rule of law have a negative effect on the sensitivity of cash to leverage and dividend payment. Given that issuing debt or paying out dividends can reduce agency costs and transitively cash holdings (Opler et al. 1999), this means that these approaches become more effective when the level of democracy is higher or when rule of law is stronger such that any negative effect of leverage or dividend payment on cash strengthens under such circumstances. Moreover, results indicate that democracy and rule of law reinforce each other in terms of improving corporate governance. Furthermore, to reap the benefit of democracy and rule of law in terms of improving corporate governance effectively, it appears that countries should first achieve higher level of economic development.

The remainder of this paper is structured into sections. A literature review that leads to this study's hypotheses is first provided, followed by a description of the methodology and an analysis of the empirical results. The final section concludes the paper.

2 Literature review

2.1 Cash holdings

Firms hold cash for three major motives, namely, transaction cost, precautionary, and agency cost motives. More precisely, they hold more cash when transaction costs are higher. They also maintain ideal amounts of cash reserves to take advantage of growth or investment opportunities owing to the fact that external financing is costlier. Furthermore, the management tends to hoard cash under their discretion for free cash flow (Opler et al. 1999).

Prior studies have explained cash holdings using tradeoff, agency, and financing hierarchy theories. Based on tradeoff theory, optimal cash level exists because firms balance the marginal benefit and marginal cost of holding cash (Almeida et al. 2004; Bates et al. 2009; Keynes 1936; Opler et al. 1999). Agency theory states that firms are inclined to hoard cash to gain discretionary power. Considering that such cash hoarding for managerial discretion entails agency cost of free cash flow (Jensen 1986), agency theory implicitly predicts the presence of optimal cash level. Finally, financing hierarchy theory states that cash is preferred to debt, followed by equity in financing. Thus, variation in internal funds dictates cash holdings of firms and optimal cash level is nonexistent (Myers and Majluf 1984; Shyam-Sunder and Myers 1999).

2.2 Corporate governance and cash holdings

All the aforementioned theories have gained empirical support from prior studies. However, compared with other theories, agency theory has received increasing attention in recent liquidity studies (e.g., Pinkowitz et al. 2006; Dittmar and Mahrt-Smith 2007; Kalcheva and Lins 2007; Harford et al. 2008; Tong 2011; Huang and Zhang 2008). According to agency theory, management tends to accumulate cash under its discretion (Jensen 1986). When corporate governance is poorer, the agency costs of firms are higher (Shleifer and Vishny 1997; Dennis and McConnell 2003). As a result,

external financing is costlier such that the management is more inclined to hoard cash for the discretionary purpose under such circumstances (Chen et al. 2011). By contrast, when corporate governance is better, agency costs are lower such that management tends not to hoard cash for discretion because external financing is less costly under such circumstances.

Firm-level governance variables (e.g., board composition, dividend payout policy, executive compensation, managerial control rights, and ownership structure) have been used to examine the relation between corporate liquidity and corporate governance in a single-country setting. However, results on how these firm-level governance variables relate to corporate liquidity are mixed, and mainly depend on the countries under examination (Drobetz and Gruninger 2007; Opler et al. 1999; Ozkan and Ozkan 2004; Harford et al. 2008). To address this issue, more recent liquidity studies have used a multiple-country sample, introducing other country-specific governance-related variables such as anti-director rights (Dittmar et al. 2003; Ferreira and Vilela 2004; Kalcheva and Lins 2007), creditor rights (Ferreira and Vilela 2004), culture (Chang and Noorbakhsh 2009), and national-level governance reform (Chen et al. 2011). Such cross-country studies are beneficial in the sense that their results can provide implications for firms in the current globalized market. In particular, such results can provide multinational firms or firms that consider establishing their subsidiaries outside their home countries with effective suggestions on how to adjust cash level to better suit different institutional environments. In addition, with other countries serving as the control group, the results are more reliable and informative. Furthermore, country-specific governance variables have an overriding effect on corporate liquidity as opposed to their firm-specific counterparts (Dittmar et al. 2003; Doidge et al. 2007). Failure to consider these variables likely results in model misspecification.

Although studies on the relationship between country-level governance variables and corporate liquidity are not lacking, whether and how democracy and rule of law influence corporate liquidity has yet to be examined. Nevertheless, the existing literature provides several directions on the relationship of democracy and rule of law to corporate governance, which can be further linked to corporate liquidity. For example, Gomez and Korine (2005) examine the evolution of corporate governance, demonstrating that democratic procedures have been increasingly adopted as governance mechanism of firms. Their findings support Tocqueville's (2000) central hypothesis that democracy is perceived as the ultimate model of acceptable governance in modern society, and its prevalence is expected to eventually reach all domains of organized activity. However, another strand of literature contradicts democracy and asserts that higher level of shareholder democracy is detrimental to corporate governance (e.g., Falaschetti 2009; Driver and Thompson 2002). As for rule of law, the Organization for Economic Co-operation and Development (OECD) Principles of Corporate Governance (2004) clearly state that corporate governance framework must be in line with rule of law. Thus, the quality of corporate governance is closely tied to the effectiveness of rule of law. In fact, the existing literature has documented and empirically shown that rule of law has a positive effect on corporate governance (Cooper 2007; Donelson and Yust 2013; La Porta et al. 2000b; Doidge et al. 2007; Kuipers et al. 2009). However, La Porta et al. (2000b) report a negative effect of rule of law on corporate governance.

Given the documented relationship between corporate governance and corporate liquidity, national-level governance variables such as democracy and rule of law, which likely have bearings on corporate governance as mentioned previously, should play roles in determining corporate liquidity through the corporate governance channel. However, as stated previously, only a few studies have examined whether and how democracy and rule of law are related to corporate governance. Although Gomez and Korine (2005) successfully establish the relation between democracy and the evolution of corporate governance, the nature of their study is qualitative rather than quantitative. Furthermore, their study sample is limited only to four developed countries. Thus, further research should be conducted, using empirical tests that employ a more comprehensive multi-country sample to investigate whether the established relationship between democracy and corporate governance is a coincidence or involves any causality. In addition, prior studies have linked rule of law to corporate governance; however, most of them provide mere arguments rather than empirical evidence to support their claim (OECD 2004; Cooper 2007; Donelson and Yust 2013; La Porta et al. 2000b). Ferreira and Vilela (2004), for example, use rule of law as one of the determinants of corporate liquidity; nevertheless, their sample is limited to 12 Economic and Monetary Union (EMU) countries and their corresponding results regarding the relationship of rule of law to corporate liquidity are not robust to different model specifications. Therefore, this study contributes to the existing literature using a more comprehensive data set to examine whether and how democracy and rule of law modifies the effect of corporate governance on corporate liquidity. In doing so, the effects of democracy and rule of law on corporate governance can be identified, given that corporate liquidity is a good channel for examining the quality of corporate governance (Yun 2009).

2.3 Democracy and corporate governance

Acceptable governance is based on fair decision procedures, among which, democratic procedures are highly valued. In terms of evolution, only the fittest survive. The ongoing trend of incorporating democratic procedures in the evolution of corporate governance indicates that democratic procedures are fit, if not the fittest, to serve as fair decision procedures for firms. Otherwise, such a historical trend would not have been observed.

According to modern theorists, procedures of democracy consist of enfranchisement, separation of powers, and representation with public debate. More specifically, enfranchisement deals with equal treatment and voice. In the context of corporations, allowing shareholders to participate in corporate decisions by granting them voting rights is desirable. This is based on the fact that voting enables shareholders to participate in selecting the managers who they think can operate the firm in a way that maximizes firm value instead of expropriating the shareholders' wealth. In addition, powers of direction and control must be separated to avoid autocracy as well as to protect individual freedom. In firms, shareholders (i.e., principals) monitor and control managers (i.e., agents) with the power of direction. Although the board of directors is supposed to monitor managers, they may fail to do so effectively. Thus, shareholders should perform external monitoring to supplement the internal monitoring being con-

ducted by the board of directors. This complementary action is particularly important when firm performance is poor (Ward et al. 2009). Therefore, separation of powers ensures that shareholders effectively exert their control over managerial decisions to avoid managerial entrenchment. Furthermore, in a democracy where power is delegated to representatives, all kinds of public opinions are encouraged and agreement with mutual decisions is reinforced by different voices. Similarly, corporate decisions can be reached by shareholders with different views through voting. Within this system, any corporate decisions made are deemed fair because they are not only produced based on majority rule but are backed by the diverse opinions of shareholders. This assertion is evidenced by the increasingly higher value of reaching corporate decisions with shareholders' diverse opinions. More specifically, shareholders have been allowed to voice their opinions more freely and have been granted increasingly stronger voting power in corporate decision making, especially after the recent global financial crisis (Yermack 2010). In sum, all these democratic procedures (i.e., enfranchisement, separation of powers, and representation with public debate) have been gradually reflected in modern corporate governance (Gomez and Korine 2005).

Given that democratic procedures are considered fair for firms and practicing democratic procedures has become a trend in modern corporate governance, the level of democracy should influence corporate governance. More specifically, when the external environment is more democratic, firms should be more inclined to practice democratic procedures. This is because the extent to which firms practice democratic procedures is influenced by their external democracy setting. A higher democracy in a country implies that its citizens can more freely voice their opinions and the authorities concerned are more accountable to the society. Such a democratic spirit is influential and more deeply rooted in the society, and as such, firms are likely to be more democratic therein (de Tocqueville 2000). By contrast, when the environment outside the firms is less democratic, practicing democratic procedures should incur higher cost such that firms are less likely to incorporate democratic procedures into their governance mechanisms. In sum, when the level of democracy is higher, corporate governance is more likely to reflect the external democratic setting, and firms are more likely to adopt and practice democratic procedures in their respective governance mechanisms. As a result, corporate governance should be improved and agency problems should be less severe under such circumstances. Thus, democracy should have a positive effect on corporate governance.

However, democracy can also have a negative effect on corporate governance because higher level of shareholder democracy can destabilize corporate strategies and aggravate the conflict between shareholders and other stakeholders (Falaschetti 2009). More specifically, when firms are more democratic and the opinions of shareholders are more diverse, corporate decision making is likely to be inefficient, thereby resulting in poor corporate governance and higher agency costs. The conflict between shareholders and other stakeholders is also likely to worsen when the level of shareholder democracy is higher because corporate decisions are more driven by the former than the latter. This condition necessitates broader corporate democracy termed as "stakeholder democracy." However, given the difficulty involved in operationalizing stakeholder democracy, shareholder democracy has remained the focus of corporate democracy; thus, the negative effect of shareholder democracy is likely to persist. Fur-

thermore, to a certain extent, a higher level of democracy suggests greater emphasis on equality and fairness, which poses a threat to liberty and freedom and can destabilize firms and societies as well. Therefore, corporate democracy might be at odds with liberty and freedom (i.e., the benefits enjoyed by the participants of the capital market) and may jeopardize corporate governance (Driver and Thompson 2002).

Hence, the net effect of democracy on corporate governance is ambiguous, depending on the relative magnitudes of these two opposing effects. Nevertheless, the abovementioned positive effect is likely to overpower the potential negative effect of democracy on corporate governance, especially because democratic procedures have been gradually incorporated into modern corporate governance (Gomez and Korine 2005). This notion implies that the benefits of practicing democratic procedures outweigh the costs for firms; otherwise, practicing democracy would not have become a trend among modern firms. In this light, the following hypothesis is formulated:

Hypothesis 1 Democracy has a positive effect on corporate governance.

2.4 Rule of law and corporate governance

All economic agents are bound to heed and observe the law in a given country to avoid receiving discipline or punishment. Firms in a given country certainly cannot be excluded from the effect of rule of law. When rule of law is stronger and public enforcement is more effective in a given country, firms are more likely to commit themselves to better corporate governance owing to greater pressure and discipline from the external legal environment. Therefore, corporate governance should be directly influenced by the external legal environment (Cooper 2007). In addition, when rule of law is stronger, litigation risk is expected to be higher, such that agency costs associated with the conflict between the management and the external shareholders are lower (Donelson and Yust 2013). Furthermore, when rule of law is stronger, any laws related to firms, especially those dealing with investor protection, are likely to be made or revised more efficiently upon the requests of the investors. This condition creates a virtuous cycle, in which rule of law is effectively reinforced in a given country. This condition results in even stronger investor protection and, transitively, better corporate governance brought about by the documented relationship between investor protection and corporate governance (La Porta et al. 2000b).[2] Based on the above reasoning, the following hypothesis is formulated:

Hypothesis 2 Rule of law has a positive effect on corporate governance.

3 Methodology

Given that the quality of corporate governance can be well understood through the cash channel (Yun 2009), we test our hypotheses by estimating the cash model to

[2] In addition to the literary arguments, existing literature has also provided empirical evidence suggesting the relationship of corporate governance to investor protection and rule of law (La Porta et al. 1998, 1999, 2000b; Edwards and Fischer 1994; Gorton and Schmid 2000; Kuipers et al. 2009; Doidge et al. 2007).

discern any indirect effect of democracy and rule of law on cash through some of its determinants.

The sample consists of 36,620 non-financial firms from 67 countries for the period from 1996 to 2010. Following the majority of previous liquidity studies (e.g., Opler et al. 1999; Dittmar et al. 2003), financial firms are excluded because of their different goals. Non-financial firms belonging to the public administration division are also excluded because these are government-related and their decision criteria are likely different from those of other private firms. Firm-specific annual financial data are gathered from the Worldscope database. The data on democracy and rule of law come from Kaufmann et al. (2010). The raw data obtained from the Worldscope database are further manipulated to obtain the empirical variables used in this study.

Table 1 presents the cross-country descriptive statistics of variables used in this study for developing and developed countries, which are classified based on International Monetary Fund (2012).[3] To be consistent with the observations used in the regression analysis, the summary statistics for the observations effectively used in estimation are reported. The sample then consists of 276,473 firm-year observations. Cash holding (cash), the key variable in this study, is defined as cash plus its equivalents (CH) divided by total assets net of cash [(i.e., net assets (NA)]. Following seminal liquidity studies (Dittmar et al. 2003; Kalcheva and Lins 2007; Opler et al. 1999), NA rather than total assets is used in computing the cash ratio because the future profitability of firms should be related to "assets in place." Corporate liquidity considerably varies across the 67 countries. The median values of cash for the developing and developed countries are 0.076 and 0.109, respectively.

The selection of cash determinants follows previous studies. Firm size (Size) is proxied by the book value of total assets in millions of USD. Firm profitability is proxied by cash flow (CF), defined as earnings before interest and taxes, depreciation and amortization (EBITDA) less interest, as well as taxes and common dividends. Net working capital (NWC), measured as total current assets less cash less total current liabilities, proxies an additional liquid asset, which is a substitute for cash holdings. Capital expenditure (CAPX) is used as a proxy for potential growth or investment opportunities and is measured as additions to fixed assets (Kalcheva and Lins 2007). Leverage (LEV), or total debt as a fraction of total assets, is included because of its role as a key determinant of corporate liquidity in the existing literature. The financing hierarchy theory predicts a negative relation between cash and debt. In fact, such a negative relation is also predicted by agency theory. More specifically, issuing debt can mitigate the agency problem within the firm (Gamba and Triantis 2014). As a result, agency costs are lower when leverage is higher such that external financing cost decreases and demand for cash weakens under such circumstance. Dividend payment (DIV) is the dummy variable that returns a value of one if a firm pays dividends and zero otherwise. DIV is used in this work as the corporate governance variable affecting agency costs given that a firm can alleviate agency problems by paying out dividends.

[3] Countries are divided into developing and developed countries to match our econometric model, where the level of economic development is included as one of independent variables because it might have bearings on how VA and RL influence corporate governance.

Table 1 Cross-country descriptive statistics of variables used in this study

Country	CH/NA	Size	CF/NA	NWC/NA	CAPX/NA	LEV	DIV	RD/NA	VA	RL	N
Developing countries											
Argentina	0.054	227.745	0.070	−0.014	0.038	0.209	0.000	0.000	0.267	−0.582	896
Bahrain	0.099	125.110	0.098	−0.012	0.043	0.058	1.000	0.000	−0.877	0.572	28
Bermuda	0.132	312.060	0.047	−0.054	0.045	0.321	0.000	0.000	1.021	0.900	354
Brazil	0.087	554.920	0.061	−0.035	0.060	0.283	1.000	0.000	0.430	−0.365	3138
Bulgaria	0.033	14.330	0.050	0.076	0.012	0.134	0.000	0.000	0.581	−0.142	939
Cayman Islands	0.150	95.170	0.064	0.020	0.042	0.162	0.000	0.000	0.786	1.130	89
Chile	0.035	243.115	0.059	0.033	0.046	0.222	1.000	0.000	0.976	1.263	1922
China	0.177	151.405	0.074	−0.048	0.061	0.224	1.000	0.000	−1.547	−0.405	9176
Colombia	0.054	412.760	0.051	0.004	0.026	0.116	1.000	0.000	−0.300	−0.788	335
Cyprus	0.033	102.120	0.025	−0.011	0.018	0.270	0.000	0.000	1.064	1.186	435
Egypt	0.108	133.170	0.073	−0.020	0.039	0.186	1.000	0.000	−1.177	−0.058	599
Ghana	0.055	31.340	0.073	−0.043	0.081	0.167	1.000	0.000	0.428	−0.072	69
Hong Kong	0.178	121.540	0.049	−0.006	0.035	0.174	0.000	0.000	0.512	1.549	9211
Hungary	0.051	111.030	0.085	0.030	0.087	0.164	0.000	0.000	1.072	0.863	351
India	0.033	64.210	0.073	0.106	0.060	0.317	1.000	0.000	0.433	0.084	13,647
Indonesia	0.073	85.170	0.063	0.003	0.040	0.340	0.000	0.000	−0.283	−0.682	3287
Jordan	0.048	32.030	0.035	−0.020	0.017	0.125	0.000	0.000	−0.729	0.413	165
Kuwait	0.113	222.955	0.072	0.001	0.035	0.252	0.500	0.000	−0.504	0.568	66
Lithuania	0.023	47.750	0.125	−0.031	0.084	0.365	0.000	0.000	0.905	0.606	16
Malaysia	0.077	67.580	0.050	0.052	0.029	0.230	1.000	0.000	−0.501	0.510	9809

Table 1 continued

Country	CH/NA	Size	CF/NA	NWC/NA	CAPX/NA	LEV	DIV	RD/NA	VA	RL	N
Malta	0.038	60.200	0.044	−0.029	0.035	0.200	1.000	0.000	1.189	1.514	55
Mexico	0.051	717.160	0.071	0.028	0.038	0.234	0.000	0.000	0.116	−0.450	1490
Morocco	0.054	166.360	0.073	0.124	0.049	0.116	1.000	0.000	−0.773	−0.192	234
Pakistan	0.046	52.880	0.068	−0.042	0.045	0.357	1.000	0.000	−0.876	−0.826	1718
Peru	0.030	95.560	0.073	0.026	0.043	0.227	1.000	0.000	0.029	−0.671	867
Philippines	0.058	121.460	0.051	−0.029	0.028	0.246	0.000	0.000	−0.040	−0.462	1561
Poland	0.071	62.660	0.084	0.076	0.056	0.134	0.000	0.000	0.997	0.523	2248
Qatar	0.112	739.340	0.078	0.002	0.061	0.177	1.000	0.000	−0.892	0.712	109
Russia	0.042	156.670	0.078	0.027	0.045	0.222	0.000	0.000	−0.945	−0.963	2692
Saudi Arabia	0.069	393.080	0.096	0.053	0.075	0.209	1.000	0.000	−1.671	0.162	331
South Africa	0.106	120.265	0.100	0.021	0.058	0.137	1.000	0.000	0.662	0.093	3348
Sri Lanka	0.046	20.020	0.064	−0.002	0.039	0.227	1.000	0.000	−0.474	0.125	909
Thailand	0.051	58.980	0.068	0.011	0.036	0.309	1.000	0.000	0.131	0.104	5158
Turkey	0.057	118.980	0.075	0.081	0.042	0.181	0.000	0.000	−0.144	0.066	2211
United Arab Emir	0.138	423.700	0.088	0.049	0.064	0.132	1.000	0.000	−0.888	0.465	233
Venezuela	0.054	202.740	0.065	0.031	0.032	0.127	1.000	0.000	−0.560	−1.230	222
Vietnam	0.085	17.940	0.108	0.058	0.048	0.254	0.000	0.000	−1.467	−0.446	2142
Total	0.076	97.930	0.068	0.028	0.045	0.234	1.000	0.000	0.018	0.078	80,060
Developed countries											
Australia	0.088	45.110	0.041	−0.016	0.042	0.177	0.000	0.000	1.406	1.757	8011
Austria	0.083	259.700	0.081	0.024	0.062	0.246	1.000	0.000	1.389	1.853	985
Belgium	0.086	255.690	0.079	0.008	0.053	0.256	1.000	0.000	1.394	1.309	1290
Canada	0.072	113.500	0.053	−0.007	0.059	0.209	0.000	0.000	1.428	1.775	7575

Table 1 continued

Country	CH/NA	Size	CF/NA	NWC/NA	CAPX/NA	LEV	DIV	RD/NA	VA	RL	N
Czech Republic	0.048	296.900	0.085	−0.041	0.082	0.103	1.000	0.000	0.977	0.836	345
Denmark	0.085	155.825	0.084	0.053	0.058	0.243	1.000	0.000	1.581	1.887	1680
Finland	0.087	223.570	0.077	0.051	0.055	0.244	1.000	0.004	1.565	1.953	1610
France	0.104	200.870	0.073	0.023	0.044	0.215	1.000	0.000	1.245	1.411	7251
Germany	0.088	181.155	0.075	0.084	0.047	0.175	1.000	0.000	1.380	1.618	8052
Greece	0.045	169.550	0.040	0.050	0.036	0.320	1.000	0.000	0.958	0.789	1904
Iceland	0.045	546.490	0.059	0.018	0.030	0.449	0.000	0.000	1.496	1.902	78
Ireland	0.109	233.635	0.069	−0.014	0.043	0.258	1.000	0.000	1.403	1.576	762
Israel	0.148	89.960	0.047	0.015	0.030	0.299	0.000	0.000	0.651	0.877	2398
Italy	0.083	422.265	0.058	0.012	0.038	0.267	1.000	0.000	1.022	0.550	2898
Japan	0.149	300.240	0.050	−0.008	0.032	0.233	1.000	0.002	0.983	1.326	38,529
Korea, South	0.111	111.710	0.068	0.008	0.043	0.254	1.000	0.001	0.687	0.860	12,998
Luxembourg	0.060	8934.130	0.047	0.049	0.036	0.227	1.000	0.000	1.532	1.811	53
Netherlands	0.063	442.500	0.089	0.042	0.053	0.235	1.000	0.000	1.592	1.752	2182
New Zealand	0.028	117.520	0.053	0.027	0.046	0.257	1.000	0.000	1.602	1.862	1073
Norway	0.119	247.600	0.070	−0.027	0.064	0.302	0.000	0.000	1.562	1.932	1894
Portugal	0.035	303.740	0.061	−0.048	0.042	0.344	1.000	0.000	1.335	1.186	709
Singapore	0.145	73.465	0.063	0.037	0.037	0.190	1.000	0.000	−0.225	1.674	6244
Slovakia	0.040	222.610	0.073	−0.002	0.058	0.165	0.000	0.000	0.893	0.497	71
Slovenia	0.048	2.230	0.055	−0.068	0.061	0.315	1.000	0.000	1.074	0.975	142
Spain	0.063	672.680	0.071	−0.019	0.045	0.244	1.000	0.000	1.249	1.210	1615
Sweden	0.098	114.065	0.071	0.051	0.036	0.167	1.000	0.000	1.565	1.856	3588
Switzerland	0.130	382.350	0.088	0.078	0.046	0.213	1.000	0.000	1.456	1.902	2519

Table 1 continued

Country	CH/NA	Size	CF/NA	NWC/NA	CAPX/NA	LEV	DIV	RD/NA	VA	RL	N
Taiwan	0.147	94.975	0.068	0.071	0.041	0.216	0.000	0.011	0.856	0.900	14788
United Kingdom	0.089	102.190	0.064	−0.019	0.043	0.169	1.000	0.000	1.332	1.655	17303
United States	0.081	251.410	0.066	0.035	0.045	0.246	0.000	0.000	1.332	1.533	47,866
Total	0.109	180.280	0.061	0.018	0.042	0.224	1.000	0.000	1.162	1.514	196,413

This table presents the median values of variables used in the study. Countries are classified as developing countries and developed countries (IMF 2012). Cash holding (CH/NA) is the ratio of cash plus its equivalents plus marketable securities (cash) to net assets. Net assets (NA) are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization (EBITDA), less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is the dummy variable that returns a value of one if a firm pays dividends and zero otherwise. RD/NA is the ratio of expense on research and development to net assets. All financial ratios are winsorized at the 1 and 99% level. The voice and accountability (VA) and rule of law (RL) indices are constructed by Kaufmann et al. (2010). The values of these indices range from −2.5 to 2.5. Higher index values indicate higher level of democracy or stronger rule of law. N represents the number of firm-year observations

Research and development expenses (RD) primarily serves as a proxy for information asymmetry or opaqueness (Dittmar et al. 2003).

Following the previous liquidity literature, all firm-specific variables used in this study are ratios except for Size and DIV. NA is used as the denominator in calculating the ratios for all variables except LEV (Dittmar et al. 2003; Kalcheva and Lins 2007; Opler et al. 1999). The observations are winsorized at the 1 and 99 % levels to remove outliers from the sample before estimating the model.

Democracy and rule of law are measured using the voice and accountability (VA) and rule of law (RL) indices constructed by Kaufmann et al. (2010). The VA index measures the "perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media." It consists of government repression, orderly change in government, vested interests, accountability of public officials, human rights, freedom of association, civil liberties, political liberties, freedom of the press, travel restrictions, freedom of political participation, imprisonment, government censorship, military role in politics, responsiveness of the government, democratic accountability, and institutional permanence (Munck 2003). Meanwhile, the RL index measures the "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." It consists of legitimacy of the state, adherence to rule of law, losses and costs of crime, kidnapping of foreigners, enforceability of government contracts, enforceability of private contracts, violent crime, organized crime, fairness of judicial process, speediness of judicial process, black market, property rights, independence of judiciary, and law and order tradition (Munck 2003). The values for each of these two indexes range from −2.5 to 2.5. Higher index values indicate higher level of democracy or stronger rule of law. Considering that the level of economic development might play roles in shaping the effect of VA and RL on corporate governance, a dummy variable DVPMT is created to distinguish between these two country groups in estimating the model. DVPMT takes on a value of one if a given country is classified as a developed country and zero otherwise (IMF 2012).

Table 2 presents the correlation matrix of the variables used in this study as well as the variance inflation factors (VIF) for the independent variables used in the regression analysis. Cash indeed correlates with these determinants, implying that they should be included in the estimation. Additionally, all the VIF values are low (i.e., less than 2), except for VA (2.960) and RL (2.980). Hence, the concern about multicollinearity can be alleviated.[4]

To examine the individual effect of democracy and rule of law on corporate governance clearly, the entire sample is divided into two subsamples in hypothesis testing based on the strength of rule of law and level of democracy, respectively. Countries are classified as those with high (low) level of democracy and those with strong (weak)

[4] It should be noted that we do consider other national-level governance indicators such as political stability and absence of violence, government effectiveness, regulatory quality, and control of corruption in the pilot study. However, they are eventually excluded because including them results in severe multicollinearity.

Table 2 Correlation matrix and variance inflation factors

	ln(CH/NA)	ln(Size)	CF/NA	NWC/NA	CAPX/NA	LEV	DIV	RD/NA	VA	RL	VIF
ln(CH/NA)	1.000										
ln(Size)	−0.094	1.000									1.260
CF/NA	−0.098	0.272	1.000								1.510
NWC/NA	−0.119	0.168	0.462	1.000							1.540
CAPX/NA	0.069	−0.027	−0.016	−0.075	1.000						1.010
LEV	−0.252	0.005	−0.261	−0.457	0.003	1.000					1.340
DIV	0.008	0.364	0.198	0.142	−0.019	−0.151	1.000				1.200
RD/NA	0.254	−0.137	−0.372	−0.217	0.047	0.011	−0.136	1.000			1.200
VA	0.003	0.095	−0.092	−0.014	−0.004	−0.012	0.005	0.124	1.000		2.960
RL	0.097	0.086	−0.109	−0.034	−0.012	−0.035	0.008	0.127	0.812	1.000	2.980

Cash holding (CH/NA) is the ratio of cash plus its equivalents plus marketable securities (cash) to net assets. Net assets (NA) are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization (EBITDA), less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is the dummy variable that returns a value of one if a firm pays dividends and zero otherwise. RD/NA is the ratio of expense on research and development to net assets. All financial ratios are winsorized at the 1 and 99% level. The voice and accountability (VA) and rule of law (RL) indices are constructed by Kaufmann et al. (2010). The values of these indices range from −2.5 to 2.5. Higher index values indicate higher level of democracy or stronger rule of law. VIF indicates the values of variance inflation factors for independent variables used in regression analysis

rule of law if the VA and RL values are greater (less) than the overall median (i.e., 0.837 and 0.817, respectively), respectively.

Since the data in this study vary with firms and time, the panel data model is deemed more appropriate. Fixed-effects panel data model is estimated because the Hausman test results strongly favor fixed-effects over random-effects models. In fact, the fixed-effects panel data model has been widely used to mitigate the concern on endogeneity of firms in seminal studies on corporate liquidity and governance (Bates et al. 2009; Dittmar and Mahrt-Smith 2007; Cremers and Ferrell 2014; Huang et al. 2013).[5] Additionally, empirical results based on the fixed-effects panel data model are used to infer any causal relationship in these studies. Given the potential correlations within firms, the Huber/White/sandwich robust standard errors are estimated to perform statistical inference.[6] The following model is estimated:

$$\begin{aligned} Ln\left(\frac{CH_{i,t}}{NA_{i,t}}\right) = {} & \beta_0 + \beta_1 \ln(Size_{i,t}) + \beta_2 \frac{CF_{i,t}}{NA_{i,t}} + \beta_3 \frac{NWC_{i,t}}{NA_{i,t}} + \beta_4 \frac{CAPX_{i,t}}{NA_{i,t}} \\ & + \beta_5 LEV_{i,t} + \beta_6 DIV_{i,t} + \beta_7 \frac{RD_{i,t}}{NA_{i,t}} \\ & + \beta_8 Z_{i,t} \times X_{i,t} + \beta_9 Z_{i,t} \times DVPMT_i \times X_{i,t} \\ & + \sum_{t=1996}^{2010} \theta_t Year_t + \mu_i + \nu_{i,t}, \end{aligned} \tag{1}$$

where Z is VA or RL; X is the variable (CAPX, LEV, or DIV) through which VA or RL influences cash; other variables are as defined above; $Year_t$ denotes the tth year dummy variable that returns a value of one if a given year is the tth year and zero otherwise; μ_i denotes the unobservable fixed effect for firm i; $\nu_{i,t}$ is the remainder disturbance for firm i in year t.[7]

To verify whether democracy and rule of law have positive effects on corporate governance, we examine the effects of democracy and rule of law on cash through the channels of CAPPX/NA, LEV and DIV. If higher level of democracy or stronger rule of law improves corporate governance and reduces agency costs, managers should be more inclined to hoard cash to take advantage of greater growth or investment opportunities for the value maximization purpose because managers' and outside shareholders' interests are more aligned under such circumstances (Dittmar et al. 2003). In fact, based on free cash flow theory, extra cash leads to agency costs because the management is likely to use extra cash to overinvest (Jensen 1986). When the level of democracy is higher or rule of law is stronger, the agency cost of free cash flow declines and

[5] This study builds upon seminal liquidity literature (e.g., Dittmar et al. 2003; Dittmar and Mahrt-Smith 2007; Bates et al. 2009), which uses the OLS or the fixed-effects panel data model to examine how cash is influenced by its determinants.

[6] Results thus obtained are more conservative in the sense that the Huber/White/sandwich robust standard errors are generally larger than regular standard errors such that the coefficients become less significant or turn insignificant with this approach.

[7] Industry dummy variables as well as other variables that are not time-varying are not included in the model because they get dropped with the fixed-effects panel estimation.

firms are allowed to hold more cash (Huang et al. 2013). Based on this view, the cash sensitivity to growth opportunities should be higher when level of democracy is higher or rule of law is stronger. This means that democracy and rule of law have a positive effect on the cash sensitivity to CAPX/NA (i.e., a proxy of growth opportunities).[8]

Meanwhile, issuing debt and paying out dividend can mitigate agency problems, such that agency costs are reduced and the precautionary motive for holding cash is weakened (Gamba and Triantis 2014; La Porta et al. 2000a). Therefore, LEV and DIV have a negative effect on cash based on the agency cost perspective. If higher level of democracy or stronger rule of law improves corporate governance and mitigates agency problems within the firm, issuing debt and paying out dividends should become more effective in reducing agency costs. This means that democracy and rule of law have a negative effect on the cash sensitivity to LEV and DIV.

4 Empirical results

Tables 3 and 4 present the results regarding how democracy and rule of law influence cash holdings through CAPX/NA, LEV, and DIV. Results on how corporate liquidity is related to its benchmark determinants are generally consistent with the prediction and empirical evidence of prior studies (Dittmar et al. 2003; Opler et al. 1999). More precisely, in Table 3 where countries with different strength of rule of law are compared, the coefficient of Size is significantly positive but less than 1 for countries with weak rule of law, indicating that cash holdings increase over size less than proportionately. By contrast, the coefficient of Size is significantly negative for countries with strong rule of law, suggesting that firms hold less cash as they expand for this country group. Results on Size confirm the economy of scale as indicated in prior studies. Meanwhile, the cash flow coefficient (CF/NA) is significantly positive for countries with weak rule of law, indicating that firms tend to retain cash from operating income for precautionary purposes for this country group. By contrast, the coefficient of CF/NA is significantly negative for countries with strong rule of law, indicating that cash holdings decrease as firms are more profitable for this country group.

Results regarding the remaining benchmark variables are consistent for both types of countries. The coefficient of net working capital (NWC/NA) is significantly negative, confirming that cash and NWC are substitutes. The coefficient of capital expenditure (CAPX/NA), a proxy for growth opportunities, is significantly positive, indicating that management tends to hold more cash when growth opportunities are greater. LEV has a significantly negative coefficient, concurring with the prediction of financing hierarchy theory and further supporting the assumption that cash and debt are substitutes in terms of financing (Acharya et al. 2007). DIV has a significantly positive coefficient, indicating that firms hold more cash if they pay dividends. Existing empirical evidence on the relation of DIV to cash holdings is mixed. However, firms that pay dividends are likely to be more profitable such that they hold more cash. Thus, a positive relation-

[8] Dittmar et al. (2003) found that the sensitivity of cash to investment opportunities is higher when shareholder rights are stronger, suggesting that the interests of managers and shareholders are more aligned when shareholders are better protected such that managers are inclined to hoard cash to take advantage of greater investment opportunities under such circumstances.

Table 3 Effect of democracy on cash holdings—weak versus strong rule of law countries

Dependent variable: ln(CH/NA)	Weak rule of law	Strong rule of law	Weak rule of law	Strong rule of law	Weak rule of law	Strong rule of law
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Size)	0.059***	−0.064***	0.059***	−0.066***	0.059***	−0.065***
	(0.016)	(0.009)	(0.016)	(0.009)	(0.016)	(0.009)
CF/NA	0.601***	−0.070***	0.602***	−0.070***	0.604***	−0.072***
	(0.054)	(0.017)	(0.054)	(0.017)	(0.054)	(0.017)
NWC/NA	−0.505***	−0.461***	−0.505***	−0.458***	−0.506***	−0.462***
	(0.033)	(0.015)	(0.033)	(0.015)	(0.033)	(0.015)
CAPX/NA	0.697***	0.518***	0.636***	0.911***	0.636***	0.905***
	(0.082)	(0.133)	(0.074)	(0.055)	(0.074)	(0.055)
LEV	−1.164***	−1.375***	−1.152***	−1.201***	−1.164***	−1.378***
	(0.056)	(0.034)	(0.059)	(0.082)	(0.056)	(0.034)
DIV	0.166***	0.032***	0.166***	0.033***	0.167***	0.241***
	(0.014)	(0.011)	(0.014)	(0.011)	(0.016)	(0.022)
RD/NA	2.038***	1.011***	2.042***	1.016***	2.046***	1.008***
	(0.366)	(0.064)	(0.365)	(0.064)	(0.368)	(0.064)
VA × CAPX/NA	0.083	0.779**				
	(0.092)	(0.352)				
VA × DVPMT × CAPX/NA	−0.659**	−0.455				
	(0.310)	(0.319)				
VA × LEV			0.037	0.061		
			(0.062)	(0.180)		

Table 3 continued

Dependent variable: ln(CH/NA)	Weak rule of law	Strong rule of law	Weak rule of law	Strong rule of law	Weak rule of law	Strong rule of law
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
VA × DVPMT × LEV			−0.124	−0.216		
			(0.184)	(0.165)		
VA × DIV					−0.045**	0.028
					(0.018)	(0.054)
VA × DVPMT × DIV					−0.055	−0.240***
					(0.047)	(0.051)
Constant	−3.099***	−1.804***	−3.098***	−1.796***	−3.092***	−1.784***
	(0.075)	(0.044)	(0.075)	(0.044)	(0.075)	(0.044)
χ^2	1429.46***	2320.31***	1404.44***	2318.55***	1341.00***	2463.21***
N	79247	197226	79247	197226	79247	197226
n	14436	25483	14436	25483	14436	25483
R^2	0.059	0.078	0.059	0.078	0.059	0.079

Cash holding (CH/NA) is the ratio of cash plus its equivalents plus marketable securities (cash) to net assets. Net assets (NA) are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization (EBITDA), less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is the dummy variable that returns a value of one if a firm pays dividends and zero otherwise. RD/NA is the ratio of expense on research and development to net assets. All financial ratios are winsorized at the 1 and 99% level. The voice and accountability (VA) index is constructed by Kaufmann et al. (2010). The values of the VA index range from −2.5 to 2.5. Higher index values indicate higher level of democracy. DVPMT is a dummy variable that returns a value of one if a given country is classified as a developed country and zero otherwise (IMF 2012). In all columns, year dummies are included to capture year-specific effects, but results are saved for brevity. χ^2 is the test statistic for the Hausman test. N represents the number of firm-year observations; n stands for the number of firms. The numbers in the parentheses are Huber/White/sandwich robust standard errors. ***, **, and * stand for 1, 5 and 10% significant

Table 4 Effect of rule of law on cash holdings—low versus high democracy countries

Dependent variable: ln(CH/NA)	Low democracy	High democracy	Low democracy	High democracy	Low democracy	High democracy
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Size)	0.016	−0.061***	0.016	−0.061***	0.016	−0.061***
	(0.013)	(0.009)	(0.013)	(0.009)	(0.013)	(0.009)
CF/NA	0.314***	−0.092***	0.307***	−0.093***	0.313***	−0.093***
	(0.036)	(0.018)	(0.035)	(0.018)	(0.036)	(0.018)
NWC/NA	−0.493***	−0.461***	−0.492***	−0.461***	−0.493***	−0.461***
	(0.026)	(0.016)	(0.026)	(0.016)	(0.026)	(0.016)
CAPX/NA	0.699***	−0.068	0.610***	0.982***	0.603***	0.983***
	(0.073)	(0.292)	(0.062)	(0.061)	(0.062)	(0.061)
LEV	−1.298***	−1.347***	−1.227***	−1.006***	−1.296***	−1.347***
	(0.048)	(0.036)	(0.052)	(0.146)	(0.048)	(0.036)
DIV	0.158***	0.001	0.158***	0.001	0.187***	0.032
	(0.012)	(0.012)	(0.012)	(0.012)	(0.014)	(0.041)
RD/NA	1.974***	0.970***	1.969***	0.968***	1.980***	0.969***
	(0.244)	(0.065)	(0.241)	(0.065)	(0.242)	(0.065)
RL × CAPX/NA	0.172	1.129**				
	(0.116)	(0.516)				
RL × DVPMT × CAPX/NA	−0.558***	−0.452				
	(0.156)	(0.423)				
RL × LEV			−0.031	−0.606**		
			(0.060)	(0.298)		
RL × DVPMT × LEV			−0.280***	0.389		
			(0.098)	(0.267)		

Table 4 continued

Dependent variable: ln(CH/NA)	Low democracy	High democracy	Low democracy	High democracy	Low democracy	High democracy
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
RL × DIV					−0.039*	0.026
					(0.020)	(0.084)
RL × DVPMT × DIV					−0.040	−0.049
					(0.027)	(0.073)
Constant	−2.667***	−1.838***	−2.663***	−1.841***	−2.669***	−1.840***
	(0.059)	(0.048)	(0.059)	(0.048)	(0.059)	(0.048)
χ^2	1579.06***	1999.33***	1679.87***	1939.55****	1634.81***	2145.32***
N	103193	173280	103193	173280	103193	173280
n	16329	22452	16329	22452	16329	22452
R^2	0.066	0.077	0.066	0.077	0.066	0.077

Cash holding (CH/NA) is the ratio of cash plus its equivalents plus marketable securities (cash) to net assets. Net assets (NA) are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization (EBITDA), less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is the dummy variable that returns a value of one if a firm pays dividends and zero otherwise. RD/NA is the ratio of expense on research and development to net assets. All financial ratios are winsorized at the 1 and 99% level. The rule of law (RL) index is constructed by Kaufmann et al. (2010). The values of the RL index range from −2.5 to 2.5. Higher index values indicate stronger rule of law. DVPMT is a dummy variable that returns a value of one if a given country is classified as a developed country and zero otherwise (IMF 2012). In all columns, year dummies are included to capture year-specific effects, but results are saved for brevity. χ^2 is the test statistic for the Hausman test. N represents the number of firm-year observations; n stands for the number of firms. The numbers in the parentheses are Huber/White/sandwich robust standard errors. ***, **, and * stand for 1, 5 and 10% significant

ship exists between cash holdings and dividend payment (Luo and Hachiya 2005).[9] Furthermore, R&D expense (RD/NA) has a significantly positive coefficient, indicating that firms hold more cash when their R&D expense increases. Such a positive relationship between R&D expense and corporate liquidity is expected because R&D expense can serve as a proxy for information asymmetry. This means that firms are likely to hold more cash due to higher information asymmetry and the corresponding increase in external financing cost.

Focusing on the results regarding the effect of democracy on cash through CAPX/NA, LEV, and DIV, for countries with weak rule of law, the coefficient of VA × CAPX/NA is insignificant whereas that of VA × DVPMT × CAPX/NA is significantly negative in Column 1. Hence, results fail to support the hypothesized positive effect of democracy on the cash sensitivity to CAPX/NA for this country group. By contrast, for countries with strong rule of law, the coefficient of VA × CAPX/NA is significantly positive whereas that of VA × DVPMT × CAPX/NA is insignificant in Column 2, indicating that the cash sensitivity to CAPX/NA increases when level of democracy is higher for this country group. In addition, such a positive effect of VA on the cash sensitivity to CAPX/NA is independent of economic development.

In Columns 3 and 4 where the effect of VA on cash through the channel of LEV is examined, the coefficients of the corresponding interaction variables are insignificant, indicating that VA has no effect on the cash sensitivity to LEV. However, if regular standard errors rather than cluster-robust ones are used for statistical inference, we find a significantly negative coefficient (p value = .01) on VA × DVMPT × LEV in Column 4 only, indicating that the negative effect of LEV on cash is strengthened when VA is higher for countries with strong rule of law and higher level of economic development. Moreover, results regarding the effect of VA on cash through the channel of DIV in Columns 5 and 6 are more pronounced. Specifically, for countries with weak rule of law, the coefficient of VA × DIV is significantly negative whereas that of VA × DVPMT × DIV is insignificant in Column 5, indicating that VA has a negative effect on the cash sensitivity to DIV and such a negative effect is independent of economic development for this country group. As for countries with strong rule of law, the coefficient of VA × DIV is insignificant whereas that of VA × DVPMT × DIV is significantly negative in Column 6, indicating that VA has a negative effect on the cash sensitivity to DIV for this country group with higher level of economic development only. In sum, results in Table 3 suggest that any negative effect of VA on agency costs tends to be observed in countries with strong rule of law, particularly those with higher level of economic development. This finding further suggests that for democracy to help improve corporate governance and reduce agency costs effectively, countries are recommended to strengthen their rule of law. In addition, countries should promote economic development to ensure the positive effect of democracy on their corporate governance.

Table 4 presents the results regarding the effect of rule of law on cash through CAPX/NA, LEV, and DIV. For countries with low democracy, the coefficient of RL × CAPX/NA is insignificant whereas that of RL × DVPMT × CAPX/NA is significantly

[9] The coefficients on DIV are generally positive (Tables 3, 4), indicating that the positive effect of DIV on cash overwhelms its negative effect such that the net effect is positive.

negative in Column 1. Hence, results fail to support the hypothesized positive effect of rule of law on the cash sensitivity to CAPX/NA for this country group. For countries with high democracy, the coefficient of RL × CAPX/NA is significantly positive whereas that of RL × DVPMT × CAPX/NA is insignificant in Column 2, indicating that the cash sensitivity to CAPX/NA is higher when rule of law is stronger for this country group and such a positive effect of RL on the cash sensitivity to CAPX/NA is independent of economic development.

Regarding the effect of RL on cash through the channel of LEV, the coefficient on RL × LEV is insignificant whereas that of RL × DVPMT × LEV is significantly negative in Column 3, indicating that the negative effect of LEV on cash is strengthened when rule of law is stronger for low democracy countries with higher level of economic development only. By contrast, for countries with high democracy, the coefficient on RL × LEV is significantly negative whereas that of RL × DVPMT × LEV is insignificant, indicating that the negative effect of LEV on cash is strengthened when rule of law is stronger for this country group, regardless of the level of economic development.

As for the effect of RL on cash through the channel of DIV, the coefficient of RL × DIV is significantly negative whereas that of RL × DVPMT × DIV is insignificant in Column 5, indicating that RL has a negative effect on the cash sensitivity to DIV for countries with low democracy and such a negative effect is independent of the level of economic development.[10] By contrast, the coefficients of RL × DIV and RL × DVPMT×DIV are insignificant in Column 6, indicating that RL has no effect on the cash sensitivity to DIV for countries with high democracy. In sum, results in Table 4 suggest that any negative effect of RL on agency costs tends to be found in countries with high democracy. Such negative effect is also observed in countries that have low democracy and are more economically developed. Therefore, for rule of law to help improve corporate governance and reduce agency costs effectively, countries are recommended to promote democracy or enhance economic development.

To tighten up, results in Tables 3 and 4 indicate that when level of democracy is higher or rule of law is stronger, managers are more inclined to hoard cash to take advantage of greater growth opportunities. Results concur with the finding of Dittmar et al. (2003). In addition, democracy and rule of law have a negative effect on the cash sensitivity to LEV and DIV, suggesting increased effectiveness of issuing debt and paying dividends in reducing agency costs when level of democracy is higher or rule of law is stronger. Results support H1 and H2. Furthermore, any positive effect of democracy and rule of law on corporate governance tends to exist when rule of law is stronger and the level of democracy is higher, respectively. Economic development also appears to help ensure the effectiveness of democracy and rule of law in reducing agency costs.

[10] When regular rather than cluster-robust standard errors are used for statistical inference, the coefficient of RL × DVPMT × DIV is significantly negative in Column 5, indicating that the negative effect of RL on the cash sensitivity to DIV is stronger for low democracy countries with higher level of economic development than for those with lower level of economic development.

4.1 Rule of law and cash sensitivity: additional tests

The empirical results in Tables 3 and 4 are interpreted conservatively in terms of how corporate governance is influenced by democracy and rule of law because the econometric model used in the study might fail to mitigate endogeneity problem effectively. The accession of some European countries to the EU in mid-2000s provides a natural experiment to verify the causal relationship between rule of law and corporate governance because such accession signifies exogenous variation in the legal environment. As shown in Fig. 1, the median values of RL increase substantially in mid-2000s for new EU countries as opposed to other countries. The increasing trend of RL for the new EU countries is particularly found in Fig. 2 that shows the locally-weighted scatterplot smoother (LOWESS) line plots. More specifically, these countries have experienced a tightening of rule of law since their entry into the EU because of the enforcement of the treaties by the European Commission. As a result, any positive effect of rule of law on corporate governance should be stronger during the post-entry period for these new EU countries as opposed to other countries. That is, rule of law should be more effective in improving corporate governance and reducing agency costs in the new EU countries such that any positive (negative) effect of rule of law on the cash sensitivity to CAPX/NA (LEV and DIV) is reinforced after their entry into the EU. Based on this, the study further examines whether any positive effect of rule of law is more pronounced after accession to the EU in mid-2000s for countries such as Bul-

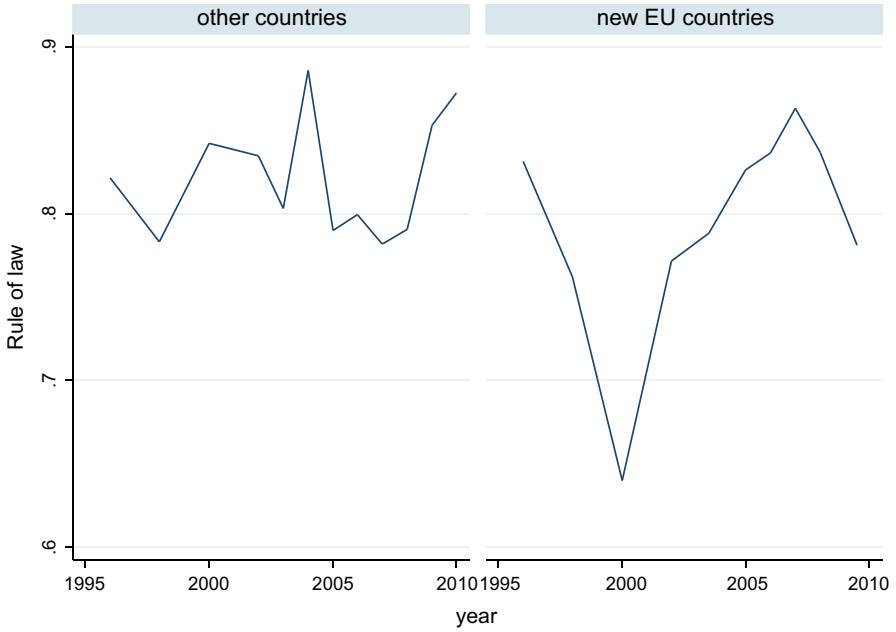

Fig. 1 Rule of law versus year—median plots

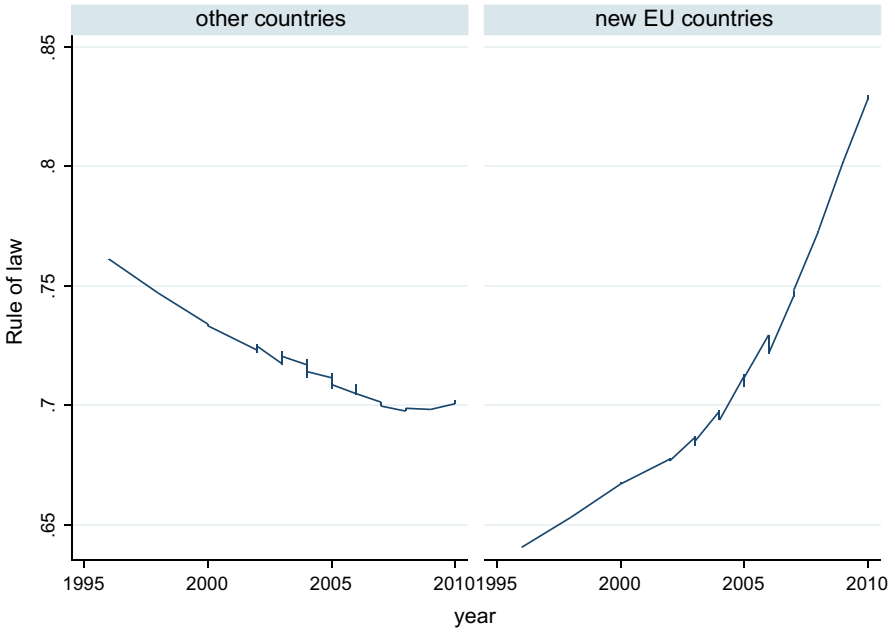

Fig. 2 Rule of law versus year—LOWESS line plots

garia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia.[11]

To this end, additional dummy variables are created to distinguish between country groups and between time periods. Specifically, a dummy variable EU is created that returns a value of one if a given country joined the EU in mid 2000s and zero otherwise. In addition, the sample period is divided into pre- and post-2004 periods. Pre2004 is a dummy variable that returns a value of one if a given year is before 2004 and zero otherwise. Post2004 is a dummy variable that returns a value of one if a given year is 2004 and thereafter and zero otherwise. To account for any variation of the effects of rule of law after 2004, another dummy variable Post2007 is created, which returns a value of one if a given year is 2007 and thereafter and zero otherwise. Another reason for creating Post2007 is to examine whether any increased effectiveness of rule of law in improving corporate governance is particularly found during 2004–2006 as opposed to the post-2007 period when two more countries joined the EU and global financial crisis started.

The estimation results are presented in Table 5, where Panels A and B present the results based on regular standard errors and Huber/White/sandwich robust standard errors, respectively. The coefficients are the same except that they tend to be more significant in Panel A than in Panel B. To highlight the difference in the causal rela-

[11] Twelve countries joined the EU in mid-2000s, with the majority of them entering the EU in 2004. Bulgaria and Romania became members in 2007. The data for Romania are unavailable, rendering the number of these EU countries reduced to 11

Table 5 Effect of rule of law on cash holdings—new EU countries versus other countries

Dependent variable: ln(CH/NA) Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Results based on regular standard errors						
Ln(Size)	0.001	−0.003	0.001	0.004	−0.003	−0.000
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
CF/NA	−0.010	−0.012	−0.007	−0.011	−0.012	−0.006
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
NWC/NA	−0.487***	−0.480***	−0.489***	−0.488***	−0.480***	−0.488***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
CAPX/NA	0.576***	0.784***	0.769***	0.576***	0.784***	0.770***
	(0.049)	(0.029)	(0.029)	(0.049)	(0.029)	(0.029)
LEV	−1.390***	−1.370***	−1.385***	−1.390***	−1.370***	−1.385***
	(0.013)	(0.022)	(0.013)	(0.013)	(0.022)	(0.013)
DIV	0.072***	0.071***	0.168***	0.072***	0.071***	0.171***
	(0.006)	(0.006)	(0.010)	(0.006)	(0.006)	(0.010)
RD/NA	1.149***	1.141***	1.143***	1.148***	1.141***	1.142***
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
RL × CAPX/NA	0.012			0.425***		
	(0.041)			(0.043)		
Post2004 × RL × CAPX/NA	0.321***					
	(0.031)					
EU × Post2004 × RL × CAPX/NA	0.749*					
	(0.410)					

Table 5 continued

Dependent variable: ln(CH/NA) Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
RL × LEV		−0.109***			0.067***	
		(0.017)			(0.017)	
Post2004 × RL × LEV		0.176***				
		(0.009)				
EU × Post2004 × RL × LEV		−0.678***				
		(0.185)				
RL × DIV			−0.130***			−0.094***
			(0.008)			(0.009)
Post2004 × RL × DIV			0.048***			
			(0.004)			
EU × Post2004 × RL × DIV			0.045			
			(0.069)			
Pre2004 × RL × CAPX/NA				−0.406***		
				(0.034)		
Post2007 × RL × CAPX/NA				−0.193***		
				(0.036)		
EU × Pre2004 × RL × CAPX/NA				−0.867*		
				(0.504)		
EU × Post2007 × RL × CAPX/NA				−0.148		
				(0.414)		
Pre2004 × RL × LEV					−0.176***	
					(0.011)	

Table 5 continued

Dependent variable: ln(CH/NA) Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Post2007 × RL × LEV					−0.001	
					(0.011)	
EU × Pre2004 × RL × LEV					−0.612**	
					(0.271)	
EU × Post2007 × RL × LEV					−0.616***	
					(0.143)	
Pre2004 × RL × DIV						−0.038***
						(0.005)
Post2007 × RL × DIV						0.020***
						(0.005)
EU × Pre2004 × RL × DIV						−0.172*
						(0.089)
EU × Post2007 × RL × DIV						−0.027
						(0.064)
Constant	−2.217***	−2.197***	−2.215***	−2.231***	−2.197***	−2.206***
	(0.017)	(0.017)	(0.017)	(0.018)	(0.017)	(0.018)
χ^2	2421.73***	2498.71***	2844.79***	2430.54***	2513.99***	2834.99***
N	276474	276474	276474	276474	276474	276474
n	36621	36621	36621	36621	36621	36621
R^2	0.065	0.066	0.065	0.065	0.066	0.065

Table 5 continued

Dependent variable: ln(CH/NA) Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Results based on Huber/White/sandwich robust standard errors						
Ln(Size)	0.001	−0.003	0.001	0.004	−0.003	−0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
CF/NA	−0.010	−0.012	−0.007	−0.011	−0.012	−0.006
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
NWC/NA	−0.487***	−0.480***	−0.489***	−0.488***	−0.480***	−0.488***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
CAPX/NA	0.576***	0.784***	0.769***	0.576***	0.784***	0.770***
	(0.068)	(0.044)	(0.044)	(0.068)	(0.044)	(0.044)
LEV	−1.390***	−1.370***	−1.385***	−1.390***	−1.370***	−1.385***
	(0.029)	(0.044)	(0.029)	(0.029)	(0.044)	(0.029)
DIV	0.072***	0.071***	0.168***	0.072***	0.071***	0.171***
	(0.009)	(0.009)	(0.013)	(0.009)	(0.009)	(0.013)
RD/NA	1.149***	1.141***	1.143***	1.148***	1.141***	1.142***
	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)
RL × CAPX/NA	0.012			0.425***		
	(0.064)			(0.062)		
Post2004 × RL × CAPX/NA	0.321***					
	(0.052)					
EU × Post2004 × RL × CAPX/NA	0.749					
	(0.598)					
RL × LEV		−0.109***			0.067**	
		(0.034)			(0.033)	
Post2004 × RL × LEV		0.176***				
		(0.017)				

Table 5 continued

Dependent variable: ln(CH/NA) Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
EU × Post2004 × RL × LEV		−0.678**				
		(0.344)				
RL × DIV			−0.130***			−0.094***
			(0.012)			(0.011)
Post2004 × RL × DIV			0.048***			
			(0.007)			
EU × Post2004 × RL × DIV			0.045			
			(0.112)			
Pre2004 × RL × CAPX/NA				−0.406***		
				(0.054)		
Post2007 × RL × CAPX/NA				−0.193***		
				(0.051)		
EU × Pre2004 × RL × CAPX/NA				−0.867		
				(0.702)		
EU × Post2007 × RL × CAPX/NA				−0.148		
				(0.501)		
Pre2004 × RL × LEV					−0.176***	
					(0.018)	
Post2007 × RL × LEV					−0.001	
					(0.016)	
EU × Pre2004 × RL × LEV					−0.612	
					(0.411)	
EU × Post2007 × RL×LEV					−0.616***	
					(0.234)	

Table 5 continued

Dependent variable: ln(CH/NA) Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Pre2004 × RL × DIV						−0.038***
						(0.007)
Post2007 × RL × DIV						0.020***
						(0.006)
EU × Pre2004 × RL × DIV						−0.172
						(0.153)
EU × Post2007 × RL × DIV						−0.027
						(0.077)
Constant	−2.217***	−2.197***	−2.215***	−2.231***	−2.197***	−2.206***
	(0.034)	(0.034)	(0.034)	(0.035)	(0.034)	(0.035)
χ^2	2421.73***	2498.71***	2844.79***	2430.54***	2513.99***	2834.99***
N	276474	276474	276474	276474	276474	276474
n	36621	36621	36621	36621	36621	36621
R^2	0.065	0.066	0.065	0.065	0.066	0.065

Cash holding (CH/NA) is the ratio of cash plus its equivalents plus marketable securities (cash) to net assets. Net assets (NA) are total assets net of cash. Firm size (Size) is total assets in millions of U.S. dollars. CF/NA is the ratio of cash flow to net assets, where cash flow is earnings before interest and taxes, depreciation and amortization (EBITDA), less interest, taxes, and common dividends. NWC/NA is the ratio of net working capital (NWC) to net assets, where NWC is total current assets less cash less total current liabilities. CAPX/NA is the ratio of capital expenditure (CAPX) to net assets, where CAPX is additions to fixed assets. Leverage (LEV) is the ratio of total debt to total assets. Dividend (DIV) is the dummy variable that returns a value of one if a firm pays dividends and zero otherwise. RD/NA is the ratio of expense on research and development to net assets. All financial ratios are winsorized at the 1 and 99% level. The rule of law (RL) index is constructed by Kaufmann et al. (2010). The values of the RL index range from −2.5 to 2.5. Higher index values indicate stronger rule of law. EU is a dummy variable that returns a value of one if a given country joined the EU in mid-2000s and zero otherwise. Pre2004 is a dummy variable that returns a value of one if a given year is before 2004 and zero otherwise. Post2004 is a dummy variable that returns a value of one if a given year is 2004 and thereafter and zero otherwise. Post2007 is a dummy variable that returns a value of one if a given year is 2007 and thereafter and zero otherwise. χ^2 is the test statistic for the Hausman test. N represents the number of firm-year observations; n stands for the number of firms. The numbers in the parentheses are regular standard errors. ***, **, and * stand for 1, 5 and 10% significant

tionship between rule of law and corporate governance between new EU members and other countries, we focus on the results in Panel A.

In Columns 1 to 3 where the sample period is divided into pre- and post-2004 subperiods, the coefficients of Post2004 × RL × CAPX/NA and EU × Post2004 × RL × CAPX/NA are both significantly positive in Column 1, suggesting that the positive effect of rule of law on the cash sensitivity to CAPX/NA is reinforced after the year of entry (2004) and such a phenomenon is more pronounced among new EU members. Results suggest that rule of law is more effective in improving corporate governance for new EU countries after 2004 such that any strengthening of rule of law after 2004 helps align the interests of mangers and outside shareholders more effectively for these countries, rendering firms more inclined to hoard cash for greater growth opportunities under such circumstances. In Column 2 where the interaction between rule of law and the cash sensitivity to LEV is examined, the coefficients of Post2004 × RL × LEV and EU × Post2004 × RL × LEV are significantly positive and significantly negative, respectively. Results suggest that while other countries see a weakened negative effect of rule of law on the cash sensitivity to LEV after 2004, the negative effect of rule of law becomes stronger after 2004 for new EU countries. Results further suggest that new EU countries experienced a stronger positive effect of rule of law on corporate governance after their entry to the EU such that rule of law reinforces the effectiveness of issuing debt in mitigating agency costs, resulting in increased cash sensitivity to LEV after 2004. In Column 3 where the interaction between rule of law and the cash sensitivity to DIV is examined, the coefficients of Post2004 × RL × DIV and EU × Post2004 × RL × DIV are significantly positive and insignificant, respectively. Results indicate no difference in the effect of rule of law on the cash sensitivity to DIV after 2004 between new EU countries and other countries. However, given the coefficients of RL × DIV and post2004 × RL × DIV being −0.13 and 0.048 respectively, the coefficient of RL × DIV remains negative (−0.082) after 2004. Hence, results confirm that rule of law is effective in improving corporate governance such that dividend payment becomes more effective in reducing agency costs when rule of law is strengthened for all countries during the entire sample period.

In columns 4 to 6 where the sample period is divided into 3 subperiods (i.e., pre-2004, 2004–2006, and post-2007), the coefficients of Pre2004 × RL × CAPX/NA and Post2007 × RL × CAPX/NA are both significantly negative in Column 4. Given that the coefficient of RL × CAPX/NA is significantly positive (0.425), these results indicate that the positive effect of rule of law on the cash sensitivity to CAPX/NA is stronger during the period 2004–2006 than in the pre-2004 and post-2007 periods. That is, rule of law is generally more effective in improving corporate governance during the period 2004–2006 such that strengthening of rule of law results in higher propensity of firms to hoard cash for greater growth opportunities during this period. In addition, the coefficients of EU × Pre2004 × RL × CAPX/NA and EU × Post2007 × RL × CAPX/NA are significantly negative and insignificant, respectively, suggesting that new EU countries experienced a larger increase in the effectiveness of rule of law in improving corporate governance after 2004 as opposed to other countries. Results concur with the finding from Column 1 that rule of law is more effective in improving corporate governance and reducing agency costs after these European

countries joined the EU in mid-2000s. In Column 5 where the interaction between rule of law and the cash sensitivity to LEV is examined, the coefficients of Pre2004 × RL × LEV and Post2007 × RL × LEV are significantly negative and insignificant whereas those of EU × Pre2004 × RL × LEV and EU × Post2007 × RL × LEV are both significantly negative. Results suggest that all countries experienced a decreased effectiveness of rule of law in improving corporate governance and reducing agency costs after 2004. However, rule of law appears to be more effective in improving corporate governance and reducing agency costs after 2007 for new EU countries only given that the coefficient of RL × LEV for the post-2007 period is negative (−0.549) whereas that for other countries is positive (0.067). In Column 6 where the interaction between rule of law and the cash sensitivity to DIV is examined, the coefficients of Pre2004 × RL × DIV and Post2007 × RL × DIV are significantly negative and significantly positive whereas those of EU × Pre2004 × RL × DIV and EU × Post2007 × RL × DIV are significantly negative and insignificant, respectively. Results indicate that the negative effect of rule of law on the cash sensitivity to DIV is increasingly weaker during the entire sample period and such an inclination is stronger for the new EU countries. Results fail to support that rule of law becomes more effective in improving corporate governance and reducing agency costs after 2004. However, the coefficient of RL × DIV for the 2004–2006 and post-2007 periods is −0.094 and −0.074, respectively. Hence, rule of law remains effective in improving corporate governance after 2004, concurring with the finding from Column 3.

In sum, results from the additional tests indicate that rule of law is more effective in improving corporate governance in new EU countries during the post-entry period likely because these countries were required to improve their legal system such that their rule of law has become more effective in improving corporate governance during such a period. More importantly, using the accession to the EU as the backdrop, the study provides additional evidence that strongly indicate the presence of causal relationship between rule of law and corporate governance.

5 Conclusions

This study contributes to the existing liquidity literature by exploring the effects of democracy and rule of law on corporate governance from the perspective of corporate liquidity. Considering that democratic procedures have been gradually discerned through modern corporate governance, the level of democracy outside the firms should influence corporate governance. In addition, good governance necessitates rule of law. Regardless of how sophisticated the governance mechanism within the firm is, corporate governance is likely to fail when strong rule of law is lacking. The effective enforcement of corporate provisions and the improvement of corporate governance are more likely to occur when the external legal environment is enhanced.

A review of 67 countries from 1996 to 2010 indicates that democracy and rule of law generally have a positive effect on the sensitivity of cash to growth opportunities, suggesting that interests of managers and outside shareholders are more aligned when the level of democracy is higher or rule of law is stronger such that managers are inclined to hoard cash to take advantage of greater growth opportunities for value

maximization under such circumstances. In addition, democracy and rule of law generally have a negative effect on the cash sensitivity to leverage and dividend payout, suggesting that issuing debt and paying out dividends become more effective in reducing agency costs when the level of democracy is higher or rule of law is stronger such that the external financing cost decreases and the cash demand declines under such circumstances. Furthermore, any negative effect of democracy and rule of law on agency costs appears to be reinforced when rule of law is stronger and level of democracy is higher, respectively. Economic development also appears to ensure the benefit of democracy and rule of law in terms of reducing agency costs.

Results provide implications for researchers, practitioners, and policymakers. For researchers, results indicate that democracy and rule of law indeed have bearings on corporate governance and liquidity. Thus, future related studies are recommended to consider these two national variables. In addition, to the author's knowledge, this study provides the first strong empirical evidence supporting Tocqueville's well known hypothesis that democracy eventually prevails in all domains of organized activity. Meanwhile, for practitioners, results suggest that multinational firms or firms that are planning to establish subsidiaries in foreign countries should consider the external environment of a country when managing cash holdings. In other words, country-specific variables, such as democracy and rule of law, should be formally considered because they may affect the agency costs of firms and external financing cost. Specifically, firms should hold less cash in countries with higher level of democracy or stronger rule of law because results suggest that corporate governance is better and agency costs are lower in such countries. As for policy makers, results suggest that higher level of democracy and strong rule of law are desirable in terms of improving corporate governance. Thus, to ensure enhanced corporate governance, governments need to promote democracy and strengthen rule of law without reservation. However, democracy and rule of law also have several subtle effects on corporate governance. Specifically, study results highlight the importance of promoting democracy and rule of law simultaneously to ensure that democracy and rule of law can help improve corporate governance and reduce the agency costs of firms effectively. In addition, results indicate that democracy and rule of law tend to reduce agency costs more effectively in developed countries than in developing countries. Therefore, to ensure that democracy and rule of law can improve corporate governance effectively, the authorities in developing countries should also promote economic development because these two factors require a favorable infrastructure and economy to reduce agency costs effectively.

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References

Acharya VV, Almeida H, Campello M (2007) Is cash negative debt? A hedging perspective on corporate financial policies. J Financ Intermed 16:515–554

Almeida H, Campello M, Weisbach MS (2004) The cash flow sensitivity of cash. J Finance 59:1777–1804

Bates TW, Kahle KM, Stulz RM (2009) Why do U.S. firms hold so much more cash than they used to? J Finance 64:1985–2021

Chang K, Noorbakhsh A (2009) Does national culture affect international corporate cash holdings? J Multinatl Financ Manag 19:323–342
Chen KCW, Chen Z, Wei KCJ (2011) Agency costs of free cash flow and the effect of shareholder rights on the implied cost of equity capital. J Financ Quant Anal 46:171–207
Cooper SM (2007) Corporate governance in developing countries: shortcomings, challenges, and effect on credit. In: Modern law for global commerce, congress to celebrate the fortieth annual session of UNCITRAL, Vienna, 9–12 July 2007
Cremers M, Ferrell A (2014) Thirty years of shareholder rights and firm valuation. J Finance 69:1167–1196
de Tocqueville A (2000) [1830] Democracy in America. In: Mansfield H, Winthrop D (eds) The University of Chicago Press, Chicago
Dennis DK, McConnell JJ (2003) International corporate governance. J Financ Quant Anal 38:1–36
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 Quant Anal 38:111–133
Doidge C, Karolyi GA, Stulz RM (2007) Why do countries matter so much for corporate governance? J Financ Econ 86:1–39
Donelson DC, Yust CG (2013) Litigation risk and agency costs: evidence from Nevada corporate law (March 1, 2013). Working Paper
Driver C, Thompson G (2002) Corporate governance and democracy: the stakeholder debate revisited. J Manag Gov 6:111–130
Drobetz W, Gruninger MC (2007) Corporate cash holdings: evidence from Switzerland. Financ Mark Portf Manag 21:293–324
Edwards J, Fischer K (1994) Banks, finance and investment in West Germany since 1970. Cambridge University Press, Cambridge
Falaschetti D (2009) Shareholder democracy and corporate governance. Rev Bank Financ Law 28:553–580
Ferreira M, Vilela A (2004) Why do firms hold cash? Evidence from EMU countries. Eur Financ Manag 10:295–319
Fligstein N, Choo J (2005) Law and corporate governance. Annu Rev Law Soc Sci 1:61–84
Gamba A, Triantis AJ (2014) How effectively can debt covenants alleviate financial agency problems? Working Paper
Gomez P, Korine H (2005) Democracy and the evolution of corporate governance. Corp Gov 13:739–752
Gorton G, Schmid F (2000) Universal banking and the performance of German firms. J Financ Econ 58:29–80
Harford J, Mansi SA, Maxwell WF (2008) Corporate governance and firm cash holdings in the US. J Financ Econ 87:535–555
Huang P, Zhang Y (2008) Does enhanced disclosure really reduce agency costs? Evidence from the value of corporate cash holdings and dividends. Paper presented at the 2007 European Finance Association Annual Meetings
Huang Y, Elkinawy S, Jain PK (2013) Investor protection and cash holdings: Evidence from US cross-listing. J Bank Financ 37:937–951
International Monetary Fund (IMF) (2012) Coping with high debt and sluggish growth. World, Economic Outlook October 2012
Jensen MC (1986) Agency costs of free cash flow, corporate finance and takeovers. Am Econ Rev 76:323–329
Kalcheva I, Lins KV (2007) International evidence on cash holdings and expected managerial agency problems. Rev Financ Stud 20:1087–1112
Kaufmann D, Kraay A, Mastruzzi M (2010) The worldwide governance indicators: methodology and analytical issues. World Bank Policy Research Working Paper no. 5430
Keynes JM (1936) The general theory of employment, interest and money. Harcourt, Brace & World, New York
Kuipers DR, Miller DP, Patel A (2009) The legal environment and corporate valuation: evidence from cross-border takeovers. Int Rev Econ Finance 18:552–567
La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny RW (1997) Legal determinants of external finance. J Finance 52:1131–1150
La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny RW (1998) Law and finance. J Polit Econ 106:1113–1155

La Porta R, Lopez-de-Silanes F, Shleifer A (1999) Corporate ownership around the world. J Finance 54:471–517
La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny RW (2000a) Agency problems and dividend policies around the world. J Finance 55:1–33
La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (2000b) Investor protection and corporate governance. J Financ Econ 58:3–27
La Porta R, Lopez-de-Silanes F, Shleifer A (2006) What works in securities laws? J Financ Econ 61:1–32
Licht AN, Goldschmidt C, Schwartz SH (2005) Culture, law, and corporate governance. Int Rev Law Econ 25:229–255
Luo Q, Hachiya T (2005) Corporate governance, cash holdings, and firm value: evidence from Japan. Rev Pacific Basin Financ Mark Polic 8:613–636
Mijiyawa AG (2013) Determinants of property rights institutions: survey of literature and new evidence. Econ Gov 14:127–183
Munck GL (2003) Measures of democracy, governance and rule of law: an overview of cross-national data sets. Paper prepared for the World Bank workshop Understanding Growth and Freedom from the Bottom Up, Washington, DC, 15–17 July 2003
Myers SC, Majluf N (1984) Corporate financing and investment decisions when firms have information that investors do not have. J Financ Econ 13:187–221
OECD (2004) OECD Principles of corporate governance. OECD Publishing, Paris
Opler T, Pinkowitz L, Stulz R, Williamson R (1999) The determinants and implications of corporate cash holdings. J Financ Econ 52:3–46
Ozkan A, Ozkan N (2004) Corporate cash holdings: an empirical investigation of UK companies. J Bank Finance 28:2103–2134
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 Finance 61:2725–2751
Shleifer A, Vishny RW (1997) A survey of corporate governance. J Finance 52:737–783
Shyam-Sunder L, Myers SC (1999) Testing static tradeoff against pecking order models of capital structure. J Financ Econ 51:219–244
Tong Z (2011) Firm diversification and value of cash holdings. J Corp Finance 17:741–758
Ward AJ, Brown JA, Rodriguez D (2009) Governance bundles, firm performance, and the substitutability and complementarity of governance mechanisms. Corp Gov 17:646–660
Yermack D (2010) Shareholder voting and corporate governance. Annu Rev Financ Econ 2:103–125
Yun H (2009) The choice of corporate liquidity and corporate governance. Rev Financ Stud 22:1447–1475