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State Ownership and Corporate Cash Holdings

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Abstract

Using a unique sample of newly privatized firms from 59 countries, this article provides new evidence about the agency costs of state ownership and new insight into the corporate governance role of country-level institutions. Consistent with agency theory, we find strong and robust evidence that state ownership is positively related to corporate cash holdings. Moreover, we find that the strength of country-level institutions affects the relation between state ownership and the value of cash holdings. In particular, as state ownership increases, markets discount the value of cash holdings more in countries with weaker institutions.

I. Introduction

In this article, we investigate the impact of state ownership on corporations' cash holdings. Although a large body of research documents the effect of corporate governance on the costs and benefits of firms' cash holdings (Dittmar and Mahrt-Smith (2007), Dittmar, Mahrt-Smith, and Servaes (2003), Harford, Mansi, and Maxwell (2008), and Kalcheva and Lins (2007)), the literature has little to say about the role of state ownership on corporate cash holdings. Liquid assets help mitigate transaction costs (Meltzer (1963), Miller and Orr (1966), and Mulligan (1997)) but may also lead self-interested managers to consume private benefits at shareholders' expense (Jensen (1986)). According to the former view, firms accumulate cash as a precaution against adverse economic shocks and the underinvestment problem (Opler, Pinkowitz, Stulz, and Williamson (1999)). According to the latter view, firms hold more cash because it is easier for entrenched managers to

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expropriate value from cash than from other assets, particularly in countries with weak shareholder protection (Dittmar et al. (2003), Kalcheva and Lins (2007)).

Using a large and unique sample of newly privatized firms (NPFs), we examine whether the level of residual state ownership affects how firms navigate this trade-off between the costs and benefits of cash holdings. We further investigate the role of the country-level institutional environment on the relation between state ownership, cash holdings, and firm value. Kalcheva and Lins (2007) find that cash held by firms with entrenched management is valued at a discount when external country-level shareholder protection is weak. We extend this analysis by examining how shareholder protection, freedom of the press, and political accountability affect cash management.

Understanding the relation between state ownership and corporate cash holdings is important because of the dramatic increase in state ownership around the world that has primarily resulted from rescue efforts following the financial crisis (Borisova, Fotak, Holland, and Megginson (2015), Megginson (2017)). As of 2011, for instance, state ownership of equity accounts for nearly 20% of stock market capitalization worldwide (Borisova, Brockman, Salas, and Zagorchev (2012)). Evidence on the role of the state as a large shareholder, however, is mixed. On the one hand, state ownership is associated with more agency problems, as managers of state-owned enterprises (SOEs) are typically entrenched bureaucrats who pursue political goals instead of the maximization of shareholder value. In line with this view, research shows that state ownership is associated with poor corporate governance, weak performance, and severe moral hazard problems (Boubakri, Cosset, and Saffar (2013), Megginson and Netter (2001), and Shleifer and Vishny (1997)). On the other hand, state ownership is associated with implicit government guarantees, preferential access to credit, and soft budget constraints, particularly during times of financial distress (Borisova et al. (2015), Borisova and Megginson (2011), and Faccio, Masulis, and McConnell (2006)). This evidence suggests that as government stakes increase, firms suffer less from financial constraints, adverse economic shocks, and underinvestment problems. The impact of state ownership on corporate cash holdings is thus an open question.[1]

To shed light on the potential relation between state ownership and corporate cash holdings, we compile a unique sample of 578 NPFs from 59 countries. Privatization, defined as the sale of SOEs or other government assets to the private sector (Megginson and Netter (2001)), provides an ideal setting for isolating the effect of state ownership on corporate cash holdings. First, privatization is associated with a dramatic change in ownership structure, as ownership is transferred from the government to private shareholders.[2] Second, the movement of SOEs

[1]The most prominent empirical studies of the impact of state ownership on cash holdings (Kusnadi, Yang, and Zhou (2015), Megginson, Ullah, and Wei (2014)) consider only China. Our large, multinational sample (59 countries) allows us to examine the broader, cross-national implications of residual state ownership on corporate cash holdings.

[2]We define an NPF as an entity in which state ownership has been recently reduced through privatization. A term commonly used in the privatization literature, NPFs may have a zero or a positive level of residual state ownership. Consistent with the findings of Megginson, Nash, and Van Randenborgh (1994) and Boubakri and Cosset (1998), a majority of our sample NPFs retains residual state ownership.

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to the private sector is associated with changes in agency problems, information asymmetry, and government implicit guarantees (e.g., Borisova and Megginson (2011), Boubakri, Cosset, and Guedhami (2005), Denis and McConnell (2003), and Guedhami, Pittman, and Saffar (2009)), and therefore is suitable for addressing questions on how state ownership affects cash holdings.

Consistent with the view that government ownership leads to serious information asymmetry and agency problems, we find that state ownership is positively associated with corporate cash holdings. Economically, an increase in government ownership from the 25th to 75th percentile leads to a 30% increase in corporate cash holdings, while all other variables remain constant. This result continues to hold when we use alternative measures of state ownership. In particular, we find that firms hold more cash if the state maintains majority control (i.e., the government retains more than 50% of a firm's shares) and if the NPFs are politically connected as defined in Faccio (2006). Following prior studies of cash management (e.g., Gao, Harford, and Li (2013), Harford et al. (2008)), we use alternative measures of cash holdings to test the sensitivity of our findings. For instance, to mitigate the concern that industry representation drives the relation between state ownership and cash holdings, we use an industry-adjusted measure of cash holdings. We continue to find that firms hold more cash when state ownership is higher.

One may be concerned about the endogeneity of state ownership. Megginson and Netter ((2001), p. 346) argue that "sample selection bias can arise from several sources, including the desire of governments to make privatization look good by privatizing the healthiest firms first." In addition, the relation between state ownership and cash holdings could be due to unobserved determinants of cash holdings that also explain residual state ownership following privatization. To address this concern, we first use firm fixed effects. Consistent with our main results, we find that state ownership continues to load positively and is statistically significant at the 10% level. A disadvantage of a firm fixed effects model, however, is that it is not able to capture the effects of time-invariant factors (e.g., country-level variables such as the amount of shareholder protection). We address this issue by employing instrumental variables, the Heckman (1979) selection model, and propensity score matching. Our main results continue to hold after we use each of these approaches.

To mitigate the concern that the relation between state ownership and cash holdings is driven by other firm- and country-level characteristics, we include several additional control variables. At the firm level, we include the ratio of research and development (R&D) expenses to sales, which proxies for information asymmetry, and the ratio of acquisition expenditures to sales, which captures managers' attempts to increase the size of the firm. We also add proxies for profitability, asset sales, and new debt issues to account for the possibility that cash holdings in NPFs reflect increased profitability or deliberate corporate actions such as borrowing or selling assets. At the country level, we include the ratio of market capitalization to gross domestic product (GDP) to control for the development of a nation's capital market. After taking these additional variables into account, we continue to find that state ownership is positively and significantly associated with corporate cash holdings.

Next, we examine why state ownership is associated with larger cash holdings and whether this relation reflects greater agency problems. We address these questions in two ways. First, we examine how state ownership influences the use of cash holdings through firms' investment and financial policies. Our results suggest that as residual state ownership increases, NPFs are more likely to use cash to increase capital expenditures and acquisitions, but not to increase R&D. We also do not find evidence that cash is used to increase dividend payouts. In addition, consistent with Jaslowitzer, Megginson, and Rapp (2016) and Chen, El Ghoul, Guedhami, and Wang (2017), we find that state ownership is associated with poor investment efficiency. Our initial findings are consistent with the contention that NPFs with higher residual state ownership are more likely to disgorge cash to achieve political goals rather than profit maximization. Second, we explore the role of market power and superior access to state-owned banks in influencing the relation between state ownership and cash holdings. Our findings suggest that state owners are likely to have superior access to financing and maintain high cash balances through financing from state-owned banks.

In additional analysis, we examine whether the quality of the institutional environment affects the value of cash holdings by our sample of NPFs. We find that as residual state ownership increases, capital markets more severely discount the value of cash holdings in countries where investor protection, freedom of the press, and political accountability are weaker. Overall, these results suggest that when country-level institutions are less effective in constraining consumption of political private benefits, the market value of cash holdings is lower for firms with a higher government stake.

Our study of the relation between state ownership and corporate cash holdings makes an important contribution to the privatization literature. Research (summarized in Megginson and Netter (2001)) generally identifies significant improvements in the financial and operating performance of NPFs. However, there is limited empirical evidence on the sources of these improvements. We extend this literature by providing preliminary insight into the sources of the performance improvements of NPFs. As we previously note, the financial and operating performance of SOEs can be reduced by state misappropriation of corporate resources (i.e., the agency costs of state ownership). Privatization should mitigate such costs. One area where a reduction in the agency costs of state ownership could be directly measured is a firm's cash management policies. Specifically, because cash is the most liquid asset, Caprio, Faccio, and McConnell (2013), Kusnadi et al. (2015), and Myers and Rajan (1998) argue that cash is most vulnerable to political extraction. Therefore, cash is an especially tempting target for state expropriation. Because privatization should dampen that temptation, one source of performance improvement following privatization is likely to be an increase in the value of cash holdings. By documenting that the value of cash holdings increases as residual state ownership decreases, we provide evidence of a direct source of the value accretion associated with privatization.

Furthermore, because we examine cash holdings across a large sample of institutionally diverse countries, our study provides interesting evidence regarding the effect of the institutional environment on financial decision making. We know that institutions matter. In this article, we attempt to shed light on which

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institutions matter more and why some institutions may matter more in particular settings. Following La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), we consider the role of legal institutions. We further examine how additional institutional characteristics (e.g., effectiveness of the media, degree of political accountability) affect the private benefits of state control. By identifying the impact of multiple institutional factors, we broaden our understanding of how the institutional environment affects financial policy.

The remainder of the article is organized as follows: In Section II, we review the related literature and develop our main hypotheses. In Section III, we describe the sample and variables, and provide descriptive statistics. In Section IV, we report our main empirical results and robustness tests. In Section V, we present results regarding the impact of country-level institutions on the relation among state ownership, cash holdings, and firm value. We conclude in Section VI.

II. Literature Review and Hypothesis Development

A. Cash Holdings

Theoretically, a corporation should set its cash holdings at a level such that the marginal costs of cash holdings equal the marginal benefits of those holdings (Opler et al. (1999)). The costs of holding cash include the cost-of-carry, which is the opportunity cost of an additional dollar of cash, and the agency cost of cash holdings, which is the cost associated with self-interested managers engaging in wasteful spending or private consumption. On the benefits side, firms may hold cash for precautionary purposes. For instance, Myers and Majluf (1984) argue that firms hold more cash when information asymmetry is severe and the cost of raising external funds is high. Also, consistent with the precautionary motive, Myers (1984) and Myers and Majluf (1984) contend that firms hold cash to prevent underinvestment in positive net present value (NPV) projects.

Empirically, prior studies find evidence for the precautionary motive to hold cash. Opler et al. (1999), for instance, show that publicly listed U.S. firms that face more difficulties in raising external capital (e.g., smaller firms and firms without a credit rating) hold more cash. Similarly, Duchin (2010) finds that public firms with higher cash-flow uncertainty are likely to increase corporate cash holdings. McLean (2011) shows that firms with large R&D expenses, which proxy for firms' precautionary motives, tend to issue shares to increase their cash positions. Other studies, however, find evidence supporting the agency-based explanation of cash holdings. In research focusing on the U.S. context, Harford (1999) finds that cash-rich firms are more likely to attempt to engage in acquisitions and that such acquisitions are associated with a negative stock market reaction and poor long-term operating performance. Additionally, Dittmar and Mahrt-Smith (2007) identify that the value of cash is lower in firms with severe agency problems (as measured by the intensity of antitakeover provisions and institutional ownership). In studies emphasizing the role of country-level agency problems, Dittmar et al. (2003) show that firms are likely to hold more cash in countries with weak

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investor protection.[3] Pinkowitz, Stulz, and Williamson (2006) find that the market value of cash holdings by private-sector firms is lower in countries with low investor protection. Kalcheva and Lins (2007) focus on the effects of firm-level agency problems and the institutional environment on cash holdings. They find that private-sector firms in countries with weak shareholder protection tend to hold more cash, and firm value is lower when firms with entrenched management hold more cash. Chen, Chen, Schipper, and Xu (2012) consider how corporate governance affects the cash holdings of Chinese firms. Using a sample of private and state-owned firms from China, the authors consider how an exogenous shock in the institutional environment affected the cash holdings and identify that levels of cash holdings respond to changes in the strength of corporate governance. Given the mixed evidence (and the prior focus on private-sector firms), the effect of state ownership on corporate cash holdings is ultimately an empirical question. We next discuss different theories and consider their testable predictions about how state ownership may affect cash holdings.

B. State Ownership

1. Soft Budget Constraints

According to the soft budget constraint theory developed by Kornai (1979), (1980), a government can soften or relax an SOE's budget constraints by providing tax discounts, preferential access to credit, and other forms of support (Kornai, Maskin, and Roland (2003)). Anderson, Korsun, and Murrell (2000) find that privatization and decentralization are essential in reducing soft budget constraints because when the central government retains ownership in privatized firms, more than two-thirds of enterprises still have soft budget constraints. In a related study, Frydman, Gray, Hessel, and Rapaczynski (2000) identify performance differences between privatized firms controlled by outsiders and those controlled by governments, and argue that privatized firms controlled by governments are not as disciplined because state banks and tax authorities provide extra support to soften budget constraints. Faccio et al. (2006) describe yet another channel through which state ownership affects corporate decisions. In particular, they find that politically connected firms are more likely to be bailed out by the government during times of financial distress. Similarly, Boubakri, Guedhami, Mishra, and Saffar (2012) show that firms increase leverage after a politician joins the board of directors. Chaney, Faccio, and Parsley (2011) further document that politically connected firms have a lower cost of borrowing even though their reporting quality is poorer.

Taken together, extant studies suggest that the transaction cost and precautionary motives should be less relevant for SOEs because state-controlled firms can raise external funds at lower cost. Consistent with this conjecture, Megginson et al. (2014) find for a sample of Chinese privatized firms that state ownership is negatively associated with corporate cash holdings. This discussion leads to our

[3] Contrary to much of the cross-country literature, Harford et al. (2008) find that U.S. firms with weaker corporate governance structures tend to hold less cash. The authors argue that entrenched managers in the United States prefer to spend cash faster to avoid being scrutinized by external governance mechanisms (e.g., activists and raiders).

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first hypothesis on the relation between state ownership and the cash holdings of NPFs:

Hypothesis 1A. NPFs hold less cash because of the soft budget constraints provided by residual state ownership.

2. Agency Problems

In an agency theory setting, SOE inefficiencies are a natural outcome of the separation of ownership and control. First, because SOEs are owned by the public but controlled by politicians, no individual owner has a strong incentive to engage in active monitoring (Laffont and Tirole (1993), Vickers and Yarrow (1988), (1991)). In addition, managers of SOEs are evaluated according to achievement of political goals rather than profit maximization, and are less subject to pressures from the stock, product, or labor markets. Lacking both internal monitoring and external corporate governance mechanisms, SOE managers have incentives to consume private benefits. In line with these arguments, empirical evidence shows that when the state retains a majority share of a privatized firm, the performance and governance improvements from privatization are less pronounced. For instance, Boubakri and Cosset (1998), D'Souza and Megginson (1999), Guedhami et al. (2009), and Megginson et al. (1994) document that state residual control undermines postprivatization restructuring and hinders improvements in profitability, efficiency, and investment. Similarly, Borisova et al. (2012) find that higher state ownership is associated with lower quality corporate governance. Jaslowitzer et al. (2016) and Chen et al. (2017) report that state ownership is negatively associated with investment efficiency. Boubakri et al. (2013) show that state ownership is negatively related to corporate risk taking.

The previously mentioned literature suggests that state ownership is associated with poor corporate governance and more severe agency problems. Because managers of SOEs may hold more cash in an effort to expropriate minority shareholders, this theory predicts a positive relation between state ownership and the cash holdings of NPFs. Therefore, our alternative hypothesis on the association between state ownership and cash holdings is as follows:

Hypothesis 1B. NPFs hold more cash because of the agency costs of residual state ownership.

3. Institutional Environment and the Agency Costs of State Ownership

Our second hypothesis relates to our analysis of whether the strength of a country's institutional environment affects the agency costs of residual state ownership and thus the value of cash holdings by NPFs. If stronger institutions help mitigate the agency problems of state ownership, we should expect a positive relation between the strength of a country's institutions and the value of cash holdings. This leads to our second hypothesis:

Hypothesis 2. The value of cash holdings of NPFs is higher in countries with a stronger institutional environment.

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III. Sample, Variables, and Descriptive Statistics

A. Sample Selection

To empirically test the relation between state ownership and cash holdings, we construct a sample of 578 NPFs from 59 countries from 1981 to 2014. In our multivariate analysis, we also construct various samples by matching NPFs to privately owned U.S. firms. Our sample of NPFs is from Chen et al. (2017). These data provide a powerful setting in which to investigate the role of state ownership on cash holdings. First, we track the change in ownership after the first privatization, which allows us to analyze the time-varying effect of state ownership on cash holdings. Second, these data cover firms in countries with diverse institutional environments, allowing us to investigate the relation among cash holdings, state ownership, and institutional quality. We obtain cash holdings and other financial statement information from Compustat Global and ownership data from Chen et al. (2017), firms' annual reports, Bureau van Dijk's Osiris database, and Bloomberg. Because the behavior of financial firms (Standard Industrial Classification (SIC) codes between 6000 and 6999) is heavily influenced by a country's regulatory environment, we exclude these firms from our sample.

Table 1 summarizes the sample distribution by year, industry, and region. Panel A reveals significant growth in privatizations over time. In particular, more than 90% of our sample firms were privatized in the 1990s and 2000s. Panel B shows that the sample firms are widely distributed across industries (defined according to Campbell's (1996) classification), with 31% in utilities, 16% in basic industry, and 14% in transportation. Similarly, Panel C shows that the sample firms are widely distributed across regions, with 46% located in East and South Asia and the Pacific, 41% in Europe and Central Asia, 9% in Latin America and the Caribbean, and 4% in Africa and the Middle East.

B. Variables

1. Cash Holdings

Following the literature (e.g., Harford et al. (2008)), we calculate our measure of cash holdings (CASH_HOLD) as the ratio of cash and marketable securities to sales. For robustness, we also use the ratio of cash and marketable securities to total assets (Gao et al. (2013)) and the ratio of cash and marketable securities to net assets, where net assets is the difference between total assets and cash and marketable securities (Opler et al. (1999)). To mitigate concerns that the relation between state ownership and cash holdings is driven by industry-specific characteristics, we additionally use an industry-adjusted measure of cash holdings. This metric (IND_ADJ_CASH) is equal to the difference between a firm's cash holdings and its industry median cash holdings (Gao et al. (2013), Harford et al. (2008)).[4] The Appendix summarizes the definitions for these and all other variables used in our analyses.

[4]We also follow Dittmar and Mahrt-Smith (2007) to estimate excess cash. Our measure of excess cash is the residual from a regression of cash on its determinants. Our main results remain statistically unchanged when using excess cash as the dependent variable.

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TABLE 1
Distribution of the Sample of Newly Privatized Firms

Table 1 presents the distribution of the sample of 578 privatized firms. The full sample contains 5,254 firm-year observations. Panel A reports sample distribution by privatization year. Panel B reports sample distribution by industry based on industry groupings in Campbell (1996). Panel C reports sample distribution by region based on World Bank group classification.

Panel A. By Privatization Year

Year	No. of Obs.	%	Firms	%
1981	15	0.29	1	0.17
1983	7	0.13	1	0.17
1984	4	0.08	1	0.17
1985	20	0.38	2	0.35
1986	44	0.84	4	0.69
1987	121	2.30	8	1.38
1988	96	1.83	8	1.38
1989	166	3.16	12	2.08
1990	150	2.85	15	2.60
1991	369	7.02	33	5.71
1992	427	8.13	45	7.79
1993	313	5.96	36	6.23
1994	438	8.34	43	7.44
1995	350	6.66	39	6.75
1996	301	5.73	33	5.71
1997	488	9.29	49	8.48
1998	359	6.83	39	6.75
1999	272	5.18	28	4.84
2000	214	4.07	26	4.50
2001	117	2.23	13	2.25
2002	101	1.92	10	1.73
2003	141	2.68	16	2.77
2004	85	1.62	12	2.08
2005	106	2.02	12	2.08
2006	228	4.34	28	4.84
2007	118	2.25	15	2.60
2008	44	0.84	6	1.04
2009	27	0.51	6	1.04
2010	56	1.07	14	2.42
2011	17	0.32	6	1.04
2012	33	0.63	5	0.87
2013	20	0.38	7	1.21
2014	7	0.13	5	0.87
Total	5,254	100.00	578	100.00

Panel B. By Industry

Industry	No. of Obs.	%	Firms	%
Basic industry	837	15.93	96	16.61
Capital goods	260	4.95	26	4.5
Construction	380	7.23	44	7.61
Consumer durable	420	7.99	45	7.79
Food and tobacco	255	4.85	35	6.06
Leisure	143	2.72	13	2.25
Petroleum	360	6.85	39	6.75
Services	84	1.60	10	1.73
Textiles and trade	139	2.65	18	3.11
Transportation	713	13.57	74	12.80
Utilities	1,604	30.53	170	29.41
Other	59	1.12	8	1.38
Total	5,254	100.00	578	100.00

Panel C. By Region

Region (number of countries)	No. of Obs.	%	Firms	%
Africa & the Middle East (9)	196	3.73	22	3.81
East and South Asia & the Pacific (15)	2,419	46.04	249	43.08
Latin America & the Caribbean (8)	457	8.70	57	9.86
Europe & Central Asia (27)	2,182	41.53	250	43.25
Total (59)	5,254	100.00	578	100.00

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2. State Ownership

We measure state ownership using three indicators. First, STATE_OWN is the percentage of shares held by the government. Second, STATE_CONT is a dummy variable equal to 1 for firms in which the state maintains control (i.e., the government holds more than 50% of the firm's shares) following partial privatization, and 0 otherwise. Third, POLITICAL is a dummy variable equal to 1 for firms that are politically connected (Faccio (2006)), and 0 otherwise.[5]

3. Control Variables

Our regressions include several firm- and country-level control variables to ensure that the relation between cash holdings and state ownership is not driven by confounding factors. In particular, we follow Gao et al. (2013), Harford et al. (2008), and Opler et al. (1999) and include firm size (SIZE), leverage (LEV), net working capital to sales (NWC), cash flow to sales (CASH_FLOW), capital expenditures to sales (CAPX), sales growth (SALES_GROW), a dividend dummy (DIV), and the standard deviation of cash flow (CASH_FLOW_VOL) as controls. Additionally, following Dittmar et al. (2003) and Kalcheva and Lins (2007), we include a measure of private credit (PRIV_CREDIT), which we calculate as private credit to GDP, to control for a country's banking sector development.

4. Institutional Variables

We examine the effect of institutional development on corporate cash holdings and consider the role of institutions in the relation among state ownership, cash holdings, and firm value. Specifically, we include measures of institutional strength that relate to investor protection, freedom of the press, and political accountability. We discuss each of these in turn.

a. Investor Protection

Beginning with the seminal work of La Porta et al. (1997), (1998), the literature documents that the protection of the rights of minority shareholders varies significantly across countries. Dyck and Zingales (2004) and Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) show that expropriation by majority owners is more likely in countries providing less legal protection of minority shareholders. Therefore, the state may engage in more diversion from NPFs when legal protection of minority shareholders is weak. Because this expropriation of minority shareholders could include extracting value from the firm's assets, we expect a positive relation between the strength of shareholder protection and the value of cash holdings. To measure the strength of shareholder protection, we follow Kalcheva and Lins (2007) and use the revised antidirector rights index of Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008) to construct our measure of shareholder rights (SHDR_RIGHTS).[6]

[5]Faccio ((2006), p. 369) identifies a firm as politically connected "if at least one of its large shareholders (anyone controlling at least 10 percent of voting shares) or one of its top officers (CEO, president, vice-president, chairman, or secretary) is a member of parliament, a minister, or is closely related to a top politician or party."

[6]In unreported robustness tests, we also use the anti–self-dealing index from Djankov et al. (2008), the rule of law metric from the World Governance Indicators, and legal origin from La Porta et al. (1998). Our main results remain unchanged.

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b. Freedom of the Press

Bushman, Piotroski, and Smith (2004) and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2002) show that governments may restrict media freedom in efforts to conceal politically motivated expropriation. However, free media are more likely to expose expropriation of SOE assets, decreasing the value of diversion and increasing politicians' accountability (Dinc and Gupta (2011), Haw, Hu, Hwang, and Wu (2004), and Hellman, Jones, and Kaufman (2003)).[7] Thus, by raising the costs of state diversion, active and independent media are expected to positively affect the value of cash holdings by NPFs. To capture the role of the media, we follow Brunetti and Weder (2003), Dyck and Zingales (2002), and El Ghoul, Guedhami, Nash, and Patel (2018) and use Freedom House's freedom of the press index. Freedom House assesses each country's media independence by assigning numerical scores ranging from 0 (the most free media) to 100 (the least free media). We construct PRESS_FREE as 100 minus the original Freedom House index. Higher values of PRESS_FREE indicate that a country's media are more independent and hence more likely to expose state corruption or misappropriation.

c. Political Accountability

Prior work suggests that politicians are less likely to engage in expropriation in a more competitive political setting (Beck, Clarke, Groff, Keefer, and Walsh (2001), Bortolotti and Pinotti (2003), Dyck, Volchkova, and Zingales (2008), and Johnston (1997)). Building on these studies, we argue that politicians who are more accountable to voters should be less willing to expropriate wealth from firms with residual state ownership. Thus, by limiting the state's ability to extract private benefits, greater accountability to voters should be positively associated with the value of cash holdings.

We employ several proxies for the constraints imposed by a competitive political environment (i.e., political accountability). First, we use CHECKS, which reflects the degree to which political checks and balances restrict the ability of government officials to engage in unilateral decision making and, in turn, rent-seeking behavior (see, e.g., Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2002), (2010), Keefer (2001), and Keefer and Knack (1997)). This measure is from the Database of Political Institutions and is based on the number of political actors with veto power in a country's government (e.g., whether the executive and legislative branches are controlled by different parties, the number of parties in coalition governments). Henisz (2002) shows that governments that do not have political checks and balances in place are more likely to divert resources from SOEs. We therefore expect a positive association between CHECKS and the value of cash holdings by NPFs.

Second, we use the democracy index, DEMOC, from the International Country Risk Guide. This index reflects how democratic versus autocratic a country's political system is. Politicians from countries with a more democratic political system are likely to face greater electoral competitiveness and hence are more

[7]The monitoring role of the media is consistent with the conjecture of Glaeser, La Porta, Lopez-de-Silanes, and Shleifer (2004) and Haw et al. (2004) that an educated public is less tolerant of government malfeasance.

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likely to be constrained from exploiting private benefits of control. Because higher index values indicate a more democratic government (i.e., more competitive elections), we expect a positive relation between DEMOC and the value of cash holdings by NPFs.

As a measure of another "check" on governmental power, we use La Porta, Lopez-de-Silanes, Pop-Eleches, and Shleifer's (2004) judicial independence index (JUD_IND), which reflects the degree to which a country's judicial system is autonomous from its other branches of government. This measure is based on factors such as the tenure of judges and the prevalence of case law. By limiting unilateral decision making within a government, greater judicial independence should reduce the expropriation of SOE resources by politicians. Accordingly, we expect a positive relation between JUD_IND and the value of cash holdings by NPFs.

Our last political accountability variable captures the opacity of a state's operations. Specifically, we use Djankov et al.'s (2010) measure of disclosure by politicians (DISCL_POL), which indicates the extent to which politicians are required to disclose their finances and business activities. Higher disclosure scores suggest more transparency. To the extent that expropriating governments prefer to operate in the shadows (Bushman et al. (2004), Guedhami et al. (2009)), a more transparent government should be associated with lower private benefits of control. We therefore expect the value of cash holdings by NPFs to be higher in countries with more stringent disclosure requirements.

C. Descriptive Statistics

Panel A of Table 2 provides summary statistics.[8] Our main dependent variable, cash holdings (CASH_HOLD), has a mean (median) of 0.12 (0.09).

TABLE 2

Descriptive Statistics and Pearson Correlation Matrix

Table 2 presents descriptive statistics for the key variables used in our analyses. Our sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. All financial variables are winsorized at the 1% level in both tails of the distribution. Variable definitions and sources are provided in the Appendix. Panel A reports summary statistics for the firm-level variables. Panel B reports pairwise correlations coefficients between firm-level variables. Panel C reports means of country-level variables across years. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Summary Statistics

Variables	No. of Obs.	Min	Mean	Median	Max	Std. Dev
Tobin's *Q* (TOBINS_Q)	5,254	0.37	1.34	1.13	4.88	0.74
Cash holdings (CASH_HOLD)	5,254	0.00	0.12	0.09	0.53	0.11
State ownership (STATE_OWN)	5,254	0.00	0.25	0.12	1.00	0.28
State control (STATE_CONT)	5,254	0.00	0.29	0.00	1.00	0.45
Political (POLITICAL)	2,943	0.00	0.33	0.00	1.00	0.47
Size (SIZE)	5,254	2.90	7.59	7.63	12.16	1.95
Leverage (LEV)	5,254	0.00	0.17	0.14	0.59	0.15
Net working capital (NWC)	5,254	−0.52	−0.05	−0.05	0.34	0.15
Cash flow (CASH_FLOW)	5,254	−0.16	0.10	0.09	0.34	0.08
Capital expenditures (CAPX)	5,254	0.00	0.07	0.06	0.25	0.05
Sales growth (SALES_GROW)	5,254	−0.45	0.12	0.08	1.27	0.25
Dividend (DIV)	5,254	0.00	0.51	1.00	1.00	0.50
Cash flow volatility (CASH_FLOW_VOL)	5,254	0.00	0.04	0.03	0.21	0.04

(continued on next page)

[8]To avoid the influence of outliers, we winsorize all financial variables at the 1% level on both sides of the sample distribution.

TABLE 2 (continued)
Descriptive Statistics and Pearson Correlation Matrix

Panel B. Pearson Correlation Matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1	TOBINS_Q	1.00											
2	ln(CASH_HOLD)	0.11***	1.00										
3	STATE_OWN	−0.03	0.14***	1.00									
4	STATE_CONT	−0.03	0.11***	0.87***	1.00								
5	POLITICAL	−0.04*	0.12***	0.87***	0.96***	1.00							
6	SIZE	−0.10***	−0.10***	0.05*	−0.00	−0.02	1.00						
7	LEV	−0.08***	−0.34***	−0.15***	−0.14***	−0.08***	0.33***	1.00					
8	NWC	−0.07***	−0.07***	−0.06***	−0.02	−0.04	−0.13***	−0.14***	1.00				
9	CASH_FLOW	0.16***	0.19***	−0.02	0.02	−0.03	0.11***	−0.14***	0.21***	1.00			
10	CAPX	0.39***	−0.06**	0.08***	0.06**	0.04*	0.15***	0.11***	−0.11***	0.24***	1.00		
11	SALES_GROW	0.07***	0.10***	0.09***	0.08***	0.08***	−0.07***	−0.05*	0.01	0.17***	0.08***	1.00	
12	DIV	0.02	0.04*	0.09***	0.05**	0.07**	0.16***	−0.05**	0.15***	0.22***	0.12***	−0.00	1.00
13	CASH_FLOW_VOL	0.18***	0.06**	−0.09***	−0.09***	−0.10***	−0.23***	−0.07***	−0.06*	−0.04*	−0.12***	0.00	−0.23***

Panel C. Means of Country-Level Variables across Years

Country	SHDR_RIGHTS	PRESS_FREE	CHECKS	DEMOC	JUD_IND	DISCL_POL
Argentina	2.00	55.13	4.00	4.55	1.00	1.00
Australia	4.00	83.70	4.58	6.00	1.00	1.00
Austria	2.50	79.16	4.10	5.45	0.67	1.00
Belgium	3.00	88.97	4.38	5.96	0.67	1.00
Brazil	5.00	60.47	4.44	4.74	0.67	1.00
Bulgaria	3.00	62.00	2.00	5.50	—	1.00
Chile	4.00	71.61	3.06	4.69	0.67	1.00
China	1.00	16.60	1.00	1.28	0.00	0.00
Colombia	3.00	42.68	4.04	4.38	0.33	1.00
Croatia	2.50	59.46	3.31	5.21	—	1.00
Czech Republic	4.00	79.27	5.33	5.29	—	1.00
Denmark	4.00	89.47	5.60	6.00	1.00	0.00
Egypt	3.00	32.65	2.00	1.96	0.67	1.00
Finland	3.50	89.18	4.10	6.00	1.00	0.00
France	3.50	78.46	4.18	5.79	0.33	1.00
Germany	3.50	83.73	4.65	5.69	1.00	1.00
Ghana	5.00	71.50	3.00	3.00	1.00	1.00
Greece	2.00	68.95	3.00	6.00	0.67	1.00
Hong Kong	5.00	19.61	—	2.18	—	1.00
Hungary	2.00	74.06	3.57	5.90	—	1.00
India	5.00	63.16	10.29	6.00	1.00	1.00
Indonesia	4.00	46.30	2.70	4.34	1.00	1.00
Ireland	5.00	83.87	5.58	6.00	1.00	1.00
Israel	4.00	70.82	4.05	5.99	1.00	1.00
Italy	2.00	68.77	3.42	5.28	0.67	1.00
Jamaica	4.00	83.30	4.00	4.03	—	1.00
Japan	4.50	79.51	3.12	5.00	0.67	1.00
Jordan	1.00	37.22	1.00	3.61	1.00	1.00
Kazakhstan	4.00	18.40	1.00	1.72	—	1.00
Kenya	2.00	40.50	3.00	4.76	1.00	1.00
Korea (South)	4.50	70.00	2.95	5.89	0.67	1.00
Latvia	4.00	77.40	5.25	5.00	—	1.00
Lithuania	4.00	80.56	3.18	5.46	—	1.00
Malaysia	5.00	33.24	4.00	3.56	1.00	0.00
Mexico	3.00	47.59	4.80	5.78	0.33	1.00
Morocco	2.00	35.17	1.00	4.71	—	1.00
Netherlands	2.50	87.24	5.87	6.00	0.67	1.00
New Zealand	4.00	88.57	3.50	5.91	1.00	1.00
Nigeria	4.00	46.50	4.00	3.40	1.00	1.00
Norway	3.50	91.20	4.92	6.00	1.00	0.00
Pakistan	4.00	37.86	2.40	1.94	1.00	1.00
Peru	3.50	58.40	4.00	4.89	1.00	1.00
Philippines	4.00	57.87	4.00	5.00	1.00	1.00
Poland	2.00	77.15	4.18	6.00	—	1.00
Portugal	2.50	84.05	2.58	5.92	0.67	1.00
Romania	5.00	57.67	5.38	6.00	—	1.00
Russia	4.00	19.26	2.32	2.27	—	1.00
Singapore	5.00	32.91	2.00	2.06	1.00	0.00
Slovakia	3.00	78.07	4.46	6.00	—	1.00
South Africa	5.00	70.86	2.00	4.67	1.00	1.00
Spain	5.00	77.51	3.67	5.94	0.67	1.00
Sri Lanka	4.00	29.11	3.65	3.52	—	1.00
Sweden	3.50	90.08	4.38	6.00	1.00	1.00
Switzerland	3.00	89.06	3.13	6.00	0.67	1.00
Thailand	4.00	53.21	4.43	4.29	0.67	1.00
Turkey	3.00	44.52	2.85	4.25	1.00	1.00
United Kingdom	5.00	80.83	3.09	5.89	1.00	1.00
Venezuela	1.00	43.89	2.86	4.12	0.33	1.00
Zimbabwe	4.00	15.33	2.00	1.43	1.00	0.00
Average	3.13	54.96	3.49	4.28	0.65	0.71

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Residual state ownership (STATE_OWN) has a mean (median) of 0.25 (0.12), in line with a sharp decline in state ownership after privatization (Boubakri et al. (2005)), although governments maintain control (STATE_CONT) in 29% of the firms in our sample. Of the privatized firms, 33% are politically connected (POLITICAL). This is consistent with the finding by Bortolotti and Faccio (2009) that governments frequently transfer ownership rights without relinquishing control rights after privatization.

Panel B of Table 2 presents Pearson correlation coefficients between the firm-level variables. Consistent with the agency hypothesis, we find that state ownership (STATE_OWN), state control (STATE_CONT), and political (POLITICAL) are all positively and significantly related to cash holdings. Panel C reports the means of our institutional indices by country. The above statistics show that our sample countries vary in the extent of their institutional development. This cross-sectional variation mitigates concerns of selection bias in privatization data (e.g., Megginson and Netter (2001)).[9] Most important, this diversity in terms of institutional development allows us to empirically examine how cross-country variation in institutional factors affects the market value of cash holdings.

IV. Results for the Relation between State Ownership and Cash Holdings

A. Main Evidence

Table 3 presents results for regressions of the different measures of cash holdings on our proxies for state ownership as well as firm characteristics, country-level institutional variables, and industry and year fixed effects. In our baseline specification (model 1), we use the natural logarithm of CASH_HOLD as the dependent variable[10] and test for the effect of state ownership. Specifically, we estimate the following regression (superscripts omitted for simplicity):

$$
\begin{aligned}
(1)\quad \ln(\text{CASH_HOLD}) \;=\; & \alpha + \beta_1 \text{STATE_OWN} + \beta_2 \text{SIZE} + \beta_3 \text{LEV} + \beta_4 \text{NWC} \\
& + \beta_5 \text{CASH_FLOW} + \beta_6 \text{CAPX} + \beta_7 \text{SALES_GROW} \\
& + \beta_8 \text{DIV} + \beta_9 \text{CASH_FLOW_VOL} + \beta_{10} \text{SHDR_RIGHTS} \\
& + \beta_{11} \text{PRIV_CREDIT} + \text{Industry fixed effects} \\
& + \text{Year fixed effects} + \varepsilon.
\end{aligned}
$$

To control for within-firm correlation, we present significance levels based on robust standard errors adjusted for clustering at the firm level.

[9] These data also emphasize the large institutional differences between China and the other countries in our sample. Megginson et al. (2014), in one of the most prominent studies of the relation between state ownership and cash holdings, consider only Chinese firms. Our large, institutionally diverse sample allows us to more broadly consider how institutional heterogeneity can affect the relation between state ownership and cash holdings. Jaslowitzer et al. (2016) also recognize the importance of a sample's institutional diversity when considering the relation between state ownership and financial decision making.

[10] Our main results are statistically unchanged when we use CASH_HOLD instead of ln(CASH_HOLD) as our dependent variable.

TABLE 3
State Ownership and Cash Holdings

The dependent variable in models 1, 2, and 3 of Table 3 is the natural log of CASH_HOLD, which is calculated as cash and marketable securities divided by sales. The main independent variable in model 1 is STATE_OWN, which is defined as the percentage of shares held by the government. The main independent variable in model 2 is STATE_CONT, which is a dummy variable equal to 1 for firms in which the state maintains control (i.e., the government holds more than 50% of the firm's shares) following partial privatization, and 0 otherwise. The main independent variable in model 3 is POLITICAL, which is a dummy variable equal to 1 for firms that are politically connected as defined by Faccio (2006), and 0 otherwise. Models 4, 5, and 6 use 3 alternative measures of cash holdings. The dependent variable in model 4 is the natural log of CASH/ASSETS, which is calculated as cash and marketable securities divided by total assets. The dependent variable in model 5 is natural log of CASH/NET_ASSETS, which is calculated as cash and marketable securities divided by assets less cash holdings. The dependent variable in model 6 is IND_ADJ_CASH, which is calculated as the difference between a firm's actual cash holdings and its industry median, based on Campbell's (1996) industry classification. Model 7 replaces country-level variables with country fixed effects. The full sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: ln(CASH_HOLD)						
	3 Measures of State Ownership			Alternative Dependent Variable			Country Fixed Effects
Variable	STATE_OWN	STATE_CONT	POLITICAL	ln(CASH/ ASSETS)	ln(CASH/ NET_ASSETS)	IND_ADJ_CASH	
	1	2	3	4	5	6	7
STATE_OWN	0.587***			0.359***	0.458***	0.344***	0.301**
	(4.500)			(3.147)	(3.817)	(2.994)	(2.225)
STATE_CONT		0.307***					
		(4.213)					
POLITICAL			0.225***				
			(2.708)				
SIZE	−0.036	−0.031	−0.058**	0.051**	−0.021	0.073***	−0.041*
	(−1.538)	(−1.336)	(−2.168)	(2.420)	(−0.949)	(3.806)	(−1.707)
LEV	−1.225***	−1.260***	−1.380***	−1.744***	−0.579**	−1.856***	−0.014
	(−4.356)	(−4.518)	(−4.440)	(−6.928)	(−2.367)	(−7.484)	(−0.148)
NWC	−0.379***	−0.385***	−0.373**	−0.993***	−1.250***	−0.042	−0.250**
	(−3.037)	(−3.070)	(−2.320)	(−4.611)	(−6.529)	(−0.382)	(−1.982)
CASH_FLOW	2.376***	2.393***	2.133***	3.309***	4.868***	1.291***	2.494***
	(8.613)	(8.650)	(6.737)	(8.991)	(15.451)	(5.474)	(9.455)
CAPX	0.539**	0.570**	0.240	−1.605***	0.194	−0.507**	0.273
	(2.311)	(2.483)	(0.965)	(−3.228)	(0.412)	(−2.541)	(1.145)
SALES_GROW	−0.009	−0.003	0.021	0.154**	0.014	0.178***	−0.136*
	(−0.114)	(−0.040)	(0.237)	(2.254)	(0.188)	(2.723)	(−1.737)
DIV	−0.046	−0.042	−0.077	0.032	0.015	0.016	0.067
	(−0.787)	(−0.721)	(−1.194)	(0.602)	(0.266)	(0.311)	(1.169)
CASH_FLOW_VOL	1.501*	1.578*	0.895	1.812**	1.153	2.552***	1.651*
	(1.752)	(1.840)	(0.775)	(2.356)	(1.252)	(3.488)	(1.919)
SHDR_RIGHTS	0.003	−0.006	−0.020	−0.011	−0.021	−0.015	
	(0.115)	(−0.201)	(−0.620)	(−0.427)	(−0.778)	(−0.592)	
PRIV_CREDIT	0.003***	0.003***	0.002*	0.001	0.002	0.000	
	(3.136)	(3.277)	(1.877)	(0.816)	(1.621)	(0.469)	
Constant	−1.884***	−1.843***	−1.209***	−2.762***	−2.500***	−0.339	−1.760***
	(−6.956)	(−7.260)	(−2.830)	(−11.176)	(−8.855)	(−1.522)	(−5.890)
Country fixed effects	No	No	No	No	No	No	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	5,254	5,254	2,943	5,254	5,254	5,254	5,254
Adj. R^2	0.233	0.229	0.216	0.214	0.278	0.118	0.259

We find that state ownership is positively related to corporate cash holdings. This relation is statistically significant at the 1% level. It is also economically significant, with the coefficient on state ownership (STATE_OWN) suggesting that moving state ownership from the 25th percentile (0.00) to the 75th percentile (0.51) results in a 30% (= 0.51 × 0.587) increase in corporate cash holdings (with all other variables constant). In line with the univariate results, these findings support the agency view of state ownership (Hypothesis 1B).

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Models 2 and 3 of Table 3 include alternative proxies for state ownership. In model 2, we replace STATE_OWN with the dummy variable STATE_CONT, which is equal to 1 if the government retains control over the partially privatized firm (i.e., owns more than 50% of the firm's shares), and 0 otherwise. We find that STATE_CONT loads with a positive and statistically significant coefficient (at the 1% level). This result is also economically significant, with corporate cash holdings increasing 31% as STATE_CONT changes from 0 to 1 (while holding all other variables constant). In model 3, we replace STATE_OWN with the dummy variable POLITICAL, which is equal to 1 if a firm is politically connected, as defined by Faccio (2006), and 0 otherwise. Providing additional evidence that state influence is positively associated with corporate cash holdings, we find that POLITICAL loads positively and is statistically significant at the 1% level. This finding is also economically significant, with cash holdings increasing 23% as POLITICAL changes from 0 to 1 (while holding all other variables constant). These results are consistent with those based on state ownership and support the agency view of state ownership (Hypothesis 1B).[11]

In models 4–6 of Table 3, we employ alternative measures of cash holdings. In model 4, we use the natural logarithm of the ratio of cash holdings to total assets (CASH/ASSETS). We find that the coefficient on STATE_OWN continues to be positive and statistically significant at the 1% level, with the magnitude of the economic impact of state ownership on corporate cash holdings comparable to that in model 1. In model 5, we use the natural logarithm of the ratio of cash to net assets (CASH/NET_ASSETS) as our dependent variable. Our results remain unchanged: STATE_OWN loads positively and is statistically significant at the 1% level. In model 6, we use an industry-adjusted measure of cash holdings, which is the difference between a firm's actual cash holdings and its industry-median cash holdings (based on Campbell's (1996) 12 industry categories). We continue to find that STATE_OWN is positively and significantly associated with cash holdings. Finally, in model 7, we develop an additional specification in which we retain our primary measure of cash holdings but we omit the country-level institutional variables and include country fixed effects. We find that STATE_OWN continues to load positively and is statistically significant at the 5% level. These results confirm our findings that state ownership is a key determinant of corporate cash holdings.

In summary, our results in Table 3 are consistent with the agency view of state ownership, indicating that firms are likely to hold more liquid assets as the government's ownership stake increases. We further note that our multinational results are very different from those of Megginson et al. (2014). Using a sample of Chinese firms, Megginson et al. (2014) identify a negative relation between state ownership and cash holdings (consistent with the soft-budget hypothesis). However, Megginson et al. (2014) consider firms only in China. As we document in Table 2 (Panel C), the institutional environment in China is very different from

[11]To help verify robustness, we follow Boubakri et al. (2013) and capture state influence with a dummy variable GOLDEN, which indicates whether the government holds a golden share in the NPF. The unreported results indicate that GOLDEN is positively and significantly (at the 1% level) related to corporate cash holding, consistent with Hypothesis 1B.

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that in the rest of the world.[12] We contend that the unique political, social, economic, and cultural environment of China contributes to the differences between our findings and those of Megginson et al. (2014). We further explore the effect of those institutional differences in our subsequent empirical analysis (in Section V).

B. Endogeneity

In the context of privatization, a major econometric concern is selection bias. As Megginson and Netter ((2001), p. 346) point out, "sample selection bias can arise from several sources, including the desire of governments to make privatization look good by privatizing the healthiest firms first." Furthermore, governments may retain higher stakes in firms with more cash holdings because they wish to extract greater private benefits or because few shareholders may be interested in investing in cash-rich privatized firms. In addition, the relation between state ownership and cash holdings could be driven by unobserved determinants of cash holdings that also explain residual state ownership. We address these issues using several approaches in Table 4.

First, we use a firm fixed effects model to mitigate concerns that corporate cash holdings are driven by time-invariant unobservable variables. Model 1 of Table 4 presents the results. We find that state ownership (STATE_OWN) loads positively and is statistically significant at the 10% level. This result suggests that the positive relation between state ownership and corporate cash holdings is not driven by time-invariant firm effects.[13]

Second, we estimate an instrumental variable regression. In particular, we use the variable COLLECTIVISM, which is equal to 100 minus the value of Hofstede's (2001) individualism index. We use COLLECTIVISM as an instrument because Boubakri, Guedhami, Kwok, and Saffar (2016) show that residual state ownership is higher in privatized firms located in more collectivistic societies. In the first-stage regression (unreported), we regress STATE_OWN on COLLECTIVISM along with the full set of control variables. Consistent with Boubakri et al. (2016), we find that COLLECTIVISM is positively and significantly associated with STATE_OWN. We use 2 tests to check the validity of our instrument. We conduct an F-test of the excluded exogenous variable. The results reject the null hypothesis of the F-test that the instrument does not explain state ownership. Also, we conduct a Kleibergen and Paap (2006) *rk* LM test and reject the null hypothesis that the model is underidentified at the 1% level. Model 2 of Table 4 shows the results of the second-stage regression. We again find that state ownership is positively and significantly associated with corporate cash holdings.

Third, we perform a Heckman (1979) 2-stage analysis to address sample selection concerns. In the first stage, we use a probit model to predict whether governments retain control over the privatized firms. In particular, we regress

[12] In unreported robustness tests, we redo the analysis in Table 3 using data only for our Chinese firms and then using data for the total sample (excluding China). Our findings for the China-only sample confirm those of Megginson et al. (2014). Our findings for the total sample (after excluding China) are virtually the same as those presented in Table 3.

[13] Using firm effects has the disadvantage of omitting time-invariant variables from the regression. We are unable to examine the effect of country-level time-invariant measures of institutional factors on corporate cash holdings in this setting.

TABLE 4
Endogeneity of State Ownership

The dependent variable in Table 4 is the natural log of CASH_HOLD, which is calculated as cash and marketable securities divided by sales. The main independent variable is STATE_OWN, which is defined as the percentage of shares held by the government. Model 1 reports results from a firm fixed effect regression. The remainder of the table reports results from tests that address the endogeneity of state ownership using instrumental variable regression (model 2), Heckman (1979) selection model (model 3), and propensity score matching (model 4). The first-stage regression results predicting state ownership are unreported. Model 2 reports the second-stage regression of the natural log of CASH_HOLD on fitted values of STATE_OWN. In the first-stage regression (unreported), the instrument for STATE_OWN is COLLECTIVISM, which is equal to 100 minus the value of Hofstede's (2001) individualism index. In model 3, the Heckman sample selection model controls for the inverse Mills (1926) ratio (LAMBDA). In model 4, the propensity score matching analysis uses a sample of state-controlled firms matched to control firms with the closest propensity score. The full sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: ln(CASH_HOLD)			
	Firm Fixed Effects Regression	Instrumental Variable Regression: 2nd Stage	Heckman Sample Selection Model: 2nd Stage	Propensity Score Matching
Variable	1	2	3	4
STATE_OWN	0.360*	2.640***	0.564***	0.356***
	(1.862)	(3.678)	(3.830)	(2.873)
SIZE	−0.073	0.036	0.068***	0.096***
	(−1.310)	(1.373)	(3.512)	(4.428)
LEV	−0.973***	−1.380***	−1.855***	−1.861***
	(−4.191)	(−3.922)	(−7.436)	(−6.960)
NWC	−0.166*	0.024	−0.026	−0.109
	(−1.742)	(0.195)	(−0.230)	(−0.751)
CASH_FLOW	0.950***	1.101***	1.161***	1.429***
	(4.745)	(3.937)	(4.796)	(5.379)
CAPX	−0.362**	−0.764***	−0.478**	−0.392
	(−2.165)	(−2.599)	(−2.301)	(−1.423)
SALES_GROW	0.183***	0.094	0.230***	0.217***
	(3.069)	(1.136)	(3.331)	(2.682)
DIV	0.103**	−0.133	−0.009	−0.022
	(2.560)	(−1.642)	(−0.177)	(−0.345)
CASH_FLOW_VOL	0.924	2.690***	2.447***	3.296***
	(1.346)	(2.904)	(3.167)	(3.957)
SHDR_RIGHTS		0.083*	0.003	0.020
		(1.892)	(0.103)	(0.617)
PRIV_CREDIT	−0.003**	0.001	0.001	−0.000
	(−2.131)	(0.549)	(0.588)	(−0.482)
LAMBDA			−0.109**	
			(−2.085)	
Constant	−1.856***	−2.910***	−2.837***	−2.935***
	(−4.180)	(−11.314)	(−10.242)	(−10.177)
Industry fixed effects	No	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	5,254	4,993	4,993	4,072
Adj. R^2	0.070	0.102	0.204	0.191

STATE_CONT on COLLECTIVISM, the full set of control variables (as in model 1 of Table 3), and industry and year fixed effects. This allows us to estimate the inverse Mills (1926) ratio (LAMBDA). In the second stage, we include LAMBDA as an additional independent variable in the cash holdings regression. The results in model 3 of Table 4 show that state ownership is positively and significantly associated with corporate cash holdings. In addition, LAMBDA loads negatively and is statistically significant at the 5% level.

Fourth, we employ propensity score matching to match firms under government control with firms not under government control based on observable

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firm characteristics.[14] In the first stage, we use the same probit model as in the Heckman (1979) first-stage analysis. We then match each state-controlled firm (i.e., STATE_CONT = 1) to a noncontrolled firm (i.e., STATE_CONT = 0) with the closest propensity score. In the second stage (model 4 of Table 4), we estimate the regression using the matched sample. Consistent with our main analysis, the instrumental variable analysis, and the Heckman analysis, we continue to find that the coefficient on STATE_OWN loads positively and significantly at the 1% level.

C. Alternative Explanations

We investigate several possibilities to address the additional concern that the relation between state ownership and corporate cash holdings has alternative explanations. We summarize our findings here and present the detailed results in the Internet Appendix (available at www.jfqa.org). First, when information asymmetry is severe, outside investors may be less likely to invest in privatized firms, in which case residual state ownership is likely to be high. At the same time, because it may be difficult for such firms to raise external financing, they may be likely to hold more cash. We test this explanation by including the ratio of R&D expenses to sales (R&D) as an additional control variable. This approach follows prior studies that use R&D expenditures to proxy for information asymmetry (e.g., Dittmar et al. (2003)). We find that R&D is not statistically significant. More important, the coefficient on STATE_OWN remains positive and statistically significant at the 1% level.

Second, because Boubakri et al. (2013) find that state ownership is associated with less risk taking, there may be a negative relation between acquisition activity and state ownership, which could result in higher cash holdings in firms with greater state ownership. To test this possibility, we control for the ratio of acquisitions to sales (ACQ). The results show that the relation between STATE_OWN and cash holdings is robust to adding acquisition activity as a control variable. We continue to find that STATE_OWN loads positively and is statistically significant at the 1% level.

Third, we include additional country-level variables to address the concern that the relation between state ownership and cash holdings is driven by the development of the country's stock market. Specifically, we include the ratio of market capitalization to GDP (MKT_CAP). Consistent with the agency view, we continue to find that state ownership is positively and significantly associated with corporate cash holdings. This suggests that firms with a high government stake tend to hold more cash.

Fourth, it is possible that the observed cash holdings in NPFs reflect increased profitability or a deliberate corporate decision such as borrowing or selling assets. We test these explanations by controlling for the lagged return on assets (LAG_ROA) to account for profitability, the change in the ratio of plant, property, and equipment to total assets (ASSET_SALES) to account for asset sales, and new debt issuance (DEBT_ISSUE) to account for borrowing. Although we find

[14] We obtain statistically similar results when we match firms that are partially privatized (i.e., STATE_OWN > 0) with firms that are fully privatized (i.e., STATE_OWN = 0).

that profitability is related to cash holdings, we continue to find that state ownership is positively and significantly associated with cash holdings.

Finally, we exclude firms from the utility industry because they are highly regulated and represent roughly 31% of our sample, which could be driving our results. Our main findings remain statistically unchanged when we drop the utility industry from our analyses.[15]

D. Why Is State Ownership Related to More Cash Holdings? An Investigation of the Dissipation of Cash

Our main evidence suggests a positive relation between state ownership and cash holdings. This relation, which is robust to endogeneity and alternative explanations, is consistent with the agency view of state ownership. The more interesting question is why. To answer this, we consider how state owners disgorge cash through their influence on firms' investment and financial policies. More specifically, following Gao et al. (2013), we examine whether state owners use cash to increase investment (i.e., capital expenditures, acquisitions, and R&D) or increase payouts (the sum of dividends and stock repurchases). Table 5 reports the results.

We focus on the impact of the interaction between state ownership and cash holdings on investment and financial policies in the next year. The investment and financing policies we consider involve capital expenditures (model 1 of Table 5), acquisitions (model 2), R&D (model 3), and payout policy (model 4). In model 1, the coefficient on STATE_OWN × CASH_HOLD is positive and statistically significant at the 5% level, suggesting that higher state ownership increases the likelihood that NPFs spend cash on capital expenditures in the next period. Similarly, in model 2 we estimate positive and statistically significant coefficients on STATE_OWN × CASH_HOLD, suggesting that NPFs are more likely to spend cash on acquisitions over the next period when residual state ownership is high. In model 3, we find that the coefficient on STATE_OWN × CASH_HOLD is negative but statistically insignificant. This suggests that NPFs are not more likely to spend cash holdings on R&D over the next period as state ownership increases. Additionally, in model 4, we examine whether NPFs with higher state ownership are more likely to use cash to increase their payouts. The results show that the coefficient on STATE_OWN × CASH_HOLD is negative but statistically insignificant.

In summary, our results suggest that as state ownership increases, NPFs are more likely to use cash to increase capital expenditures or acquisitions, but not to increase R&D expenses or payout. According to Harford et al. (2008), evidence on whether firms spend cash on capital expenditures, acquisitions, or R&D may not necessarily indicate whether these investments are optimal. However, prior studies (e.g., Eberhart, Maxwell, and Siddique (2004), Harford (1999), and Masulis, Wang, and Xie (2007)) show that cash-financed acquisitions tend to be value destroying, whereas R&D investment is value increasing. We therefore interpret our findings to be more consistent with the agency theory explanation.

[15]To mitigate the concern that the effect of state ownership on cash holdings is driven by local investors, we control for local ownership in the regression. In unreported tests, we find that state ownership continues to load positively and is statistically significant at the 1% level, whereas local ownership is statistically insignificant.

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TABLE 5

State Ownership and Cash Holdings: Disgorging Cash via Investment and Payout, and Investment Efficiency

Table 5 examines the relation between state ownership and investment and payout decisions using a logit regression in models 1–4. INCREASE_CAPX is a dummy variable equal to 1 if a firm increases capital expenditures in the next year, and 0 otherwise. INCREASE_ACQ is a dummy variable equal to 1 if a firm increases acquisitions in the next year, and 0 otherwise. INCREASE_R&D is a dummy variable equal to 1 if a firm increases research and development (R&D) investment in the next year. INCREASE_DIV_REP is a dummy variable equal to 1 if a firm increases the sum of dividends and stock repurchases in the next year. Model 5 examines the impact of state ownership on investment efficiency captured with the sensitivity of firm investment to Tobin's *Q*. The dependent variable in model 5 is INVESTMENT, measured as the sum of the yearly growth in property, plant, and equipment, plus growth in inventory, plus R&D expenditure, all deflated by the lagged book value of assets. The Appendix provides variable definitions and sources. Regressions include industry dummy variables based on industry groupings in Campbell (1996) and year dummy variables. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Investment Decisions			Payout Policy	Sensitivity of Investment Expenditures to TOBINS_Q
	INCREASE_CAPX	INCREASE_ACQ	INCREASE_R&D	INCREASE_DIV_REP	
Variables	1	2	3	4	5
STATE_OWN	−0.108 (−1.113)	−0.125 (−0.597)	−0.261** (−2.262)	0.226 (1.555)	0.024** (2.259)
CASH_HOLD	0.472* (1.746)	−0.240 (−0.520)	0.695* (1.905)	0.790** (2.435)	
STATE_OWN × CASH_HOLD	1.350** (2.115)	2.414** (2.200)	−0.978 (−1.048)	−0.798 (−0.994)	
STATE_OWN × TOBINS_Q					−0.012** (−1.969)
SIZE	−0.007 (−0.702)	0.169*** (6.271)	0.154*** (8.329)	0.061*** (3.661)	0.004*** (5.387)
CASH_FLOW	0.369 (1.383)	−0.378 (−0.719)	0.433 (1.042)	1.122*** (3.264)	0.054*** (7.403)
LEV	0.011 (0.081)	−0.354 (−1.189)	0.317 (1.596)	−0.379* (−1.812)	0.043*** (3.855)
TOBINS_Q	0.038 (0.468)	−0.117 (−1.126)	−0.154 (−1.391)	0.058 (0.693)	0.009** (2.485)
NWC	0.017 (0.117)	1.451*** (4.372)	0.249 (1.074)	0.512*** (2.682)	−0.021*** (−4.433)
SHDR_RIGHTS	0.039*** (3.184)	−0.026 (−0.803)	−0.086*** (−3.588)	0.118*** (5.888)	0.000 (0.388)
PRIV_CREDIT	−0.001** (−2.108)	0.002** (2.103)	0.001 (1.197)	0.004*** (5.348)	−0.000*** (−9.353)
Constant	−0.220* (−1.875)	−2.290*** (−9.353)	−1.995*** (−10.701)	−2.156*** (−12.076)	0.029*** (5.217)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,351	4,351	4,351	4,351	5,254
Pseudo/Adj. R^2	0.03	0.07	0.06	0.06	0.091

We further confirm this interpretation in model 5 of Table 5 by examining the impact of state ownership on investment efficiency. If state ownership is associated with suboptimal investment decisions, as suggested by agency theory and empirical evidence (e.g., Liu and Siu (2011), Firth, Malatesta, Xin, and Xu (2012), and Jaslowitzer et al. (2016)),[16] we should observe lower investment efficiency associated with state ownership in NPFs. To test this prediction, we follow Jaslowitzer et al. and examine the relation between state ownership and investment sensitivity to Q (TOBINS_Q). The coefficient on STATE_OWN × TOBINS_Q is negative and statistically significant at the 5% level, suggesting that higher

[16]Liu and Siu (2011) and Firth et al. (2012) examine Chinese firms, whereas Jaslowitzer et al. (2016) focus on European firms with significant state ownership. These studies provide evidence suggesting that state ownership is associated with inferior investment efficiency.

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residual state ownership in NPFs reduces investment efficiency. This is consistent with our expectation that agency costs of state ownership will be manifested by suboptimal, politically motivated investment by SOEs.

Taken together, our results regarding the impact of state ownership on the dissipation of cash in NPFs suggest that NPFs with higher residual state ownership are more likely to disgorge cash in a manner consistent with efforts to achieve political goals. Furthermore, as would be expected due to the agency costs associated with state ownership, these investment decisions are not economically efficient.

E. State Ownership and Cash Holdings: The Role of Market Power and the Banking Sector

In this section, we explore two channels through which SOEs may be able to maintain high cash balances when they are less profitable and less efficient than private firms. More specifically, we examine whether market power and superior access to state-owned banks drive the positive relation between state ownership and cash holdings. In the following empirical analysis, we interact state ownership with proxies for market power and access to government-owned banks. Table 6 reports the results. In model 1, we explore the role of market power, which we measure with the ratio of sales to industry sales (MKT_SHR). Model 1 indicates that the coefficient on the interaction term STATE_OWN × MKT_SHR is negative but statistically insignificant. The coefficient on state ownership (STATE_OWN) continues to be positive and statistically significant at the 1% level. We interpret this evidence as inconsistent with the explanation that SOEs with greater market power hold more cash.

Model 2 of Table 6 explores whether superior access to state-owned banks explains the high cash balances documented in NPFs with higher residual state ownership. We measure government ownership of banks (GOV_BANK) at the country level using data from Barth, Caprio, and Levine (2013). We expect state-owned firms to benefit from better access to external financing in countries with higher government ownership of banks. Therefore, our focus is on the interaction term between state ownership (STATE_OWN) and government ownership of banks (GOV_BANK). We find that the coefficient on STATE_OWN × GOV_BANK is positive and statistically significant at the 1% level. This suggests higher cash holdings of SOEs in countries with greater government ownership of banks. Overall, these results are consistent with Jaslowitzer et al. (2016), who find that state ownership is associated with external finance frictions in countries with no or limited government ownership of banks. These results suggest that SOEs are likely to have superior access to financing and may maintain higher cash balances through financing from state-owned banks.

F. Do NPFs and U.S. Companies Differ in Their Cash Holdings?

The literature (e.g., Bates, Kahle, and Stulz (2009), Graham and Leary (2016)) reports that U.S. companies doubled their cash holdings during the last 3 decades, and there is no consistent evidence that agency conflicts contributed to this increase. Our earlier results could reflect this temporal pattern. In this section,

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TABLE 6

State Ownership and Cash Holdings: The Role of Market Power and the Banking Sector

Table 6 presents regression results from examining the role of market power and access to state-owned banks in the relation between state ownership and cash holdings. The dependent variable is the natural log of CASH_HOLD, calculated as cash and marketable securities divided by sales. MKT_SHR is defined as the ratio of a firm's sales to its industry sales. GOV_BANK is the fraction of banking sector assets in government-owned banks, where a bank is considered a government-owned bank if the government controls 50% or more of the bank's shares. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. Regressions include industry dummy variables based on industry groupings in Campbell (1996) and year dummy variables. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: ln(CASH_HOLD)	
	Market Share	Government Ownership of Banks
Variable	1	2
STATE_OWN	0.589***	0.152
	(4.460)	(1.306)
MKT_SHR	1.366*	
	(1.957)	
STATE_OWN × MKT_SHR	−1.077	
	(−1.127)	
GOV_BANK		−0.174*
		(−1.818)
STATE_OWN × GOV_BANK		0.713***
		(4.123)
SIZE	−0.039*	−0.027***
	(−1.650)	(−2.594)
LEV	−1.222***	−1.054***
	(−4.331)	(−7.516)
NWC	−0.380***	−0.373***
	(−3.045)	(−5.518)
CASH_FLOW	2.372***	2.427***
	(8.590)	(17.438)
CAPX	0.533**	0.549***
	(2.282)	(3.831)
SALES_GROW	−0.025	−0.065
	(−0.342)	(−0.973)
DIV	−0.045	−0.015
	(−0.770)	(−0.458)
CASH_FLOW_VOL	1.460*	1.467***
	(1.690)	(2.925)
SHDR_RIGHTS	0.003	−0.009
	(0.111)	(−0.648)
PRIV_CREDIT	0.003***	
	(3.222)	
Constant	−2.323***	−2.070***
	(−9.501)	(−13.878)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
No. of obs.	5,254	5,159
Adj. R^2	0.234	0.228

we investigate how NPFs differ from U.S. companies and whether there is a time trend that explains corporate cash holdings.

In Table 7 we rerun our main regressions using samples of both NPFs and U.S. firms. We include a dummy variable, US, to identify U.S. firms. In models 1 and 2, we use the full sample of U.S. firms and NPFs. We find that the U.S. firm dummy (US) loads negatively at the 1% level in both models. In models 3–6, we use samples matched by i) size and industry and ii) all explanatory variables (by applying propensity score matching). We obtain the propensity scores from a first-stage probit model, where the dependent variable is a dummy variable equal to 1 if

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TABLE 7

Comparison of Cash Holdings of U.S. Firms and NPFs

Table 7 presents regression results comparing cash holdings of U.S. firms and newly privatized firms (NPFs). The dependent variable is the natural log of CASH_HOLD, calculated as cash and marketable securities divided by sales. The independent variable US is a dummy variable equal to 1 for a U.S. firm, and 0 otherwise. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. Regressions include industry dummy variables based on industry groupings in Campbell (1996) and year dummy variables. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: ln(CASH_HOLD)					
	Full Sample		Sample Matched by Size and Industry		Sample Matched by All Explanatory Variables	
Variable	1	2	3	4	5	6
US	−0.537***	−0.839***	−0.824***	−0.747***	−0.466***	−0.770***
	(−11.036)	(−8.109)	(−13.532)	(−15.397)	(−7.547)	(−7.349)
SIZE	−0.176***	−0.046***	−0.113***	−0.016*	−0.148***	0.015
	(−29.166)	(−7.159)	(−7.546)	(−1.763)	(−9.981)	(0.890)
LEV		−1.855***		−1.316***		−2.285***
		(−35.036)		(−13.906)		(−11.694)
NWC		−0.238***		−1.244***		−0.531***
		(−7.229)		(−10.238)		(−4.155)
CASH_FLOW		0.371***		1.777***		2.424***
		(13.349)		(9.573)		(11.094)
CAPX		−1.007***		−1.152***		−2.727***
		(−6.586)		(−3.858)		(−6.327)
SALES_GROW		0.139***		0.273***		0.210***
		(16.575)		(6.345)		(4.450)
DIV		−0.516***		−0.300***		−0.313***
		(−18.229)		(−10.142)		(−6.292)
CASH_FLOW_VOL		0.233***		1.471***		0.801***
		(8.059)		(5.553)		(4.907)
SHDR_RIGHTS		0.079***		0.053***		0.052**
		(2.854)		(4.674)		(2.021)
PRIV_CREDIT		0.004***		0.002***		0.003***
		(4.089)		(5.735)		(2.903)
Constant	−1.256***	−2.026***	−1.732***	−2.269***	−1.468***	−2.244***
	(−20.215)	(−12.576)	(−14.300)	(−17.202)	(−12.205)	(−10.127)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	103,725	103,725	10,508	10,508	10,508	10,508
Adj. R^2	0.058	0.246	0.081	0.256	0.074	0.244

a firm belongs to the NPFs sample, and 0 otherwise (i.e., a U.S. firm). This model incorporates all the explanatory variables from the main cash holdings regression model, including industry and year effects. We then match, without replacement, each NPF with the U.S. firm with the closest score, and we reestimate our regressions using the matched samples. Using these matched samples, we continue to find negative and statistically significant coefficients on the U.S. firm dummy. This again suggests that U.S. firms hold less cash than NPFs.

Next, we explore whether a time trend, instead of state ownership, explains cash holdings. Our time trend variable (TIME) reflects the number of years since the beginning of our sample period. Table 8 reports results relating time trend to cash holdings of U.S. firms and NPFs using the full and matched samples. Using the full sample in models 1 and 2, the coefficients on TIME and US × TIME are statistically insignificant at conventional levels. Models 3 and 4 replicate the regressions using the sample matched by size and industry. We find that the interaction terms between US and TIME are positive and significant, suggesting that

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TABLE 8

Trend in Cash Holdings of U.S. Firms and NPFs

Table 8 presents regression results comparing cash holdings of U.S. firms and newly privatized firms (NPFs). The dependent variable is the natural log of CASH_HOLD, calculated as cash and marketable securities divided by sales. The independent variable US is a dummy variable equal to 1 for a U.S. firm, and 0 otherwise. TIME is defined as the number of years since 1994, which is the first year of our sample period. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. Regressions include industry dummy variables based on industry groupings in Campbell (1996) and year dummy variables. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: ln(CASH_HOLD)					
	Full Sample		Sample Matched by Size and Industry		Sample Matched by All Explanatory Variables	
Variable	1	2	3	4	5	6
US	−0.562***	−0.970***	−1.023***	−0.961***	−0.672***	−1.010***
	(−5.630)	(−7.306)	(−9.934)	(−7.788)	(−7.954)	(−6.836)
TIME	−0.019	−0.017	0.013**	0.011*	0.014***	0.009
	(−0.938)	(−0.838)	(2.125)	(1.822)	(3.923)	(1.407)
US × TIME	0.007	0.011	0.022***	0.015**	0.015**	0.019**
	(1.037)	(1.619)	(2.808)	(1.970)	(2.363)	(2.273)
SIZE		−0.046***		−0.017		0.014
		(−7.160)		(−1.112)		(0.882)
LEV		−1.855***		−1.323***		−2.303***
		(−35.035)		(−9.086)		(−11.833)
NWC		−0.238***		−1.255***		−0.533***
		(−7.220)		(−7.517)		(−4.192)
CASH_FLOW		0.371***		1.809***		2.419***
		(13.339)		(8.453)		(11.115)
CAPX		−1.008***		−1.245***		−2.777***
		(−6.595)		(−3.197)		(−6.466)
SALES_GROW		0.139***		0.260***		0.198***
		(16.571)		(5.754)		(4.250)
DIV		−0.517***		−0.303***		−0.318***
		(−18.248)		(−6.346)		(−6.392)
CASH_FLOW_VOL		0.233***		1.498***		0.799***
		(8.056)		(4.907)		(4.895)
SHDR_RIGHTS		0.076***		0.049*		0.049*
		(2.727)		(1.863)		(1.894)
PRIV_CREDIT		0.004***		0.002***		0.003***
		(4.020)		(2.856)		(2.986)
Constant	−1.979***	−1.586***	−2.654***	−2.787***	−2.578***	−2.640***
	(−5.088)	(−3.805)	(−19.270)	(−15.853)	(−31.008)	(−15.205)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	103,725	103,725	10,508	10,508	10,508	10,508
Adj. R^2	0.147	0.246	0.184	0.254	0.178	0.281

the increase in cash holdings over time is more pronounced for U.S. firms. We obtain consistent evidence in models 5 and 6 using the propensity score matched sample based on all explanatory variables.

G. Is China Different?

As discussed previously, the unique political, social, economic, and cultural environment of China may contribute to differences in cash policies of Chinese NPFs compared to those in other countries. To test this possibility, in Table 9 we include a dummy variable, CHINA, to designate NPFs from China. We consider its interaction terms with STATE_OWN, STATE_CONT, and POLITICAL to investigate how China is different from other countries in terms of the effect of state

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TABLE 9

State Ownership and Cash Holdings: Is China Different?

The dependent variable in Table 9 is the natural log of CASH_HOLD, which is calculated as cash and marketable securities divided by sales. The key independent variable in model 1 is STATE_OWN, which is defined as the percentage of shares held by the government. The key independent variable in model 2 is STATE_CONT, which is a dummy variable equal to 1 for firms in which the state maintains control (i.e., the government holds more than 50% of the firm's shares) following partial privatization, and 0 otherwise. The key independent variable in model 3 is POLITICAL, which is a dummy variable equal to 1 for firms that are politically connected, as defined by Faccio (2006), and 0 otherwise. CHINA is a dummy variable equal to 1 if the newly privatized firm (NPF) is a Chinese NPF, and 0 otherwise. Models 4–6 use propensity score matching. The full sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: ln(CASH_HOLD)					
	3 Measures of State Ownership			Propensity Score Matching		
	STATE_OWN	STATE_CONT	POLITICAL	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4	5	6
STATE_OWN	0.607***			0.704***		
	(4.418)			(2.692)		
STATE_CONT		0.364***			0.522***	
		(4.303)			(3.415)	
POLITICAL			0.264***			0.520***
			(2.781)			(3.330)
CHINA	0.941***	0.733***	0.411*	0.809***	0.570**	0.189
	(4.699)	(4.275)	(1.915)	(2.945)	(2.328)	(0.616)
CHINA × STATE_OWN	−1.089***			−1.224***		
	(−3.470)			(−3.063)		
CHINA × STATE_CONT		−0.509***			−0.667***	
		(−3.511)			(−3.403)	
CHINA × POLITICAL			−0.295*			−0.549***
			(−1.864)			(−2.745)
SIZE	−0.018	−0.016	−0.049*	−0.061*	−0.066**	−0.071*
	(−0.723)	(−0.678)	(−1.730)	(−1.823)	(−2.020)	(−1.679)
LEV	−1.107***	−1.131***	−1.292***	−1.416***	−1.423***	−1.586***
	(−4.040)	(−4.165)	(−4.244)	(−3.353)	(−3.441)	(−3.005)
NWC	−0.321**	−0.324**	−0.350**	−0.218	−0.226	−0.214
	(−2.464)	(−2.482)	(−2.096)	(−1.374)	(−1.431)	(−0.973)
CASH_FLOW	2.439***	2.463***	2.178***	1.134***	1.159***	0.906**
	(9.035)	(9.086)	(7.074)	(3.455)	(3.469)	(2.061)
CAPX	0.459*	0.476**	0.187	0.477*	0.490*	0.457
	(1.929)	(2.030)	(0.738)	(1.657)	(1.723)	(1.311)
SALES_GROW	−0.039	−0.046	0.012	0.014	0.009	0.038
	(−0.519)	(−0.603)	(0.134)	(0.135)	(0.085)	(0.309)
DIV	−0.037	−0.041	−0.075	0.125	0.120	0.148
	(−0.630)	(−0.708)	(−1.163)	(1.459)	(1.440)	(1.507)
CASH_FLOW_VOL	1.494*	1.532*	0.871	−0.680	−0.609	−0.660
	(1.724)	(1.772)	(0.747)	(−0.527)	(−0.469)	(−0.462)
SHDR_RIGHTS	0.073*	0.067	0.020	0.015	0.003	−0.073
	(1.806)	(1.640)	(0.405)	(0.223)	(0.042)	(−0.891)
PRIV_CREDIT	0.001	0.002	0.001	0.001	0.002	−0.000
	(1.181)	(1.358)	(1.132)	(0.511)	(0.747)	(−0.078)
Constant	−2.536***	−2.537***	−1.772***	−2.377***	−2.287***	−1.492**
	(−9.901)	(−9.970)	(−3.842)	(−6.257)	(−6.156)	(−2.511)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	5,254	5,254	2,943	2,036	2,036	1,182
Adj. R^2	0.246	0.243	0.220	0.243	0.242	0.226

ownership on cash holdings.[17] Model 1 indicates that the coefficient on CHINA is positive and statistically significant at the 1% level, suggesting that NPFs tend to hold more cash in China. More important, the interaction term between CHINA

[17] For robustness, we replicate Table 3 regressions after excluding China from the analysis. We find that state ownership continues to be positively associated with cash holdings.

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and STATE_OWN is negative and statistically significant. This implies that Chinese NPFs hold less cash as the government stake increases, which is consistent with the findings of Megginson et al. (2014). In models 2 and 3, we replace STATE_OWN with STATE_CONT and POLITICAL, respectively, and find similar results. In models 4–6, we replicate models 1–3 applying propensity score matching to pair Chinese NPFs with NPFs from the other countries according to all explanatory variables. In the first stage we estimate a probit model, where the dependent variable is CHINA and the explanatory variables are those we include as controls (in addition to industry and year effects). We then match each Chinese NPF with a non-Chinese NPF that has the closest score. In the second stage, using the matched sample, we reestimate the specifications in models 1–3. The results reported in models 4–6 reinforce the findings in models 1–3. In particular, we find that the coefficients on the interaction between CHINA and each of the three proxies for state ownership (i.e., STATE_OWN, STATE_CONT, and POLITICAL) are all negative and statistically significant at the 1% level.[18]

H. Role of Financial Crises

We next investigate the role of the global financial crisis (2008–2010) and the Eurozone crisis (the period after 2010) to better understand the relation between state ownership and cash holdings. These crises are characterized by substantial credit contractions, which may have changed the relation between state ownership and cash holdings. The results, which we report in the Internet Appendix, indicate that NPFs had significantly less cash holdings during the global financial crisis period.[19] More important, we find that as state ownership increases, NPFs held more cash during the global financial crisis.[20] We do not document similar results when examining the effect of the Eurozone crisis on the relation between state ownership and cash holdings for a sample of European countries.

[18]Beginning in 2007, China shifted all initial share issue privatizations from Hong Kong and New York (New York Stock Exchange) to China, mostly to Shanghai (Shanghai Stock Exchange). We explore whether this shift from privatizing initial public offerings (IPOs) in foreign markets to domestic ones affects the relation between residual state ownership and corporate cash holdings. Based on our sample, we identify 15 firms from China that have been privatized since 2007; 10 were listed domestically and 5 were listed on a foreign exchange. Using univariate tests, we compare cash holdings of domestic versus foreign listings. The untabulated results suggest that Chinese NPFs listed domestically hold more cash (the mean cash-to-sales ratio is 0.22) than those listed on a foreign exchange (the mean cash-to-sales ratio is 0.16), with the difference being statistically significant at the 5% level (t-statistic = 2.41). Turning to the median level of cash holdings, NPFs listed on domestic exchanges continue to hold more cash (0.19) than those listed on foreign exchanges (0.15), although the differences in the median holdings are not statistically significant. Overall, these findings are consistent with the bonding hypothesis (Coffee (1999)): Stricter corporate governance abroad attenuates agency costs in foreign-listed NPFs, leading them to hold less cash.

[19]In additional analysis, we examine the cash holdings of rescue firms, which refer to publicly listed firms that were acquired by governments or government-controlled entities during the global financial crisis. In unreported results (for the sake of brevity), we find that rescue firms tend to hold less cash compared to their NPF peers, but increase their cash holdings following acquisitions by governments or government-controlled entities. These findings reinforce the positive relation between state ownership and cash holdings.

[20]This is consistent with Jaslowitzer et al. (2016), who present evidence that SOEs appear to formulate financial policies that promote stability (especially during periods of financial crisis).

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V. Additional Analysis: Institutions, State Ownership, and the Value of Cash

Because the United States scores highly on shareholder rights and law enforcement, Harford et al. (2008) argue that managers in the United States are not as entrenched as their counterparts in countries with weaker shareholder protection. More specific to our study, the literature examines how country-level shareholder protection (Pinkowitz et al. (2006)) interacts with firm-level agency problems and thus affects the value of cash (Kalcheva and Lins (2007)). Because research finds that the strength of a country's institutions affects the value of corporate cash holdings, we expect to observe cross-country differences in the value of cash holdings. In this section, we examine the effect of institutions on the relation between state ownership and the value of cash holdings. Specifically, we regress firm value, as captured by Tobin's Q (TOBINS_Q); on institutional factors (INSTIT); on interactions among institutional factors, cash holdings, and state ownership; and on the full set of controls. We follow Kalcheva and Lins (2007) and estimate variants of the following regression (superscripts omitted for simplicity):

$$
\begin{aligned}
(2) \qquad \text{TOBINS_Q} \;=\; & \gamma + \delta_1 \text{CASH_HOLD} + \delta_2 \text{CASH_HOLD} \times \text{INSTIT} \\
& + \delta_3 \text{STATE_OWN} + \delta_4 \text{CASH_HOLD} \times \text{STATE_OWN} \\
& + \delta_5 \text{CASH_HOLD} \times \text{STATE_OWN} \times \text{INSTIT} + \delta_6 \text{SIZE} \\
& + \delta_7 \text{LEV} + \delta_8 \text{NWC} + \delta_9 \text{CASH_FLOW} + \delta_{10} \text{CAPX} \\
& + \delta_{11} \text{SALES_GROW} + \delta_{12} \text{DIV} + \delta_{13} \text{CASH_FLOW_VOL} \\
& + \delta_{14} \text{PRIV_CREDIT} + \delta_{15} \text{INSTIT} + \text{Industry fixed effects} \\
& + \text{Year fixed effects} + \varepsilon.
\end{aligned}
$$

As in the cash holdings regression, we report significance levels based on robust standard errors clustered at the firm level. The institutional characteristics we consider are: i) shareholder protection (SHDR_RIGHTS), ii) freedom of the press (PRESS_FREE), and iii) political accountability (CHECKS, DEMOC, JUD_IND, and DISCL_POL). We discuss each of these factors in turn.

A. Role of Shareholder Protection

Table 10 presents results of the valuation model using our measure of shareholder rights (SHDR_RIGHTS), which is the revised antidirector rights index of Djankov et al. (2008). A higher antidirector rights score indicates stronger investor protection. To facilitate comparison with Kalcheva and Lins (2007), in model 1 we regress Tobin's Q only on CASH_HOLD, its interaction with SHDR_RIGHTS, and the controls. We find that the coefficient on the interaction between CASH_HOLD and SHDR_RIGHTS is negative but not statistically significant.[21]

In model 2 of Table 10, we assess the interaction between firm- and country-level governance on the value of cash holdings. Specifically, we regress

[21] Note that we base our measure of shareholder protection on Djankov et al.'s (2008) updated index rather than the index used in Dittmar et al. (2003) and Kalcheva and Lins (2007). Thus, our results may differ from these papers because of differences in the underlying data.

TABLE 10

Investor Protection, State Ownership, and the Value of Cash

The dependent variable in Table 10 is TOBINS_Q, computed as market value of equity minus book value of equity plus book value of assets, all scaled by book value of assets. Model 1 is the basic model. Models 2, 3, and 4 use STATE_OWN, STATE_CONT, and POLITICAL as independent variables, respectively. SHDR_RIGHTS is the revised antidirector rights index drawn from Djankov et al. (2008), which ranges from 0 to 6 (with lower scores indicating fewer shareholder rights). The full sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: TOBINS_Q			
		Measures of State Ownership		
	Basic Model	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4
CASH_HOLD	−0.122 (−0.586)	0.972*** (7.910)	0.836*** (3.464)	0.574** (2.088)
CASH_HOLD × SHDR_RIGHTS	−0.010 (−0.182)			
STATE_OWN		0.154 (0.747)		
CASH_HOLD × STATE_OWN		−1.076*** (−5.598)		
CASH_HOLD × STATE_OWN × SHDR_RIGHTS		0.164*** (3.834)		
STATE_CONT			0.083 (1.568)	
CASH_HOLD × STATE_CONT			−0.786*** (−3.389)	
CASH_HOLD × STATE_CONT × SHDR_RIGHTS			0.155*** (2.623)	
POLITICAL				0.081 (1.311)
CASH_HOLD × POLITICAL				−0.794*** (−3.060)
CASH_HOLD × POLITICAL × SHDR_RIGHTS				0.186** (2.504)
SIZE	−0.035** (−2.571)	−0.040*** (−6.972)	−0.037*** (−2.701)	−0.024 (−1.484)
LEV	−0.131*** (−3.370)	−0.083*** (−3.988)	−0.089** (−2.255)	−0.103** (−2.229)
NWC	−0.260*** (−3.224)	−0.237*** (−5.938)	−0.228*** (−2.846)	−0.211** (−2.300)
CASH_FLOW	1.374*** (7.999)	1.192*** (15.092)	1.184*** (7.129)	1.218*** (6.414)
CAPX	0.132** (2.410)	0.122*** (2.802)	0.127** (2.359)	0.050 (0.682)
SALES_GROW	0.006 (0.186)	−0.002 (−0.092)	0.001 (0.016)	0.014 (0.402)
DIV	3.148*** (4.946)	2.816*** (8.191)	2.801*** (4.512)	3.475*** (4.694)
CASH_FLOW_VOL	−0.199 (−1.523)	−0.112 (−1.259)	−0.124 (−0.971)	−0.097 (−0.578)
SHDR_RIGHTS	0.045** (2.463)	0.032*** (4.482)	0.028* (1.715)	0.019 (0.954)
PRIV_CREDIT	0.001* (1.878)	0.001*** (4.949)	0.001** (2.087)	0.001* (1.954)
Constant	1.034*** (7.676)	0.996*** (15.617)	1.003*** (7.963)	0.938*** (4.198)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	5,254	5,254	5,254	2,943
Adj. R^2	0.183	0.187	0.191	0.201

Tobin's Q on STATE_OWN, CASH_HOLD × STATE_OWN × SHDR_RIGHTS, and the controls. Focusing on the interactions, we find that the coefficient on

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CASH_HOLD × STATE_OWN is negative and statistically significant, suggesting that outside investors discount the value of cash holdings in NPFs with high government stakes. The coefficient on the 3-way interaction among CASH_HOLD, STATE_OWN, and SHDR_RIGHTS is positive and significant. This indicates that when shareholder protection is poor, investors further discount the value of cash holdings in NPFs with more state ownership. These results are economically significant. For an NPF with mean cash holdings of 0.12, an increase in state ownership from the 25th percentile (0.00) to the 75th percentile (0.51) and a decrease in shareholder rights (SHDR_RIGHTS) from 6 to 1 are associated with a 0.05 ($0.164 \times 0.12 \times (0.51-0) \times (1-6)$) reduction in Tobin's Q. Because the mean Tobin's Q is 1.34, this corresponds to a 4% (0.05/1.34) decline in Tobin's Q.

In model 3 of Table 10, we rerun the specification in model 2 using STATE_CONT rather than STATE_OWN. Consistent with the results in model 2, we find that the coefficient on CASH_HOLD × STATE_CONT is negative and statistically significant, and the coefficient on the 3-way interaction among CASH_HOLD, STATE_CONT, and SHDR_RIGHTS is positive and significant. These results are also economically significant. Compared to non-state-controlled firms, for a state-controlled firm with mean cash holdings of 0.12, a decrease in shareholder rights (SHDR_RIGHTS) from 6 to 1 is associated with a 7% ($0.155 \times 0.12 \times (1-6)/1.34$) decline in Tobin's Q.

In model 4 of Table 10, we replace STATE_OWN in model 2 with POLITICAL and continue to find that the two-way interaction between CASH_HOLD and POLITICAL is statistically negatively related to firm value. The 3-way interaction has a positive and significant coefficient. Economically, the results suggest that compared to non–politically connected NPFs, for a politically connected NPF with mean cash holdings of 0.12, a decrease in shareholder rights (SHDR_ RIGHTS) from 6 to 1 leads to a 8% ($0.186 \times 0.12 \times (1-6)/1.34$) decrease in Tobin's Q.

Taken together, the results in Table 10 show that although an NPF's value is lower when the state holds more cash, consistent with the agency perspective, this negative effect is less pronounced in countries with greater shareholder protection. More specifically, our results suggest that the strength of shareholder protection affects the extent of agency conflicts between politicians and minority investors: In countries with weak shareholder protection, the value of cash holdings is discounted more by outside investors. These findings highlight the importance of considering a country's institutional environment when examining agency conflicts between the state and minority investors.

B. Role of Freedom of the Press

We assess the role of freedom of the press in Table 11 by replicating the regressions in Table 10 (after replacing SHDR_RIGHTS with PRESS_FREE). In model 1, we find that the coefficient on CASH_HOLD × PRESS_FREE is positive and statistically significant at the 5% level, suggesting that cash holdings are more valuable in countries with more independent media.

In model 2 of Table 11, we regress Tobin's Q (TOBINS_Q) on interactions among CASH_HOLD, STATE_OWN, and PRESS_FREE. As in Table 10, the coefficient on CASH_HOLD is positive and statistically significant,

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TABLE 11
Press Freedom, State Ownership, and the Value of Cash

The dependent variable in Table 11 is TOBINS_Q, computed as market value of equity minus book value of equity plus book value of assets, all scaled by book value of assets. Model 1 is the basic model. Models 2, 3, and 4 use STATE_OWN, STATE_CONT, and POLITICAL as independent variables, respectively. PRESS_FREE is 100 minus the original Freedom House index. Higher values of PRESS_FREE indicate that a country's media are more independent. The full sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: TOBINS_Q			
		Measures of State Ownership		
	Basic Model	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4
CASH_HOLD	−0.056 (−0.118)	0.734** (2.316)	0.769*** (2.865)	0.547* (1.714)
CASH_HOLD × PRESS_FREE	0.018** (1.977)			
STATE_OWN		−0.040 (−0.396)		
CASH_HOLD × STATE_OWN		−2.016* (−1.844)		
CASH_HOLD × STATE_OWN × PRESS_FREE		0.051*** (2.651)		
STATE_CONT			−0.022 (−0.230)	
CASH_HOLD × STATE_CONT			−1.538*** (−2.640)	
CASH_HOLD × STATE_CONT × PRESS_FREE			0.038*** (3.482)	
POLITICAL				0.026 (0.220)
CASH_HOLD × POLITICAL				−1.075 (−1.622)
CASH_HOLD × POLITICAL × PRESS_FREE				0.030** (2.431)
SIZE	−0.017 (−1.100)	−0.015 (−0.958)	−0.015 (−0.931)	−0.005 (−0.292)
LEV	−0.106 (−0.683)	−0.119 (−0.761)	−0.115 (−0.739)	−0.120 (−0.600)
NWC	−0.221** (−2.421)	−0.220** (−2.482)	−0.216** (−2.458)	−0.213** (−2.146)
CASH_FLOW	0.953*** (6.188)	0.940*** (6.141)	0.952*** (6.289)	1.004*** (5.491)
CAPX	−0.179 (−1.513)	−0.173 (−1.484)	−0.178 (−1.529)	−0.097 (−0.606)
SALES_GROW	0.160*** (2.613)	0.163*** (2.692)	0.163*** (2.679)	0.091 (1.064)
DIV	0.006 (0.183)	−0.001 (−0.033)	−0.004 (−0.120)	−0.002 (−0.039)
CASH_FLOW_VOL	3.407*** (4.560)	3.400*** (4.712)	3.395*** (4.730)	4.034*** (4.623)
SHDR_RIGHTS	0.015 (0.865)	0.009 (0.485)	0.010 (0.602)	−0.002 (−0.095)
PRIV_CREDIT	0.001 (1.189)	0.001 (1.466)	0.001 (1.482)	0.001 (0.987)
PRESS_FREE	0.000 (0.113)	0.001 (0.567)	0.001 (0.856)	0.002 (1.620)
Constant	0.709*** (3.434)	0.682*** (3.310)	0.654*** (3.261)	0.593** (2.178)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	5,254	5,254	5,254	2,943
Adj. R^2	0.191	0.195	0.197	0.211

whereas the coefficient on CASH_HOLD × STATE_OWN is negative and statistically significant at the 10% level. Moreover, the coefficient on the 3-way interaction among CASH_HOLD, STATE_OWN, and PRESS_FREE is positive and significant. This result shows that active and independent media increase the value of cash holdings for NPFs with more residual state ownership. Indeed, for an NPF with mean cash holdings of 0.12, an increase in state ownership from the 25th percentile (0.00) to the 75th percentile (0.51) and a decrease in press freedom from the 75th percentile (more free) to the 25th percentile (less free) leads to a 12% $(0.051 \times 0.12 \times (0.51 - 0) \times (25 - 75)/1.34)$ reduction in Tobin's Q.

In model 3 (model 4) of Table 11, we regress TOBINS_Q on interactions among CASH_HOLD, STATE_CONT (POLITICAL), and PRESS_FREE. The results are consistent with those in model 2. In particular, compared to non-state-controlled firms, for a state-controlled firm with mean cash holdings of 0.12, a decrease in press freedom from the 75th percentile (free) to the 25the percentile (less free) leads to a 17% $(0.038 \times 0.12 \times (25 - 75)/1.34)$ reduction in Tobin's Q. Similarly, compared to non–politically connected NPFs, for a politically connected NPF with mean cash holdings of 0.12, a decrease in press freedom from 75 (free) to 25 (less free) will lead to a 13% $(0.030 \times 0.12 \times (25 - 75)/1.34)$ reduction in Tobin's Q.

Overall, the results in Table 11 indicate that in countries with independent media, and hence more transparent environments, cash is valued more by outside shareholders of NPFs with residual state ownership. These results are consistent with independent media reducing the scope for the extraction of private benefits in NPFs.

C. Role of Political Accountability

In Table 12, we replicate the analysis in Table 10 using several measures of political accountability: CHECKS, DEMOC, JUD_IND, and DISCL_POL. Political accountability represents a more direct channel through which managers of NPFs are likely to be subject to external discipline. Panel A reports results using the extent of checks and balances (CHECKS) in a country. Model 1 shows that the coefficient on CASH_HOLD × CHECKS is positive and statistically significant at the 1% level, which suggests that cash holdings are more valuable in countries with more checks and balances. In model 2, we regress Tobin's Q on interactions between CASH_HOLD, STATE_OWN, and CHECKS. We find that the coefficient on CASH_HOLD × STATE_OWN is negative but not statistically significant. The 3-way interaction among CASH_HOLD, STATE_OWN, and CHECKS has a positive and significant coefficient. When we replace STATE_OWN with STATE_CONT and POLITICAL in models 3 and 4, respectively, we continue to find that politicians may be able to extract private benefits more easily in countries with fewer checks and balances. This leads outside investors to more substantially discount the value of cash holdings.

Panel B of Table 12 presents the regression results using our variable reflecting the level of democracy within a country (DEMOC). Consistent with our findings in Panel A, the results for democracy suggest a positive relation between political accountability and the market value of cash holdings by NPFs.

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TABLE 12
Political Accountability, State Ownership, and the Value of Cash

The dependent variable in Table 12 is TOBINS_Q, computed as market value of equity minus book value of equity plus book value of assets, all scaled by book value of assets. Model 1 is the basic model. Models 2, 3, and 4 use STATE_OWN, STATE_CONT, and POLITICAL as independent variables, respectively. CHECKS is defined as the number of checks and balances in each country and is drawn from the Database of Political Institutions. This index reflects the degree of restraint imposed on politicians by veto players in the government. DEMOC measures how responsive government is to its people. The index ranges from 0 to 6 (with higher scores indicating more democracy) and is drawn from the International Country Risk Guide. JUD_IND is the average score of tenure of supreme court judges, tenure of administrative court judges, and whether case law is used. This index is drawn from La Porta et al. (2004), with higher values indicating more judicial independence. DISCL_POL is a dummy variable equal to 1 if the law or regulations of a country require members of parliament to disclose financial and/or business interests, and 0 otherwise. This index is drawn from Djankov et al. (2010). The full sample contains 5,254 firm-year observations from 578 firms privatized in 59 countries from 1981 to 2014. We winsorize all financial variables at the 1% level in both tails of the distribution. The Appendix provides variable definitions and sources. *t*-statistics based on robust standard errors clustered at the firm level are in parentheses below each coefficient. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: TOBINS_Q			
		Measures of State Ownership		
	Basic Model	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4
Panel A. CHECKS				
CASH_HOLD	0.405**	0.735***	0.771***	0.508***
	(2.190)	(4.235)	(5.307)	(2.676)
CASH_HOLD × CHECKS	0.120***			
	(3.139)			
STATE_OWN		−0.007		
		(−0.130)		
CASH_HOLD × STATE_OWN		−0.513		
		(−1.144)		
CASH_HOLD × STATE_OWN × CHECKS		0.204***		
		(3.712)		
STATE_CONT			0.010	
			(0.196)	
CASH_HOLD × STATE_CONT			−0.632***	
			(−2.647)	
CASH_HOLD × STATE_CONT × CHECKS			0.198***	
			(5.081)	
POLITICAL				0.014
				(0.204)
CASH_HOLD × POLITICAL				−0.365
				(−1.195)
CASH_HOLD × POLITICAL × CHECKS				0.168***
				(3.502)
SIZE	−0.007	−0.006	−0.006	0.006
	(−0.996)	(−0.843)	(−0.854)	(0.737)
LEV	−0.099	−0.103	−0.100	−0.057
	(−1.165)	(−1.209)	(−1.170)	(−0.505)
NWC	−0.203***	−0.198***	−0.197***	−0.189***
	(−4.205)	(−4.108)	(−4.108)	(−3.192)
CASH_FLOW	0.943***	0.941***	0.952***	0.987***
	(10.598)	(10.632)	(10.824)	(8.809)
CAPX	−0.176**	−0.174**	−0.177**	−0.160
	(−2.006)	(−1.965)	(−2.003)	(−1.408)
SALES_GROW	0.114**	0.115**	0.116**	0.056
	(2.208)	(2.226)	(2.252)	(0.838)
DIV	0.001	−0.000	−0.001	−0.001
	(0.044)	(−0.011)	(−0.060)	(−0.037)
CASH_FLOW_VOL	3.510***	3.529***	3.539***	4.164***
	(8.348)	(8.422)	(8.470)	(7.896)
SHDR_RIGHTS	0.027***	0.029***	0.030***	0.024**
	(3.419)	(3.559)	(3.666)	(2.149)
PRIV_CREDIT	0.000	0.000	0.000	0.000
	(1.524)	(1.357)	(1.375)	(1.214)
CHECKS	−0.012*	−0.013**	−0.016**	−0.013*
	(−1.745)	(−2.037)	(−2.577)	(−1.699)
Constant	2.090***	2.120***	2.110***	1.735***
	(8.636)	(8.757)	(8.621)	(8.364)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	4,615	4,615	4,615	2,910
Adj. R^2	0.193	0.195	0.197	0.206

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TABLE 12 (continued)
Political Accountability, State Ownership, and the Value of Cash

	Dependent Variable: TOBINS_Q			
		Measures of State Ownership		
	Basic Model	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4
Panel B. DEMOC				
CASH_HOLD	−0.224 (−0.477)	0.789** (2.490)	0.780*** (2.925)	0.552* (1.715)
CASH_HOLD × DEMOC	0.266** (2.376)			
STATE_OWN		−0.013 (−0.131)		
CASH_HOLD × STATE_OWN		−2.096 (−1.625)		
CASH_HOLD × STATE_OWN × DEMOC		0.580** (2.306)		
STATE_CONT			−0.004 (−0.047)	
CASH_HOLD × STATE_CONT			−1.451** (−2.252)	
CASH_HOLD × STATE_CONT × DEMOC			0.410*** (2.843)	
POLITICAL				0.017 (0.145)
CASH_HOLD × POLITICAL				−1.037 (−1.413)
CASH_HOLD × POLITICAL × DEMOC				0.356** (2.178)
SIZE	−0.017 (−1.075)	−0.014 (−0.912)	−0.013 (−0.840)	−0.006 (−0.341)
LEV	−0.108 (−0.677)	−0.120 (−0.752)	−0.123 (−0.768)	−0.109 (−0.537)
NWC	−0.231** (−2.439)	−0.225** (−2.423)	−0.222** (−2.405)	−0.215** (−2.170)
CASH_FLOW	0.947*** (6.175)	0.943*** (6.206)	0.954*** (6.353)	0.998*** (5.454)
CAPX	−0.179 (−1.478)	−0.177 (−1.478)	−0.180 (−1.504)	−0.115 (−0.721)
SALES_GROW	0.155** (2.468)	0.154** (2.480)	0.152** (2.439)	0.091 (1.057)
DIV	0.010 (0.286)	0.003 (0.090)	0.001 (0.042)	−0.002 (−0.044)
CASH_FLOW_VOL	3.385*** (4.430)	3.412*** (4.595)	3.419*** (4.624)	4.009*** (4.580)
SHDR_RIGHTS	0.009 (0.478)	0.002 (0.091)	0.004 (0.197)	−0.009 (−0.367)
PRIV_CREDIT	0.001 (1.388)	0.001 (1.572)	0.001 (1.561)	0.001 (1.333)
DEMOC	0.004 (0.257)	0.015 (0.964)	0.019 (1.288)	0.034 (1.616)
Constant	0.870*** (2.903)	0.827*** (2.753)	0.772*** (2.589)	0.541** (1.994)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	4,979	4,979	4,979	2,935
Adj. R^2	0.198	0.201	0.202	0.211
Panel C. JUD_IND				
CASH_HOLD	0.107 (0.241)	0.719** (2.016)	0.695** (2.280)	0.571* (1.676)
CASH_HOLD × JUD_IND	1.147** (2.083)			
STATE_OWN		−0.050 (−0.457)		
CASH_HOLD × STATE_OWN		−1.731* (−1.835)		

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TABLE 12 (continued)
Political Accountability, State Ownership, and the Value of Cash

	Dependent Variable: TOBINS_Q			
		Measures of State Ownership		
	Basic Model	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4
Panel C. JUD_IND (continued)				
CASH_HOLD × STATE_OWN × JUD_IND		3.449*** (3.373)		
STATE_CONT			−0.015 (−0.234)	
CASH_HOLD × STATE_CONT			−0.998** (−2.065)	
CASH_HOLD × STATE_CONT × JUD_IND			2.247*** (3.650)	
POLITICAL				0.012 (0.163)
CASH_HOLD × POLITICAL				−0.877* (−1.746)
CASH_HOLD × POLITICAL × JUD_IND				2.073*** (3.210)
SIZE	−0.014 (−0.801)	−0.013 (−0.756)	−0.013 (−0.734)	0.000 (0.010)
LEV	−0.222 (−1.288)	−0.222 (−1.258)	−0.220 (−1.252)	−0.095 (−0.480)
NWC	−0.193** (−2.079)	−0.199** (−2.232)	−0.200** (−2.245)	−0.203** (−2.078)
CASH_FLOW	0.859*** (5.253)	0.826*** (5.176)	0.847*** (5.386)	0.878*** (4.944)
CAPX	−0.070 (−0.551)	−0.071 (−0.569)	−0.078 (−0.620)	−0.023 (−0.143)
SALES_GROW	0.101 (1.568)	0.114* (1.786)	0.107* (1.657)	0.048 (0.569)
DIV	−0.057 (−1.516)	−0.050 (−1.295)	−0.053 (−1.389)	−0.023 (−0.596)
CASH_FLOW_VOL	3.435*** (3.914)	3.329*** (3.932)	3.334*** (3.935)	3.890*** (4.210)
SHDR_RIGHTS	−0.028 (−1.117)	−0.037 (−1.489)	−0.037 (−1.467)	−0.033 (−1.237)
PRIV_CREDIT	0.001* (1.937)	0.001** (2.275)	0.002** (2.330)	0.002** (2.277)
JUD_IND	0.212* (1.745)	0.230* (1.887)	0.277** (2.337)	0.262** (2.083)
Constant	0.699*** (2.848)	0.729*** (3.137)	0.670*** (2.977)	1.689*** (4.508)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	4,449	4,449	4,449	2,810
Adj. R^2	0.213	0.222	0.223	0.236
Panel D. DISCL_POL				
CASH_HOLD	−0.248 (−0.688)	0.742** (2.369)	0.720*** (2.612)	0.463 (1.427)
CASH_HOLD × DISCL_POL	1.483*** (3.346)			
STATE_OWN		−0.056 (−0.563)		
CASH_HOLD × STATE_OWN		−2.355*** (−2.783)		
CASH_HOLD × STATE_OWN × DISCL_POL		3.981*** (4.352)		
STATE_CONT			−0.025 (−0.424)	
CASH_HOLD × STATE_CONT			−1.333*** (−2.999)	
CASH_HOLD × STATE_CONT × DISCL_POL			2.474*** (4.555)	

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TABLE 12 (continued)
Political Accountability, State Ownership, and the Value of Cash

	Dependent Variable: TOBINS_Q			
		Measures of State Ownership		
	Basic Model	STATE_OWN	STATE_CONT	POLITICAL
Variable	1	2	3	4
Panel D. DISCL_POL (continued)				
POLITICAL				−0.010 (−0.130)
CASH_HOLD × POLITICAL				−1.066** (−2.249)
CASH_HOLD × POLITICAL × DISCL_POL				2.283*** (3.915)
SIZE	−0.015 (−1.004)	−0.011 (−0.750)	−0.011 (−0.784)	0.004 (0.214)
LEV	−0.120 (−0.754)	−0.121 (−0.778)	−0.115 (−0.736)	−0.104 (−0.513)
NWC	−0.221** (−2.455)	−0.215** (−2.483)	−0.209** (−2.416)	−0.200** (−2.047)
CASH_FLOW	0.906*** (5.817)	0.860*** (5.658)	0.884*** (5.867)	0.924*** (5.048)
CAPX	−0.205* (−1.722)	−0.181 (−1.575)	−0.196* (−1.685)	−0.133 (−0.845)
SALES_GROW	0.144** (2.359)	0.153** (2.544)	0.144** (2.363)	0.057 (0.669)
DIV	0.010 (0.292)	0.012 (0.324)	0.015 (0.410)	0.020 (0.483)
CASH_FLOW_VOL	3.331*** (4.491)	3.311*** (4.622)	3.321*** (4.628)	3.940*** (4.527)
SHDR_RIGHTS	0.015 (0.836)	0.000 (0.011)	0.004 (0.234)	−0.005 (−0.234)
PRIV_CREDIT	0.001* (1.699)	0.001* (1.795)	0.001* (1.766)	0.001 (1.383)
DISCL_POL	−0.067 (−0.870)	−0.026 (−0.349)	0.019 (0.272)	0.043 (0.537)
Constant	1.877*** (5.130)	1.927*** (5.210)	1.878*** (5.067)	0.592** (2.240)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
No. of obs.	5,254	5,254	5,254	2,943
Adj. R^2	0.194	0.203	0.202	0.215

Panel C of Table 12 further assesses the role of political accountability by using our measure of judicial independence (JUD_IND). In model 1, we find that the coefficient on CASH_HOLD × JUD_IND is positive and statistically significant. This suggests that the value of cash holdings is higher in countries with more judicial independence. In model 2, we regress TOBINS_Q on interactions among cash holdings (CASH_HOLD), state ownership (STATE_OWN), and judicial independence (JUD_ IND). We find that the coefficient on CASH_HOLD × STATE_OWN is negative and significant. The 3-way interaction among CASH_HOLD, STATE_OWN, and JUD_IND has a positive and significant coefficient. In models 3 and 4, we replicate the regression in model 2 after replacing STATE_OWN with STATE_CONT and POLITICAL, respectively. The results for models 3 and 4 are identical to those of model 2.

Panel D of Table 12 presents findings using our measure of disclosure by politicians (DISCL_POL). We find that the coefficient on CASH_HOLD ×

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STATE_OWN is negative and significant. The interaction between CASH_HOLD, STATE_OWN, and DISCL_POL has a positive and significant coefficient.[22]

In summary, Table 12 provides consistent evidence that although the cash holdings of NPFs are discounted by external investors, an institutional environment of greater political accountability helps alleviate concerns that managers of firms with residual state ownership will expropriate minority shareholders.

VI. Conclusion

We use a unique sample of 578 NPFs from 59 countries to investigate the impact of state ownership on corporate cash policy. Consistent with agency theory, we find that state ownership is positively related to corporate cash holdings. This result is robust to various measures of state ownership, alternative measures of cash holdings, endogeneity tests, and additional control variables. We further find that country-level institutions affect the agency conflicts between politicians and minority shareholders. Building on Kalcheva and Lins (2007) and Pinkowitz et al. (2006), we show that stronger institutional environments moderate the negative relation between residual state ownership and the value of cash holdings by NPFs. In particular, when the government has a higher stake in partially privatized firms, the value of cash holdings by these firms is lower in countries with weaker investor protection, lower press freedom, and reduced political accountability. Overall, our article contributes to the corporate finance literature by providing evidence that cash holdings are affected by state ownership and by broadening our understanding of how the institutional environment affects corporate finance decisions.

We provide evidence consistent with the premise that oversight resulting from a more effective institutional environment (e.g., stronger legal protection, independent media, greater political accountability) may curb the state's propensity to expropriate wealth from SOEs and therefore may contribute to higher market values of cash holdings by NPFs. Future research should focus on whether investment banks and other financial intermediaries also serve an important monitoring function. For example, Leland and Pyle (1977), Booth and Smith (1986), Titman and Trueman (1986), Megginson and Weiss (1991), Chemmanur and Fulghieri (1994), and Fang (2005), among others, identify the significant contribution of financial intermediaries as information producers. This monitoring by underwriters, coupled with the increasingly important impact of coverage by top analysts affiliated with the most prestigious banks (Mola and Loughran (2004), Huang and Zhang (2011), and Liu and Ritter (2011)), can be instrumental in reducing information asymmetry and managing stockholder/manager conflicts.

Moreover, focusing on the value of the "certification" provided by prestigious underwriters, authors such as Logue (1973), Johnson and Miller (1988), Carter and Manaster (1990), Carter, Dark, and Singh (1998), Chemmanur and Fulghieri (1994), Chen and Ritter (2000), Gao and Ritter (2010), and Golubov, Petmezas, and Travlos (2012) recognize how an investment bank's desire to

[22] In unreported tests, we use checking unit strength and registrar strength (Djankov et al. (2010)), which reflect the degree to which politicians' disclosure requirements are enforced. The results are consistent with those in Panel D of Table 12.

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protect its reputational capital instills incentives for it to diligently scrutinize the financial and managerial activities of the issuing firm. Golubov et al. further contend that the motivations of an intermediary to more meticulously evaluate the issuer are intensified in transactions involving larger reputational exposure. Because Megginson and Netter (2001) and Boutchkova and Megginson (2000) report that privatizations are typically very large and very visible equity offerings, the reputation stakes during share-issue privatizations should be high and the investment bank should thus be compelled to rigorously evaluate the issuing NPF. Accordingly, future research should consider the additional oversight brought on by the capital-raising process as another factor in the institutional environment that affects the NPF's cash management policies.

Appendix. Variable Definitions

Variable	Definition	Source
Dependent Variables		
CASH_HOLD	Cash and marketable securities to sales	Compustat
CASH/ASSETS	Cash and marketable securities to total assets	Compustat
CASH/NET_ASSETS	Cash and marketable securities to net assets, where net assets is the difference between total assets and cash and marketable securities	Compustat
IND_ADJ_CASH	Difference between a firm's CASH_HOLD and its industry median CASH_HOLD; industries are defined according to Campbell's (1996) 12-industry grouping	Compustat
INCREASE_CAPX	Dummy variable equal to 1 if a firm increases capital expenditures in the next year, and 0 otherwise	Compustat
INCREASE_ACQ	Dummy variable equal to 1 if a firm increases acquisitions in the next year, and 0 otherwise	Compustat
INCREASE_R&D	Dummy variable equal to 1 if a firm increases research and development (R&D) expenses in the next year, and 0 otherwise	Compustat
INCREASE_DIV_REP	Dummy variable equal to 1 if a firm increases the sum of dividends and stock repurchases	Compustat
INVESTMENT	Sum of the yearly growth in property, plant, and equipment, plus growth in inventory, plus R&D expenditure, all deflated by lagged book value of assets	Compustat
TOBINS_Q	Market value of equity minus book value of equity plus book value of assets, all scaled by book value of assets	Compustat
Explanatory Variables		
STATE_OWN	Percentage of shares held by the government	Firms' annual reports and offering prospectuses
STATE_CONT	Dummy variable equal to 1 for firms in which the state maintains control (i.e., the government holds more than 50% of the firm's shares) following partial privatization, and 0 otherwise	Firms' annual reports and offering prospectuses
POLITICAL	Dummy variable equal to 1 for politically connected firms, and 0 otherwise	Faccio (2006)
SIZE	Log of sales in millions of U.S. dollars	Compustat
LEV	Ratio of total debt to total assets	Compustat
NWC	Ratio of current assets net of cash minus current liabilities, all scaled by sales	Compustat
CASH_FLOW	Earnings before extraordinary items plus depreciation and amortization deflated by sales	Compustat
CAPX	Ratio of capital expenditures to sales	Compustat
SALES_GROW	The growth rate of sales relative to the previous year	Compustat
DIV	Dummy variable equal to 1 if a firm pays dividends, and 0 otherwise	Compustat
CASH_FLOW_VOL	Standard deviation of CASH_FLOW over the previous 5 years	Compustat
SHDR_RIGHTS	Revised antidirector rights index, which ranges from 0 to 6 (with lower scores indicating fewer shareholder rights)	Djankov et al. (2008)
PRIV_CREDIT	Ratio of credit from financial institutions to the private sector to gross domestic product (GDP)	World Bank
R&D	The ratio of R&D expenditures to sales; missing R&D values are set to 0	Compustat
ACQ	Ratio of acquisition expenditures to sales	Compustat
MKT_CAP	Ratio of stock market capitalization to GDP	World Bank

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Variable	Definition	Source
LAG_ROA	Lagged ratio of return on assets	Compustat
ASSET_SALES	Change in the ratio of property, plant, and equipment to total assets	Compustat
DEBT_ISSUE	Long-term debt issuance minus long-term debt reduction, scaled by total assets	Compustat
LOCAL_OWN	Percentage of shares held by local investors	Firms' annual reports and offering prospectuses
MKT_SHR	Ratio of a firm's sales to its industry sales	Compustat
GOV_BANK	Fraction of banking sector assets in government-owned banks, where a bank is considered government owned if the government controls 50% or more of the bank's shares.	Barth et al. (2013)
US	Dummy variable equal to 1 if a firm is a U.S. firm, and 0 otherwise	Compustat
TIME	Number of years since 1994, which is the first year in our sample period	Compustat
CHINA	Dummy variable equal to 1 if a newly privatized firm (NPF) is a Chinese NPF, and 0 otherwise	Compustat
COLLECTIVISM	Indicator of collectivism, which is equal to 100 minus Hofstede's cultural index of individualism	Hofstede (2001)
PRESS_FREE	100 minus the original Freedom House index; higher values of PRESS_FREE indicate that a country's media are more independent	Freedom House
CHECKS	Number of checks and balances in a country; this index reflects the degree of restraint imposed on politicians by veto players in the government	Database of Political Institutions
DEMOC	Measure of how responsive a government is to its people; the index ranges from 0 to 6 (with higher scores indicating more democracy)	International Country Risk Guide
JUD_IND	Average of three variables: i) tenure of supreme court judges, ii) tenure of the administrative court judges, and iii) case law; this index ranges from 0 to 1 with higher scores indicating more judicial independence	La Porta et al. (2004)
DISCL_POL	Dummy variable equal to 1 if the law or regulations of the country require members of parliament to provide either financial and/or business interests disclosures, and 0 otherwise	Djankov et al. (2010)

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