Political Corruption and Corporate Cash Holdings

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Abstract

This study empirically analyzes the effects of political corruption on corporate cash holdings policy and the impact of cash holdings on firm performance using 97 multinational data. Specifically, we find that there is a nonlinear cubic function relationship between the political corruption and corporate cash holdings with a negative coefficient of cubic term of political corruption. In advanced countries with low levels of political corruption, there is a U-shape relationship between political corruption and cash holdings; however, in frontier and emerging countries, there is an Inverted-U-shape relationship. These results show that two hypothesis 'Expropriation Shielding hypothesis' and 'Preoccupancy hypothesis' on previous literature are not conflicting, but can be explained differently according to the level of development of countries and the level of political corruption. In addition, we find that the effects of political corruption on firm performance when firms use cash are different in developed and developing countries. From these results, we suggest that political corruption is an important variable in corporate financial policy and firm performance.

1. Introduction

Political corruption is prevalent all over the world and especially cohesion between politicians and firms has received much attention both in the literature and media (Tanzi, 1998). For example, recently it has been hot issue in media that presidential impeachments of former president Park in Korea and former president Rouseff in Brazil have been mainly due to their cohesion with private companies. Therefore, academic literatures document the impact of political connection or environment not only on the performance firms but also the financial policy of firms. For example, Fisman (2001) shows that the value of Indonesian firms are directly affected by the political connection with the former president Suharto who has dominated the political structure of Indonesia for 31 years (1967-1998). In addition, previous studies show that the degree of political corruption in the economy affects the financial policy of the firms such as cash holding policy, earnings management, or capital structures. Among those financial policies, the most important financial policy is cash holdings policy for both corrupt politicians and politically-connected firms, because cash guarantees anonymity and can be used autonomously with low level of surveillance (because of its liquidity and flexibility). Therefore, political environment will affect the cash holdings policy of the firms because cash will be the target of expropriation by the corrupt politicians while companies want to take advantage of corrupt politicians by lobbying through cash. Therefore, this study examines the impact of corruption level of countries on the cash holdings policy of firms belong to the country using the samples from 97 countries.

Corruption level of the country is one of the most important national cultural variables that characterizes and evaluates the political and socioeconomic status of the country, because it influences the overall economic activities of people in the nation and financial policy of firms. Dynamic impact of corruption not only influences the overall economy but also all aspects of society representing the perceived culture of the country. Cultural factors are also influential to the wide range of society, so previous literatures show that significant portion of the firms' financial policy is explained by country level cultural variables while firm-specific characteristics explain only small portion of it (Chen et al., 2015; Doidge et al., 2007; Karolyi, 2016). However, there is no study directly examines the impact of national corruption level on the financial policy focusing on cash holdings policy using multinational data, and there is no study how the corruption and cash holdings affect the

performance of the firm. Furthermore, this study subcategorize the sample into frontier, emerging, and developed countries, and show that the level of economic development has moderating effect to the relation between corruption and cash holdings policy. More specifically, the literatures show that variations in national political corruption affects macroeconomic growth, market structure, corporate decision makings and financial policy except for cash holding policy and its impact on firm performance even though cash is an important asset especially in corrupt economy. Therefore, this study contributes to the literature by testing the impact of national corruption level on firms' cash holdings policy and further its impact on the firms' performance.

In previous studies, there are two controversial hypotheses on the relation between political corruption and cash holdings policy. The first hypothesis is the 'Expropriation Shielding Hypothesis' that the higher level of political corruption, firms will hold the smaller amount of cash to prevent the expropriation by the corrupt politicians. The second hypothesis is the 'Preoccupancy Hypothesis' that the higher level of political corruption, the firm will hold the more amount of cash to take an advantage from corrupt politicians by bribing or lobbying using the cash. However, the previous studies are limited to the national or regional level to test these two hypotheses. By expanding research sample to multinational level, we are able to find how political corruption affects differently on financial policy and performance. Moreover, we are able to compare the impact of political corruption of each countires. Therefore, this study uses multinational data to examine how the effects of corruption on cash holdings differ among frontier, emerging, and developed countries based on these two hypotheses.

In this study, we find that there is a nonlinear cubic function relationship with a negative coefficient of cubic term of political corruption between the political corruption and cash holdings in the firm year observations sample of 600,000 in 97 countries. Among those sample firms, we find that there is a difference in the effect of political corruption on cash holdings among frontier, emerging, and developed countries. In developed countries, we find the U-shape relation between political corruption and cash holdings. Specifically, in developed countries with very low levels of corruption, there is a negative correlation between political corruption and firm cash reserves. However, in some developed countries where corruption is moderate, there is a positive correlation between political corruption and

firm cash reserves. In addition, we find the inverse U-shape relation between political corruption and cash holdings. Specifically, in some emerging countries where corruption is moderate, there is a positive correlation between political corruption and firm cash reserves. In contrast, in some emerging and frontier economies where corruption is extremely high, negative correlations exist between political corruption and firm cash holdings. From our result, expropriation shielding hypothesis and preoccupancy hypothesis are both supported. In developed countries with low level of political corruption, there is less advantage from corruption, so only risk of expropriation exists. In this sample, expropriation shielding hypothesis explains the negative relation between political corruption and cash holdings. In sample with moderate level of corruption in some developed and emerging countries, there is huge advantage from corrupt politicians, so preoccupancy hypothesis well explain the positive relation between political corruption and cash holdings. In the last sample with extremely high level of corruption in some emerging and frontier countries, the risk of expropriation is severe, so firms want to avoid expropriation by reducing cash holdings. In this case, expropriation shielding hypothesis explain the positive relation between political corruption and cash holdings again. These results are robust in the analysis using 2 Stage Least Square (2SLS) using an instrument variable and Propensity Score Matching (PSM), and thus we find the consistent results after controlling for the endogeneity problems.

Moreover, we analyze the effect of political corruption on operating performance when using cash held by the firms. In developed countries with low levels of corruption, reducing cash holdings is beneficial to operating performance. However, in some developed and emerging countries with a medium level of corruption, raising cash reserves is favorable to operating performance. In some frontier and emerging economies, where the levels of corruption are high, it is advantageous to raise cash holdings, but firms have shown to reduce their cash holdings in reality to avoid an expropriation by corrupt politicians.

In this study, we find that both hypotheses can be explained according to the level of economic development and the level of corruption, rather than two hypotheses from the previous studies are opposing. This study extends the research on cash holdings among the studies on political corruption and financial policies of the firm from a country level to international level. We identify a nonlinear cubic function relationship between political corruption and cash holdings that has not been found in previous studies of multinational

countries and find that companies in frontier, emerging, and developed countries respond differently to political corruption in cash holding policy.

The following parts of this study are as follows. In Part 2, we describe the previous research and hypothesis. Part 3 describes the data and key variables. Part 4 describes the research model, and Part 5 describes the results of the empirical analysis derived from these research models. Part 6 deals with the limitations of the study and further research. Part 7 presents conclusions and implications of this study.

2. Literature Review and Hypothesis Development

2.1. Previous studies on culture and the financial policies of firms.

Previous studies have shown that national culture affects the formation of corporate governance and that corporate governance changes can affect corporate financial policies. According to LLSV (1998), shareholder rights protection is estimated to be influenced by cultural factors of the country. After the suggestion of LLSV(1998), other studies empirically find that cultural factors significantly affect the formation of corporate governance, especially shareholder rights protection (Dittmar et al. 2003; Pinkowitz et al. 2006; Kalcheva and Lins 2007; Li and Harrison, 2008).

In particular, Doidge, Karolyi, and Stulz (2007) show that while corporate governance variables are accounted for only 3% of firms' characteristics variables, 70% are accounted for by country dummy variables. In addition, Griffin et al. (2017) find that 90% of the country fixed effect in a firm-level corporate governance regression is explained by cultural factors such as the uncertainty avoidance and individualism. Meanwhile, recent studies have attempted to clarify the ways in which corporate financial policies are changed beyond the effects of cultural variables on corporate governance.

On the line of these previous studies, the most important field of research related to cultural factors in finance is 'change of financial policy' (Chui et al., 2002; Shao et al., 2010; Shao et al. Al., 2013; Boubakri et al., 2016). Specifically, Chen, Dou, Rhee, and Veeraraghavan (2015) identified the cultural influence on a firm's financial policy as 'cultural motive' and find that cultural factors have a significant influence. In addition, Karolyi (2016) stated that culture is a very important variable in financial decision making and should be considered because it increases explanatory power.

From the variables determined by financial policies of firms, we mainly focus on the Cash holding policies. Cash is the most unrestricted asset that can be used autonomously by financial policies (Pinkowitz et al. 2006). Therefore, cash is an asset that is greatly influenced by the agent problem (Jensen, 1986), and in the previous study, there was a significant correlation between cash and corporate governance (Pinkowitz et al., 2006; Dittmar et al., 2007). From this reason, Cash is suitable for studying how cultural factors determine corporate governance and how corporate governance affects financial policies.

Based on this logic, previous studies has been carried out until recently that the cultural factors at the national level affect the cash holdings of firms. Ramirez, A. & Tadesse, S. (2009) find that risk aversion among Hofstede's cultural variables has an effect on firm's cash holdings. In addition, Chen, Dou, and Rhee (2015) find that Hofstede's 'individualism' and 'risk aversion' have an impact on firm cash holdings. According to Chang, & Noorbakhsh (2009), even after controlling the effect of corporate governance and financial market development, 'risk aversion', 'masculinity' and 'long-term orientation' have an impact on firm cash holdings. Fernandes and Gonenc (2016) also find that the higher the cultural diversity, the lower the cash holdings. According to Dudley, and Zhang (2016), the higher the level of social trust, the more cash holdings the firm has.

2.2. Previous studies on corruption and financial policies

Meanwhile, there have been some studies that political corruption, which is a cultural variable that is mainly dealt with in this study, affects corporate financial policies. However, the results of the study on the effect of political corruption on corporate cash retention policies were not intensively investigated. In politics and economics, there have been many empirical studies that political corruption has influenced macroeconomic growth, market structure, and corporate decision making. Bliss and Di Tella (1997) and Ades and Di Tella (1999) find that corruption affects the national market structure. In addition, Shleifer and Vishny (1994) and Hellman et al. (2003) demonstrate that the political environment has a significant influence on the corporate operating activities. Mauro (1995) and Mo (2001) studied corruption and economic growth, and Friedman et al. (2000), Johnson et al. (2000), Choi and Thum (2005) investigated corruption and the size of underground economy in the country. As such, political corruption has a large macroeconomic impact and has a significant impact on the corporate operating activities.

Because political corruption has gained attention in politics and economics, many studies are continuing to find a macro-micro link between political and economic variables in macro view and corporate activities in micro view. Therefore, this study examines the effect of 'political corruption level', which is a national cultural variable, on 'cash holding policy' of corporate financial policy. According to Myers and Rajan (1998), cash, bearer bonds, and commodities are easier to be the target of expropriation than fixed assets because those assets are guaranteed anonymity, do not have specific owners, and are easy to transport. In particular, cash can be the easiest target for a politician to expropriate, and on the contrary, it is the most advantageous asset to use to take advantage of political corruption on the view of the firms. Therefore, cash can be directly affected the impact of political corruption on corporate financial policies rather than other assets.

From the previous literature, two hypotheses are controversial about the effect of political corruption on corporate cash holdings policies. ‘Expropriation Shielding hypothesis’ suggests that firms reduce their cash holdings to prevent expropriation of corrupt politicians, and from this hypothesis, it is expected to have a negative correlation between political corruption and cash holding policies. The contradictory "preoccupancy hypothesis" is that firms are actively using political corruption to facilitate government projects and loans, so firms tend to have more cash because cash is the fastest and least monitored asset for lobbying. From preoccupancy hypothesis, we expect that there is a negative relationship between political corruption and cash holdings.

2.3. Previous studies on Expropriation Shielding Hypothesis

First, in the previous studies, theoretical studies and empirical studies have been conducted in support of the expropriation shielding hypothesis that corporations tend to protect their assets by changing financial policies in order to prevent threats from political corruption. In theoretical research, research has been conducted on how companies behave when politically corrupt politicians exist outside. Shleifer and Vishny (1993) pointed out that corruption acts as a kind of informal tax, causing inefficiencies and lowering firms' performance. Stulz (2005) presented a model with three participants: politicians, corporate insiders such as managers, and external minor shareholders. In this model, a corporate insider may choose a project with a negative NPV to prevent expropriation if the cost of take over by corrupt politicians is large. In addition, Bai, Jayachandran, Malesky, and Olken (2014)

developed a model when a politician want bribes from a firm and how a firm choose which of two options that the firm would pay for bribes or transfer headquarters to another region. Firms have taken into account the cost of bribery and the cost of moving the headquarters, and they select an option with lower cost. Therefore, political corruption acts as a cost to a firm.

In the empirical study, there were not many studies that examine direct relationship between the financial policies of the political corruption. Some similar studies has been conducted in which firms actively change financial policies for rent-seeking when there is a power game between specific entities such as labor unions and firms. According to Klasa, Maxwell, and Ortiz-Molina (2009), firms tend to reduce cash holdings if they are in industry where the power of labor union is strong. In addition, Matsa (2010) find that as unions become more influential, firms strategically raise more debt, increase cash flow volatility and net income volatility, and increase the risk of bankruptcy. This result is based on the theory of Bronars and Deere (1991) and Perotti and Spier (1993), and in this theory, firm strategically take favorable position by showing an unstable state when a company is in a power game. Therefore, we expect that fleeing assets to avoid union demands is likely to be similar in situations where corrupt politicians demand bribery. In this study, we predict that firms will reduce cash and increase leverage by actively utilizing financial policies to maximize firm value and reduce bribery in power games with corrupt politicians.

Some empirical studies that examine more direct relationships between political corruption and cash holding policies have been conducted using data from the United States. Smith, J. D. (2016) find that firms with headquarters in corrupt state reduce cash holdings and boost leverage to avoid expropriation. In addition, according to Liu (2016), CEOs from corrupt cultures are more likely to engage in earnings management, accounting fraud, and opportunistic internal transactions.

Based on these empirical studies and theoretical studies, we conduct empirical analysis to verify the expropriation shielding hypothesis by adding two more assumptions. The first assumption is that politicians will demand more bribes as the firm's ability to pay. This assumption is a common sense, but it is supported by empirical results that "companies that can pay more, should pay more" in the Svensson (2003) Uganda survey. The second assumption is that there is an optimal level of cash ratios for firms to operate and the threats

by corrupt politicians may deviate from optimal levels of cash holdings. The second assumption is theoretically supported by the model of Miller and Orr (1966) that firms have optimal levels of cash holdings, and empirically supported by the studies of Opler et al. (1999), Dittmar et al. (2003), and Kalcheva and Lins (2007).

2.4. Previous studies on Preoccupancy Hypothesis

In the presence of political corruption, firms can take advantage of lobbying and bribery to affect direction of the policy to favorable conditions, and firms can preoccupy government project selections and loans by government. In theoretical research, Leff (1964) find that corrupt CEOs avoid tax better and lead cash transfers (e.g. subsidies) from the government to individual firms. In addition, Huntington (1968) find that corrupt CEOs receive more business projects from the government and improve firm performance by appropriately removing the disturbing factors by giving politicians bribes. They also preoccupy strategically advantageous positions over other firms because they are skilled in using the loopholes of law and bad laws. Therefore, in case of severe political corruption, firms may be more advantageous to exclude competitors in the competitive market if they actively use the cozy relation between politics and business.

Meanwhile, in empirical studies, political corruption can lead to better firm performance when firms actively use the political corruption through bribes and lobbying in the emerging countries. According to Debacker, Heim, and Tran (2015), US companies with owners from corrupt countries are more skillful in avoiding taxes, and it increase firm performance. Mironov (2015) also find that the corrupt CEOs in Russia can increase the company's sales growth even more. Even if the politically corrupt environment raises additional costs and threats to expropriation by politicians, paying bribes in the face of corruption can be optimal for operating performance from an individual company's perspective. For example, in competition for government-sponsored projects, firms can quickly give bribe and benefit from it, and they can get a good loan from the government. (Fisman, 2001; Faccio et al., 2006; Claessens et al., 2008; Goldman et al., 2009; Duchin and Sosyura, 2012; Tahoun, 2014)

2.5. Hypothesis Development

The previous studies show that there is a confrontation between expropriation shielding hypothesis and preoccupancy hypothesis about the relations between political corruption and corporate cash holdings policy. In the empirical studies, the results of

supporting the expropriation shielding hypothesis are mostly found in developed countries, and the results supporting the preoccupancy hypothesis are found in emerging countries. If the level of economic and political development of the country is low, then there will be a large number of firms seeking to take an advantage in political corruption. However, after the economic and political development of the country has been fully achieved, the negative impact of political corruption such as expropriation by corrupt politicians may become even greater. Therefore, in this study, we assume that political corruption will affect the corporate cash holdings policy according to the level of economic and political development of the country, and we establish hypothesis for empirical analysis as follows.

Hypothesis-1a. In countries with high levels of corruption, firms are likely to have less cash because of the risk of expropriation by corrupt politicians. (Expropriation Shielding hypothesis)

Hypothesis 1b. In countries with high levels of corruption, firms are likely to have more cash because it is important to take advantage of opportunities quickly by corrupt politicians through lobbying. (Preoccupancy hypothesis)

Hypothesis 1c. According to the level of economic development, the Expropriation Shielding hypothesis and the Preoccupancy hypothesis will be compatible.

Hypothesis 2a. In countries with high level of corruption, corporate operating performance will be worsened by high cost of the threats by corrupt politicians.

Hypothesis 2b. In countries with high level of corruption, corporate operating performance will be improved by preoccupancy of opportunities by bribe and lobbying.

3. Data and Variable descriptions

3.1. Financial variable data

The corporate financial data used in this study is collected from Compustat Capital IQ provided by Whaton Research Data Services and the data of Compustat North America and Compustat Global are merged to collect worldwide data. Firms in the financial industry and banking industry are excluded because those samples are not suitable for this study. Unlike firms in other industries, financial institutions and banks have restrictions on cash holdings, so the motive of holding cash is different. Therefore, in this study, data on individual firms in 97 countries are collected from 1995 to 2015, and the number of firm year observations is 688,789.

From the collected sample, we excluded missing values in financial variables. We

also confirmed that some outliers exist in our sample because our data is international, and we excluded the upper 1% and lower 1% of the financial variables to prevent these values from causing bias in the results. In addition, for some firms with missing value in research and development expenses, we assumed that those firms have a value of 0 in research and development expenses[1]. From this process, we obtained 600,961 firm year observations. Meanwhile, in some countries, stock price data is inaccurate and can not be collected for market capitalization variables. The number of firm year observations in our sample that can obtain stock price and market cap is 253,072, and this sample is mainly used in our empirical analysis by adding the market capitalization variable to the normal cash regression to examine the effect of political corruption on the cash holdings of firms[2]. Table 1 shows the number of firm year observations by country, industry, and year.

[Insert Table 1: Sample Distribution]

3.2. Proxy of Political corruption.

The Corruption Index of the International Transparency Organization is used as proxy for the level of political corruption at the national level. The index is provided from 1995 to 2015. In the case of the cultural variables used in the previous studies, the reliability of the data has been pointed out because the survey is not continuous and has only one survey (Karolyi, 2016). However, since the corruption index of the International Transparency Organization is annually published, and it is continuous data. Moreover, it is an index derived by integrating the results of five rational surveys, so it can overcome the vulnerability of existing cultural variables. As the corruption index is higher, it means that there is less political corruption. Therefore, in this study, we made an adjustment by subtracting the maximum value of 10 for the convenience of explanation, so that the higher the index, the higher the level of political corruption.

[1] In the study of Dittmar et al. (2007), it was treated as 0 if the R & D cost could not be obtained. The sample size decreased when we treat R & D cost was not zero and discard those data, but the main analysis of this study show no significant difference.

[2] The results of the empirical analysis with 253,072 samples after inserting the market capitalization variables and the results of using 600,961 samples excluding the market capitalization variables are not significantly different.

3.3. National level variables

Meanwhile, the macroeconomic factors such as the legal system, the level of economic development, and the opportunity cost of the bond market, which affect the corporate governance of the country, may change the corporate cash holding policy. Therefore, in this study, macro variables were collected and used controlling variables. First, the legal origin of the country is used as a proxy of corporate governance, and the three dummy variables of the English, the Continental, and Nordic laws are added as control variables. According to a previous study of LLSV (1999) on the legal system and corporate governance, the protection of shareholder rights is more important in the case of the Anglo-American law than other legal systems. Therefore, we expected that there would be a difference between the countries that follow Anglo-American law and those that do not.

In addition, since the level of economic development of the country is closely related to political corruption, we added the per capita GDP variable to control it. As the stock market is active, it is easier for companies to raise funds through the stock market, so we have added stock trading volume to GDP to control these effects. In addition, the real interest rate variable of the Treasury bond by country is used as the control variable because the opportunity cost of holding more cash increases as the real interest rate of the bond market increases. Macroeconomic variables were collected through the World bank database and the OECD factbook.

Table 2 shows the statistics of the variables used in the regression model of this study. Table 3 shows the correlation coefficient between each variable.

[Insert Table 2: Descriptive Statistics]

[Insert Table 3: Pearson’s Correlation Coefficient]

4. Research Model

4.1. Normal cash regression

In order to investigate the effect of political corruption on firm's cash holdings policy, this study uses normal cash regression model by Opler et al. (1999) that explains the motives of corporate cash holdings. In this study, we use a model that adds additional country-specific explanatory variables in addition to firm-level variables on the amount of cash held by the

firm for normal operating activities. Specifically, the variables such as the legal system variable, GDP per capita, stock trading volume to GDP, and the real interest rate of treasury bonds are added to the regression model. We can see that after adding the macroeconomic variables in the normal cash regression model, the level of explanatory power is higher than the model with only contains firm level explanatory variables These results are similar to those of Doidge, Karolyi, and Stulz (2007). Specific models and variables are described as follows.

$$\ln\frac{Cash_{i,t}}{TA_{i,t}} = \beta_0 + \beta_1 Ln(TA_{i,t}) + \beta_2\frac{CF_{i,t}}{TA_{i,t}} + \beta_3\frac{NWC_{i,t}}{TA_{i,t}} + \beta_4\frac{CPX_{i,t}}{TA_{i,t}} + \beta_5 Lev_{i,t} + \beta_6 Industry\ risk_{i,t} + \beta_7 Div\ dummy_{i,t} + \beta_8\frac{R\&D_{i,t}}{TA_{i,t}} + \beta_9\frac{MarketValue_{i,t}}{Total_{i,t}} + \beta_9\frac{StockTradedVolume}{GDP}_{i,t} + \beta_{10}\ln(GDPpercapita_{i,t}) + \beta_{11} RealInterestRate_{i,t} + \beta_{12} LegalOrigin_{i,t} + \beta_{13} Corruption_{i,t} + YFE + IFE + CFE + \varepsilon \quad (1)$$

Cash is the cash and cash equivalents, TA is the total assets, NWC is the net working capital, and the difference between the current assets and the current liabilities, CPX is the capital expenditure and the difference between tangible and intangible assets at t and tangible and intangible assets at t-1, Lev is long-term debt leverage, which is the long-term debt divided by total equity. Industry risk is the standard deviation of the cash flows in Fama and French 48 industry classifications. Div dummy is a dummy variable that has a value of 1 if there was a dividend at time t and a value of 0 otherwise. R & D means research and development expenses. Market value is the market capitalization, StockTradedVolume/GDP is the value of each country's stock trading volume divided by GDP, and GDP per capita means GDP over population in country. Real Interest Rate means the real interest rate of treasury bonds. Legal Origin are three dummy variables, and we add English, the Continental, and Nordic laws variables. Corruption refers to the level of political corruption in the country, and we use the proxy of corruption described in the preceding part.

$$\ln\frac{Cash_{i,t}}{TA_{i,t}} = \beta_0 + \beta_1 Ln(TA_{i,t}) + \beta_2\frac{CF_{i,t}}{TA_{i,t}} + \beta_3\frac{NWC_{i,t}}{TA_{i,t}} + \beta_4\frac{CPX_{i,t}}{TA_{i,t}} + \beta_5 Lev_{i,t} + \beta_6 Industry\ risk_{i,t} + \beta_7 Di\square\ dummy_{i,t} + \beta_8\frac{R\&D_{i,t}}{TA_{i,t}} + \beta_9\frac{MarketValue_{i,t}}{Total_{i,t}} + \beta_9\frac{StockTradedVolume}{GDP}_{i,t} + \beta_{10}\ln(GDPpercapita_{i,t}) + \beta_{11} RealInterestRate_{i,t} + \beta_{12} LegalOrigin_{i,t} + \beta_{13} Corruption_{i,t} + \beta_{14} Corruption_{i,t}^2 + \beta_{14} Corruption_{i,t}^3 + YFE + IFE + CFE + \varepsilon \quad (2)$$

On the other hand, the effects of political corruption on corporate cash holding

policies may be different as national politics and economy development. In the case of emerging or developing countries, the preoccupancy of government projects and loans may be more effective in the early stages of economic development using political corruption. However, in developed countries where the economy has developed somewhat, the negative effects of the threat of expropriation of political corruption may be greater. Based on these assumptions, we assume that there is a nonlinear relationship between political corruption and cash holdings, and we use the above regression model with the addition of the square and cube terms of political corruption in model (2). The definitions of frontier, emerging, and developed countries are based on the World Bank's national classification system, and we add dummy variables by these definitions.

4.2. The effect of political corruption on the operating performance in case of using cash

4.2.1. ROA model

Political corruption affects cash holdings, but it also affects operating performance when cash is used. If the preoccupancy hypothesis is surppoted, the greater the degree of political corruption, the bigger the ROA will be because the firm uses cash to better utilize political corruption and take an advantage from politicians by using cash. However, if the expropriation sheilding hypothesis is supported, the ROA of the next period will be significantly lower because firms are more likely to choose a project with a negative NPV to avoid the more severe political corruption. In particular, Morivov (2015) find that corrupt CEOs perform better and they achieve higher sales growth. Thus, rather than the market's assessment of cash holdings, it can be important how political corruption affects the use of cash and operating performance.

$$ROA_{i,t} = \beta_0 + \beta_1 \frac{Cash_{i,t-1}}{NA_{i,t-1}} + \beta_2 Corruption_{i,t-1} + \beta_3 \frac{Cash_{i,t-1}}{NA_{i,t-1}} \times Corruption_{i,t-1} + \beta_4 Ln(NA_{i,t}) + \beta_5 \frac{PPE_{i,t}}{NA_{i,t}} + \beta_6 ROA_{i,t-1} + \text{YFE} + \text{IFE} + \varepsilon \quad (3)$$

NA is net assets that total assets minus cash and cash equivalent, PPE is Property, plant, and equipment, ROA is return on assets that is operating income over total assets.

4.3. Identification Strategies for alleviate endogeneity problems in empirical tests

4.3.1. Two stages least squares (2SLS)

To examine the effect of political corruption on corporate cash holding policy, the

reverse causality problem is not severe because it is reasonable that macro variables affect the micro corporate financial policies when we interpret the correlation between corruption and cash as causality. However, there may be an omitted variable bias due to unmeasurable variables in our regression model. Therefore, in this study, we try to alleviate endogeneity problem corruption index by borrowing the ideas of previous studies.

According to the research of Campante and Do (2014), more isolated areas of the capital city in a state are more vulnerable to voter surveillance, and it results higher political corruption. Campante and Do (2014) attempted to reduce the endogeneity problem of political corruption by using the Gravity-based Centered Index for Spatial Concentration. Meanwhile, population density is a good instrument variable because it is hard to imagine that population density affects firm's cash holding policy. Therefore, in this study, we borrow this idea to use two stages least squares (2SLS) method using the largest urban population ratio of each country as an instrument variable.

Therefore, in the first stage, the corruption index is estimated by using the largest urban population density as the instrumental variable, and the estimated corruption index is used in the model (1) and model (2). The Durbin chi2 test and the Wu-Hausman F test show that the p-value is significant at 1% level, so that the null hypothesis that all variables in the model are exogenous can be rejected. In other words, in the case of the model used in this study, it is more appropriate to use the instrument variable because there is an endogeneity problem of the corruption index.

4.3.2. Propensity Score Matching (PSM)

In order to examine the different treatment effect of political corruption on corporate cash holdings in emerging and developed countries, we calculate propensity score based on the firm size (total assets). We separate our sample by propensity score that has value from 0 to 1, and we matched the most similar observation in same year and same industry. We use 4 dependent variables to examine the non-linear treatment effect of political corruption on corporate cash holdings. (1) Dummy variable that has value 1 if corruption index is higher than the median of total sample, otherwise 0. (2) Dummy variable that has value 1 if corruption index is higher than 25%, but has 0 when corruption index is lower than 75%. (3) Dummy variable that has value 1 if corruption index is higher than 25% in developed countries sample, but has 0 when corruption index is lower than 75% in developed countries

sample. (4) Dummy variable that has value 1 if corruption index is higher than 25% in frontier/emerging countries sample, but has 0 when corruption index is lower than 75% in frontier/emerging countries sample.

After matching by propensity score, we analyze the difference between treatment group and control group on the effect of political corruption on corporate cash holdings, and check the significance level by using t-statistics. By using matching, we can see more robust result in case of alleviating the endogeneity problems.

5. Empirical Results

5.1. Empirical Results in Normal Cash Regression

5.1.1. Cubic function relationship between political corruption and cash holdings

As a result of previous studies, it can be a plausible explanation in the case of some developed countries for expropriation shielding hypothesis that the political corruption increases only the threat of expropriation by corrupt politician. However, in an empirical study of emerging countries, it can be seen that the preoccupancy hypothesis can be a plausible explanation because there is more advantages of political corruption, and firm may hold more cash to preoccupy those advantages. Therefore, in this study, we assume that the effects of political corruption on corporate cash holdings would be different between developed and frontier/emerging countries. Specifically, we expect that the relation between political corruption and cash holdings in our sample would take the form of a non-linear function rather than a simple linear relationship.

The results of Model 1 in Table 3 are the univariate results between the corruption index and the cash holdings. As a result of adding the square term and the cubic term of the corruption index, we find that the coefficient of the cubic term is negative, and there is a cubic function (decrease in first, then increase, and decrease again) relationship existed in our sample. In Model 2 and 3, we add firm level control variables that explain the motives of holdings cash by the research of Oppler et al. (1999). Some firm in our sample in this study did not disclose research and development(R&D) expenses, so we treated as a value of 0 in this case by following the same method of Dittmar et al. (2007). In Model 2, we exclude samples that have missing value in R&D expenses, and in Model 3, we treat R&D expenses as a value of 0 in case of missing value. In both models, we find that the cubic relation between political corruption and cash holdings are consistent.

Meanwhile, we add the ratio of market value to total assets (MTB) in model 4, and the number of firm year observations has been reduced from 535,392 to 296,557 due to lack of stock price disclosure in many countries. MTB is added in other models in our analysis because it is an important explanatory variable as proxy variable of growth opportunity in normal cash regression. Even if the number of samples is decreased, the cubic relation function between the corruption index and the cash holdings are also consistent.

In Model 5, we added country-level variables that were not considered in previous studies as control variables. By adding country-level variables in our models, and the sample was reduced to 253,072, and we mainly use this sample in other analysis. Stock traded / GDP is stock trading volume / GDP. This variable is used as proxy for the degree of development of the stock market. The coefficient is negative at 1% significance level, and it means that the more the stock market develops, firm can easily raise fund through the stock market, so firms holds less cash. Ln (GDP per capita) is the natural logarithm of GDP per capita, and indicates the level of economic development of the country. We find that the coefficient of Ln(GDP per capita) is positive and significant at 1% level. It means that the level of economic development in the country becomes higher, firm can generate more cash from its operating activities, so firms hold more cash. The Real Interest rate is the inflation adjusted interest rate of treasury bonds and can be viewed as the opportunity cost when a firm hold cash in it. From our results, the coefficient is negative and significant at 1% level, so firms have less cash because of high opportunity costs.

From Model 6 to 8, we fixed the year effects, industry effects, and country effects to see the cubic relation is consistent in case of fixed effect models. In Model 6, we use random effect model by assuming that there is no correlation between control variables and error term, and we find that the cubic relation between corruption index and cash holdings is consistent. Moreover, in Model 7, we fixed year effects and Fama and French 48 industry effects, and we fixed also country effects in Model 8. In both Models, we find that the cubic relation between corruption and cash holdings is consistent. Even though the differences between countries were partially controlled by the national dummy variables, the effects of political corruption continue to appear in Model 8. These results show that there are effects of change in corruption within the country as well as effects between countries.

5.1.2. Difference between frontier/emerging countries and developed countries, and

identification of inflection points

To examine the different effect of political corruption on cash holdings between developed and frontier/emerging countries, we divided the sample into developed and frontier/emerging countries according to the World Bank classification. Table 4 shows that the coefficients of the cubic term are not significant, only the coefficient of the square term is significant and positive, so there is a U-shape relation between political corruption and cash holdings. A sample of developed countries with very low levels of corruption such as Finland and Canada shows that companies reduce cash holdings to avoid expropriation in the face of political corruption. However, in countries such as Italy and Spain where are developed countries but somewhat corrupt, we find that firms have more cash to take an advantage from political corruption for preoccupancy. Specifically, the inflection point of the corruption index estimated by the coefficient of model 1 is about 2.94, and the expropriation shielding hypothesis is supported in the countries with the corruption index of less than 2.94 among developed countries, and the preoccupancy hypothesis is supported in the countries above 2.94.

On the other hand, in Model 3 and Model 4, we analyze only for frontier and emerging countries. Again, unlike the whole sample, the coefficient of the cubic term is not significant and only the coefficient of the square term is significant. However, we find there is an Inverted-U-shape relation between political corruption and cash holdings unlike the developed countries. In the sample of frontier/emerging countries such as Korea with relatively low corruption level (but, with more corruption than developed countries), firms hold more cash to preoccupy opportunities from corrupt politicians. However, in the sample of frontier/emerging countries such as Pakistan and Mexico with extremely severe corruption, we find that firms reduce cash holdings to avoid the risk of expropriation by politicians. The inflection point estimated by the coefficient of model 3 is about 5.17, and we find that preoccupancy hypothesis is supported in countries with frontier/emerging countries' corruption index less than 5.17, and the expropriation shielding hypothesis is supported in countries above 5.17.

We find two inflection points in the cubic function between corruption index and cash holdings, but these points are not perfectly correct because of the econometric limitations of our model. However, these points give us some implications that there are three intervals in the relation between corruption and cash holdings, and two hypothesizes can be

explained by the level of corruption and economic development. To the convenience of analysis, we use 2.94 and 5.17 in other analysis.

Specifically, in the interval of corruption index below 2.94, developed countries with considerably low levels of corruption are included. In these countries, there is no motive to preoccupy loans and projects from corrupt politicians, and only the motive to avoid the risk of expropriation exists. Therefore, the expropriation shielding hypothesis is supported in developed countries with corruption index below 2.94.

In the interval with corruption index greater than 2.94 and below 5.17, some developed countries and emerging countries are included. These countries are more corrupt than countries in the first interval, and firms in these countries have motives to preoccupy opportunities actively from corrupt politicians. Therefore, firms hold more cash, and this result supports the preoccupancy hypothesis.

In the interval with a corruption index of 5.17 or higher, frontier/emerging countries with extremely high levels of corruption are included. In these countries, the cost of corruption is so high because of extreme level of expropriation by corrupt politicians. Therefore, firms hold less cash to avoid the risk of expropriation, and this result supports the expropriation shielding hypothesis again.

In order to confirm that there are three intervals and what hypothesis is supported in each interval, we empirically analyze the relation between political corruption and cash holdings in each intervals from the models 5 to 7.

In Model 5, we only analyze the first interval that contains developed countries sample with corruption index lower than 2.94. The coefficient of corruption index is -0.108 at 1% significance level, so there is a negative association between corruption and cash holdings that supports the expropriation shielding hypothesis. Model 6 only contains some emerging countries and developed countries with corruption index greater than 2.94 and below 5.17. The coefficient of corruption index is 0.0437 at 1% significance level, so it means that there is a positive association between corruption and cash holdings that supports the preoccupancy hypothesis. Model 7 contains the last interval, and we analyze only frontier/emerging countries with corruption index 5.17 or higher. The coefficient is -0.0214 at 1% significance level, so there is a negative association between corruption and cash holdings. The expropriation shielding hypothesis is supported in the sample of the last interval again.

5.1.3. Mitigation of endogeneity problem and robustness test

In our analysis, we borrow the idea and method of Campante and Do (2014). We use the urban population density in the largest city from the Worldbank Database as the instrument variable of corruption index in 2 stages least square (2SLS) model. The more crowded the population in the city, the more political interest and surveillance of the voters, so the level of the political corruption is deceased. However, we think that the urban population density in the largest city may not have an association with corporate cash holding policies, so we expect this instrument variable is effective to control the endogeneity problem in our model.

Model 1 in Table 5 is the first stage of 2SLS, and the dependent variable is corruption index. As expected, there is a significant negative association between the urban population density in the largest city and corruption index. This result is consistent with the idea of Campante and Do (2014). In next, we predict the corruption index in the first stage of Model (1), and we replace the corruption index to estimated corruption index 'TI_Corruption(Estimated)' in Model 2. In Model 2 where mitigates the endogeneity problem from the omitted variable bias by using instrument variable, we find that the cubic relation between political corruption and cash holdings is consistent.

However, in the results not reported in the table, unlike our expectation, there is a significant association between the urban population density in the largest city and corporate cash holdings (coefficient: 0.0032, and significant at 1% level). We find that the Spearman's Rho between the error term in the first stage in Model (1) and the error term in the second stage in Model (2) is 0.0589 at 5% significance level. It means that the correlation between the instrument variable and the dependent variable in second stage exists, so the omitted variable bias is not perfectly controlled unlike our expectation.

In spite of this result, it is not conceptually clear that there exists association between the urban population density in the largest city and corporate cash holdings. Moreover, the effect of omitted variables on the cash holdings is remarkably low because the coefficient of Spearman's Rho is low. Therefore, we partially control the endogeneity problem caused by omitted variable bias, and the effect of omitted variable bias is not that much.

In Model 3, we add estimated corruption index from the first stage, and we fix the year effects and industry effects. In Model 4, we also add year effects, industry effects, and

country effects. In both models, we find the consistent results that there exist the cubic function relation between political corruption and cash holdings. Meanwhile, we find that the coefficient of Spearman's Rho is not significant in Model 4, so we presume that the omitted variable bias is controlled by fixing the country effects.

In Table 6, we conduct propensity score matching(PSM) to mitigate the endogeneity problem. We generate the propensity score by using dummy variables generated by corruption index as dependent variable through logit regression. We matched samples in treatment groups and samples in control groups by the size of firm (Ln(total assets)). Panel A show the results of logit regression by each dummy variables, and the coefficient of Ln(total assets). We predict propensity score from the logit regression result, and matched samples in 0.01 level.

In the first result of Panel B, we make a dummy variable that has value 1 if the corruption index is higher than median, and 0 if the corruption index is lower than median. The difference is 0.0929 and significant at 1% level. It means that treatment group holds more cash than control group in the whole sample. In the previous empirical analysis, there exists the cubic relation between corruption index and cash holdings, so this results supports that samples (mostly, developed countries) with relatively high level of corruption hold more cash holdings than the samples (frontier/emerging countries) with low level of corruption.

In the second result, we make a dummy variable that has value 1 if the corruption index is higher than 25%, and 0 if the corruption index is lower than 75%. We find that there is no significant difference between the treatment group and control group after matching. This result shows that expropriation shielding hypothesis is supported in both top 25% sample and bottom 25% sample of corruption index, so there is no difference between the two samples.

Meanwhile, in the third result, we made a dummy variable only in frontier/emerging countries. The dummy variable has value 1 if the corruption index is higher than 25%, and 0 if the corruption index is lower than 75% in frontier/emerging countries sample. We find that the difference between treatment group and control group is significant at 1% level, it means treatment group hold less than control group after matching. In frontier/emerging countries, firms hold less cash in case of extremely severe corruption even if we control the endogeneity problem by matching. Therefore, this result support that there

exists inverted-U-shape relation between political corruption and cash holdings in frontier/emerging countries.

In the last and forth result, we made a dummy variable only in developed countries. The dummy variable has value 1 if the corruption index is higher than 25%, and 0 if the corruption index is lower than 75% in developed countries sample. There is a empirically significant difference at 1% level between treatment group and control group, and we find that treatment group holds more cash than control group. This result means that firms with relative higher level of corruption in developed countries hold more cash, so there exists U-shape relation between political corruption and cash holdings in developed countries.

After mitigating the endogeneity problems by using 2SLS and PSM, we consistently find that there exists the cubic function relation between political corruption and cash holdings (Decrease in first, increase, and then decrease again) in the whole sample.

5.1.4. The effect of political corruption on operating performance in using cash

In Table 7, we examine the effect of political corruption on operating performance at t period in using cash holdings at t-1 period. From the expropriation shielding hypothesis, political corruption has a negative effect on the operating performance, so it is beneficial for firms to reduce cash holdings to reduce the effect of political corruption. In contrast, from the preoccupancy hypothesis, political corruption has a positive effect on the operating performance, so firm hold more cash to take an advantage from politicians.

Specifically, we divide our sample to three intervals by using the two inflection points from the previous result in Table 4. First interval contains samples with corruption index lower than 2.94, second interval contains samples with corruption index from 2.94 to 5.17, and third interval contains samples with corruption index more than 5.17. We examine the operating performance at t period in using cash holdings at t-1 period in each intervals, and we measure the operating performance by operating income over total assets (ROA).

In Model 1 and Model 2, we use the developed countries samples with corruption index lower than 2.94. We find that the coefficient of corruption index is not statistically significant, so there is no association between political corruption and operating performance in developed countries with low level of corruption. In addition, we find that the coefficient of interaction term between corruption index and cash holdings at time t-1 is 0.0116 at 1% significance level. This means that firms can increase the operating performance by reducing

cash holdings to avoid expropriation when there exists the political corruption in this sample. This result supports the expropriation shielding hypothesis.

Model 3 and Model 4 contains developed countries samples with corruption index from 2.94 to 5.17. The coefficient of corruption index is -0.00226 at 10% significance level, and it means that corruption has a negative effect on the operating performance in the sample of developed countries with moderate level of corruption. Additionally, we find that the coefficient of interaction term between corruption index and cash holdings at time t-1 is 0.0174 at 1% significance level. Therefore, it is beneficial in operating performance for firms to increase cash holdings in this developed countries with moderate level of corruption. This result means that corruption itself is not positive for the operating performance, but there exists advantages of preoccupancy of opportunities from politicians. This result supports the preoccupancy hypothesis.

Model 5 and Model 6 contains frontier/emerging countries samples with corruption index from 2.94 to 5.17. The coefficient of corruption index is 0.00246 at 1% significance level, so there is a positive association between political corruption and operating performance unlike the result of developed countries in Model 3 and 4. The coefficient of interaction term between political corruption and cash holdings at time t-1 is 0.00301 at 1% significance level. This result means that holding more cash is beneficial to operating performance in frontier/emerging countries with moderate level of corruption. Therefore, in this sample, we find that political corruption itself has positive association with operating performance, and holding more cash is also beneficial to firm by enhancing the preoccupancy of opportunities. This result supports the preoccupancy hypothesis strongly.

In Model 7 and Model 8, we examine the frontier/emerging countries with corruption index more than 5.17, that is severe level of political corruption. The coefficient of political corruption is not statistically significant, so there is no significant effect of political corruption on operating performance unlike our expectation. The coefficient of interaction term between political corruption and cash holdings at time t-1 is 0.0103 at 1% significance level. Therefore, holding more cash is beneficial for firms to increase operating performance in frontier/emerging countries with extreme level of corruption, but from the previous analysis, firms in this interval reduce cash holdings to avoid risk of expropriation by corrupt politicians. In the view of firms, we think that firms want to avoid the expropriation even

though it suffered a decline in operating performance.

6. Conclusion

Cultural factors have a significant impact on the firm's financial policies and operations, and are necessary to account for explaining firm behavior and performance that are not explained by firm-level variables. This study investigated political corruption, which has a more direct impact among cultural factors, especially corporate financial policies and operating activities. Specifically, we empirically examines the two confront hypothesis. First hypothesis is expropriation shielding hypothesis, which is proposed by Stulz (2005) and several empirical studies. This hypothesis suggests that firms reduce their cash holdings to prevent the risk of expropriation from political corruption. Second hypothesis is preoccupancy hypothesis, which is proposed by Huntington(1968). This hypothesis suggest that firm hold more cash to have an advantages by preoccupancy of government projects and loans easily by corrupt politician.

This paper expand the empirically studies that examine the effect political corruption on corporate cash holdings from a country level analysis to international study, and we find cubic function relation between political corruption and corporate cash holdings that is not found in previous studies. Specifically, we find that there exists U-shape in developed countries, and inverted-U-shape in frontier/emerging countries even if partially control the endogeneity problems.

This suggests that the two hypotheses that were confronted in previous researches are not actually confronted but can be explained by both the level of economic development and the level of corruption in the country. This study use multinational data from 97 countries and find that the two hypotheses of the previous studies are supported differently by the level of economic development and level of corruption. In this way, our study contributes to the literature on cultural factors and corporate financial policies.

There are some limitations of this paper from these reasons. The corruption index used as proxy of political corruption is based on the survey data even if the index is continuously collected and integrated 5 surveys to reduce perception bias. Although we partially control the endogeneity problem through 2SLS by using instrument variable, we are

not able to control the endogeneity problem perfectly because of the limitation of our model. Moreover, our sample data is an unbalanced panel because firm level data such as stock price is not perfectly announced, so the sample of our analysis is decreased from 600,961 to 253,072 when we exclude observations with missing values.

Table1. Descriptive Statistics

This table provides summary statistics for the variables in Normal Cash Regression and ROA Regression from 1995 to 2015. The definitions of each variable are shown in Appendix A. All variables are winsorized at the 1% level.

Panel A. Normal Cash Regression

Variables	N	Mean	p25	p50	p75	SD
Ln(Cash/TA)	253,072	-2.49216	-3.27133	-2.28344	-1.51429	1.353617
TI_Corruption	253,072	3.467104	2.2	2.7	5.2	1.965688
Ln(TA)	253,072	6.76499	4.620414	6.718479	8.764644	2.946398
NWC/TA	253,072	0.16321	0.0158	0.157	0.329	0.298089
FCF/TA	253,072	0.007504	0.004695	0.055958	0.10128	0.255171
CPX/TA	253,072	0.054228	0.0139	0.0338	0.0699	0.06216
Leverage	253,072	0.524176	0.324	0.504	0.669	0.322471
STDEV_FCF/TA	253,072	11.77594	0.936892	3.077747	11.15181	22.02033
RD/TA	253,072	0.021488	0	0	0.00886	0.061175
MTB/TA	253,072	6.81E+13	1.84E+11	8.19E+11	3.06E+12	4.53E+14
Dividend Dummy	253,072	0.706503	0	1	1	0.455365
Stock Traded Value/GDP	253,072	111.7041	45.01248	87.08185	155.6272	86.73153
Ln(GDP per capita)	253,072	9.859364	9.129443	10.46372	10.69892	1.231852
Real Interest Rate	253,072	3.792266	1.874019	3.205684	4.822991	4.81351

Panel B. ROA Regression

Variables	N	Mean	p25	p50	p75	SD
ROA(t)	384,842	-0.05159	-0.0286	0.023913	0.063016	0.343499
Cash/NA(t-1)	384,842	0.345394	0.034406	0.109571	0.289714	0.841523
TI_Corruption(t-1)	384,842	3.47151	2.224916	2.7	5	1.968953
Ln(NA)	384,842	6.38984	4.265057	6.378436	8.383526	3.014848
PPE/NA	384,842	0.540289	0.209894	0.475597	0.806493	0.397013
ROA(t-1)	384,842	-0.04478	-0.025	0.025198	0.065269	0.321767

Table 2. Sample Distribution

This table provides sample distribution in our multinational samples from 1995 to 2015. Panel A shows the distribution by countries, Panel B shows the distribution by industries, and Panel C shows the distribution by years.

Panel A. Country Distribution

Country	Frequency	Percent	Cum.	# of unique firm	Country	Frequency	Percent	Cum.	# of unique firm
Argentina	764	0.3	0.3	16	Mexico	1,073	0.41	59.44	25
Australia	13,205	5.11	5.4	392	Namibia	29	0.01	63.08	1
Austria	78	0.03	5.43	8	Netherlands	1,712	0.66	63.96	53
Bahrain	94	0.04	6	10	New Zealand	990	0.38	64.74	19
Bangladesh	389	0.15	5.89	23	Nigeria	575	0.22	63.3	14
Belgium	796	0.31	5.74	34	Norway	1,031	0.4	64.36	56
Botswana	1	0	7.06	1	Oman	421	0.16	64.9	6
Brazil	2,756	1.07	7.06	63	Panama	48	0.02	64.92	4
Bulgaria	184	0.07	5.96	5	Papua New Guinea	48	0.02	65.85	6
Canada	18,470	7.14	14.2	683	Peru	671	0.26	65.18	18
Chile	1,526	0.59	15.74	39	Philippines	1,673	0.65	65.83	42
China	18,831	7.28	23.02	229	Poland	610	0.24	66.08	53
Colombia	187	0.07	23.12	4	Portugal	63	0.02	66.11	11
Cotedivoire	59	0.02	23.05	8	Qatar	114	0.04	66.15	#N/A
Croatia	360	0.14	32.47	12	Republic of Korea	8,032	3.11	58.5	626
Cyprus	132	0.05	23.17	28	Republic of South Africa	2,667	1.03	99.98	104
Czech	150	0.06	23.23	15	Republic of Venezuela	60	0.02	98.59	6
Denmark	381	0.15	24.11	23	Russia	1,331	0.51	66.67	28
Ecuador	2	0	24.11	#N/A	Singapore	5,583	2.16	68.82	136
Egypt	459	0.18	24.29	6	Slovakia	54	0.02	68.85	9
Estonia	28	0.01	24.47	4	Slovenia	143	0.06	68.9	8
Finland	559	0.22	24.68	27	Spain	424	0.16	24.45	26
France	2,721	1.05	25.73	188	Sri Lanka	1,022	0.4	58.99	110
Germany	1,908	0.74	23.97	126	Sweden	1,009	0.39	69.29	59
Greece	577	0.22	31.71	60	Switzerland	2,451	0.95	15.15	48
Hong Kong	1,608	0.62	32.33	32	Thailand	4,594	1.78	71.07	122
Hungary	173	0.07	32.54	6	Uganda	2	0	71.07	#N/A
Iceland	14	0.01	39.74	#N/A	Ukraine	38	0.01	71.08	#N/A
India	15,644	6.05	39.55	246	United Kingdom	14,880	5.75	31.49	628
Indonesia	2,489	0.96	33.5	78	United States of America	71,093	27.49	98.57	306
Ireland	471	0.18	39.73	15	Vietnam	915	0.35	98.95	34
Israel	2,877	1.11	40.85	48	Zambia	36	0.01	99.99	2
Italy	2,433	0.94	41.79	63	Zimbabwe	18	0.01	100	9
Jamaica	45	0.02	41.81	5					
Japan	34,134	13.2	55.32	1034					
Jordan	819	0.32	42.12	23					
Kenya	177	0.07	55.39	12					
Kuwait	254	0.1	58.59	24					
Lebanon	10	0	58.6	2					
Lithuania	22	0.01	59	1					
Luxembourg	19	0.01	59.01	8					
Malaysia	9,150	3.54	63.06	286	**Total**	**258,631**	**100**		
Malta	41	0.02	59.45	4					

Panel B. Industry Distribution

Industry	Freq.	Percent	Cum.	# of unique firm
Agriculture	1,609	0.62	0.62	36
Aircraft	852	0.33	0.95	13
Alcoholic Beverages	2,015	0.78	1.73	62
Apparel	4,496	1.74	3.47	129
Automobiles and Trucks	5,550	2.15	5.61	146
Banking	450	0.17	5.79	4
Business Services	26,682	10.32	16.11	641
Business Supplies	2,742	1.06	17.17	84
Candy and Soda	721	0.28	17.44	16
Chemicals	9,730	3.76	21.21	256
Coal	1,113	0.43	21.64	25
Computers	7,752	3	24.63	173
Construction	7,391	2.86	27.49	236
Construction Materials	9,921	3.84	31.33	292
Consumer Goods	5,453	2.11	33.44	153
Defense	246	0.1	33.53	#N/A
Electronical Equipment	17,911	6.93	40.46	447
Entertainment	4,502	1.74	42.2	110
Fabricated Products	806	0.31	42.51	17
Food Products	9,304	3.6	46.11	242
Healthcare	2,916	1.13	47.23	53
Insurance	772	0.3	47.53	14
Machinery	10,636	4.11	51.65	231
Measuring and Control Equip	3,098	1.2	52.84	46
Medical Equipment	4,801	1.86	54.7	79
Personal Services	1,948	0.75	58.46	32
Petroleum and Natural Gas	10,108	3.91	62.37	248
Pharmaceutical Products	10,405	4.02	66.39	217
Precious Metals	4,010	1.55	67.94	173
Printing and Publishing	2,272	0.88	68.82	62
Real Estate	898	0.35	69.17	11
Recreational Products	2,462	0.95	70.12	66
Restaurant, Hotel, Motel	5,327	2.06	72.18	143
Retail	12,115	4.68	76.87	248
Rubber and Plastic Products	3,415	1.32	78.19	112
Shipbuilding, Railroad Eq	659	0.25	78.44	21
Shipping Containers	693	0.27	78.71	26
Steel Works, Etc.	7,685	2.97	81.68	221
Telecommunications	5,985	2.31	83.99	118
Textiles	4,042	1.56	85.56	98
Tobacco Products	363	0.14	85.7	13
Trading	2,303	0.89	86.59	30
Transportation	9,728	3.76	90.35	255
Utilities	9,372	3.62	93.97	201
Wholesale	12,567	4.86	98.83	289
miscellaneous	3,020	1.17	100	100
Total	**258,631**	**100**		

Panel C. Year Distribution

Year	Frequency	Percent	Cum.
1996	2,496	0.97	0.97
1997	3,597	1.39	2.36
1998	9,904	3.83	6.19
1999	11,859	4.59	10.77
2000	12,647	4.89	15.66
2001	13,859	5.36	21.02
2002	14,211	5.49	26.51
2003	13,837	5.35	31.86
2004	14,611	5.65	37.51
2005	14,789	5.72	43.23
2006	15,262	5.9	49.13
2007	15,364	5.94	55.07
2008	14,878	5.75	60.83
2009	14,956	5.78	66.61
2010	14,917	5.77	72.38
2011	14,796	5.72	78.1
2012	15,531	6.01	84.1
2013	15,423	5.96	90.07
2014	14,894	5.76	95.82
2015	10,800	4.18	100
Total	**258,631**	**100**	

Table 4. Pearson's Correlation Table

This table shows the correlation coefficients of variables in our analysis. All variables are winsorized at the 1% level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Ln(Cash/TA)	TI_Corruption	Ln(TA)	NWC/TA	FCF/TA	CPX/TA	Leverage	STDEV_FCF/TA	RD/TA	MTB	Dividend Dummy	Stock Traded Value/GDP	Ln(GDP per capita)	Real Interest Rate	Legal Origin (UK)	Legal Origin (FR)	Legal Origin(GE)
Ln(Cash/TA)	1																
TI_Corruption	0.00656***	1															
Ln(TA)	-0.0525***	0.189***	1														
NWC/TA	0.452***	-0.0284***	-0.0546***	1													
FCF/TA	-0.0839***	0.0820***	0.350***	0.193***	1												
CPX/TA	-0.0763***	-0.0157***	-0.0240***	-0.103***	0.0407***	1											
Leverage	-0.252***	-0.00650**	0.0289***	-0.655***	-0.240***	-0.0552***	1										
STDEV_FCF/TA	0.0271***	-0.0320***	-0.0558***	-0.0322***	-0.0607***	0.0512***	-0.00945***	1									
RD/TA	0.265***	-0.109***	-0.224***	0.184***	-0.303***	-0.0895***	-0.0239***	0.0271***	1								
MTB	0.00718***	0.108***	-0.130***	0.00583**	-0.0321***	-0.00626**	-0.0146***	0.00189	-0.00580**	1							
Dividend Dummy	-0.0598***	0.277***	0.413***	-0.0295***	0.249***	-0.0261***	-0.0349***	-0.0667***	-0.266***	0.0641***	1						
Stock Traded Value/GDP	0.00539**	-0.352***	-0.189***	0.0484***	-0.0854***	-0.0204***	0.0532***	0.0338***	0.179***	-0.0698***	-0.345***	1					
Ln(GDP per capita)	0.0122***	-0.862***	-0.148***	0.0311***	-0.0808***	-0.0195***	0.0235***	0.0400***	0.131***	-0.0799***	-0.277***	0.457***	1				
Real Interest Rate	-0.0201***	0.128***	0.00803***	-0.00227	0.0138***	0.00830***	0.00949***	-0.0279***	-0.00357	0.0214***	0.0128***	-0.0842***	-0.148***	1			
Legal Origin(UK)	-0.0347***	-0.323***	-0.303***	0.0439***	-0.104***	0.0419***	0.00495*	0.0513***	0.143***	-0.154***	-0.340***	0.332***	0.155***	-0.0679***	1		
Legal Origin(FR)	-0.00042	0.310***	0.0868***	-0.0110***	0.0484***	-0.00970***	-0.00285	-0.0105***	-0.0541***	0.102***	0.122***	-0.293***	-0.210***	0.256***	-0.425***	1	1
Legal Origin(GE)	0.0378***	0.182***	0.273***	-0.0406***	0.0790***	-0.0397***	-0.00427*	-0.0473***	-0.117***	0.103***	0.285***	-0.156***	-0.0445***	-0.0945***	-0.778***	0.196***	1

Table 3. OLS Regression results for the effect of political corruption on corporate cash holdings (1): The whole samples

This table examines the effect of political corruption on corporate cash holdings in the whole samples. The dependent variable is the natural logarithm of cash and cash equivalent by total assets. Details on variables are provided in Appendix A. All variables are winsorized at the 1% level. VIFs of all variables are below 10. The ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Ln(Cash/TA)	**(1) Pooled**	**(2) Pooled**	**(3) Pooled**	**(4) Pooled**	**(5) Pooled**	**(6) RE**	**(7) FE**	**(8) FE**
TI Corruption	-0.194***	-0.330***	-0.399***	-0.309***	-0.502***	-0.397***	-0.353***	-0.130***
	(-16.23)	(-17.67)	(-33.06)	(-22.79)	(-29.23)	(-22.74)	(-20.66)	(-3.631)
TI Corruption^2	0.0720***	0.109***	0.126***	0.0918***	0.136***	0.107***	0.0950***	0.0586***
	(22.20)	(21.00)	(38.16)	(24.58)	(28.93)	(22.24)	(20.27)	(6.016)
TI Corruption^3	-0.00717***	-0.00957***	-0.0109***	-0.00735***	-0.00986***	-0.00808***	-0.00726***	-0.00506***
	(-27.04)	(-22.05)	(-40.44)	(-23.85)	(-26.06)	(-21.11)	(-19.46)	(-6.744)
Ln(TA)		0.0362***	0.0283***	0.0248***	0.0147***	0.0128***	0.0271***	0.0239***
		(33.63)	(38.13)	(29.57)	(15.66)	(13.58)	(28.95)	(25.04)
NWC/TA		2.053***	2.111***	2.201***	2.193***	2.199***	2.212***	2.234***
		(158.2)	(234.1)	(219.3)	(203.2)	(204.3)	(203.6)	(206.5)
FCF/TA		-0.571***	-0.781***	-0.737***	-0.717***	-0.700***	-0.707***	-0.694***
		(-50.00)	(-85.30)	(-73.47)	(-68.19)	(-66.60)	(-68.10)	(-67.19)
CPX/TA		-0.976***	-0.0769**	-0.143***	-0.121***	-0.0505	0.189***	0.272***
		(-18.08)	(-2.486)	(-4.040)	(-3.176)	(-1.327)	(4.838)	(6.993)
Leverage		-0.00438	0.0449***	0.138***	0.163***	0.182***	0.235***	0.253***
		(-0.388)	(5.572)	(15.11)	(16.59)	(18.54)	(23.94)	(25.87)
Industry sigma		0.00341***	0.00278***	0.00220***	0.00216***	0.00186***	-0.000555***	-0.000579***
		(23.93)	(30.65)	(22.73)	(20.55)	(17.48)	(-4.105)	(-4.312)
R&D/TA		1.988***	3.558***	3.351***	3.475***	3.504***	2.828***	2.950***
		(75.39)	(100.9)	(83.88)	(82.52)	(83.46)	(63.52)	(66.50)
MTB				1.55e-17***	-1.82e-17 ***	-2.22e-17***	-3.12e-17***	-3.51e-17***
				(3.188)	(-3.452)	(-4.224)	(-6.116)	(-6.633)
Dividend dummy		-0.0889***	-0.00778	-0.00689	-0.0966***	-0.129***	-0.0709***	-0.177***
		(-12.89)	(-1.562)	(-1.240)	(-15.71)	(-20.73)	(-11.52)	(-26.96)
Stock traded/GDP					-0.000412***	-0.000608***	-0.000640***	-0.000164***
					(-12.18)	(-16.73)	(-17.80)	(-2.691)
Ln(GDP per capita)					0.0628***	0.0151***	0.000593	-0.0894***
					(12.36)	(2.770)	(0.111)	(-7.160)

Real Interest Rate					-0.00622***	-0.00185***	-0.000940*	-0.00139
					(-12.30)	(-3.541)	(-1.845)	(-1.607)
Legal Origin (UK)					0.0433*	-0.0499**	-0.0734***	
					(1.870)	(-2.143)	(-3.244)	
Legal Origin (FR)					0.157***	0.0852***	0.0643***	
					(6.305)	(3.414)	(2.652)	
Legal Origin (GE)					0.299***	0.223***	0.213***	
					(12.56)	(9.368)	(9.167)	
Constant	-2.389***	-2.742***	-2.877***	-2.909***	-3.289***	-2.771***	-3.112***	-2.832***
	(-181.0)	(-113.4)	(-186.5)	(-170.0)	(-57.09)	(-44.61)	(-46.44)	(-21.26
Year effect						Random	Fixed	Fixed
FF48 Industry effect						Random	Fixed	Fixed
Country effect								Fixed
Number of observations	535,392	150,834	392,809	296,557	253,072	253,072	253,072	253,072
Adjusted R^2	0.0032	0.323	0.245	0.259	0.268	0.268	0.317	0.326

Table 4. OLS Regression results for the effect of political corruption on corporate cash holdings (2): Developed / Emerging countries sample

This table examines the effect of political corruption on corporate cash holdings in developed countries and emerging countries. We also separate our samples into three intervals by using inflections from Model (1) and (3). The dependent variable is the natural logarithm of cash and cash equivalent by total assets. Details on variables are provided in Appendix A. All variables are winsorized at the 1% level. VIFs of all variables are below 10. The ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Ln(Cash/TA)	**(1)Developed**	**(2)Developed**	**(3)Emerging**	**(4)Emerging**	**(5)Low**	**(6)Moderate**	**(7)High**
TI Corruption	-0.166***	-0.00803	0.150***	0.219***	-0.108***	0.0437***	-0.0214*
	(-11.75)	(-0.300)	(4.191)	(2.845)	(-17.14)	(2.978)	(-1.900)
TI Corruption^2	0.0282***	0.0109**	-0.0145***	-0.0150**			
	(10.63)	(2.260)	(-4.415)	(-2.281)			
Ln(TA)	0.0187***	0.0138***	0.0439***	0.0474***	0.0132***	0.0457***	0.0481***
	(15.74)	(11.61)	(25.95)	(27.39)	(10.31)	(20.56)	(26.91)
NWC/TA	2.209***	2.224***	2.229***	2.240***	2.216***	2.316***	2.203***
	(170.6)	(172.5)	(102.6)	(103.3)	(163.3)	(74.73)	(98.53)
FCF/TA	-0.706***	-0.687***	-0.527***	-0.517***	-0.690***	-0.665***	-0.507***
	(-61.50)	(-60.18)	(-18.21)	(-17.91)	(-58.22)	(-17.06)	(-16.86)
CPX/TA	0.177***	0.243***	0.291***	0.294***	0.247***	-0.0626	0.267***
	(3.652)	(5.038)	(3.995)	(4.047)	(4.852)	(-0.591)	(3.683)
Leverage	0.258***	0.269***	0.266***	0.274***	0.269***	0.309***	0.148***
	(22.68)	(23.74)	(12.48)	(12.86)	(22.69)	(10.39)	(6.751)
Industry sigma	-0.000695***	-0.000702***	-0.000218	-0.000201	-0.000786***	0.000232	-0.000628**
	(-4.246)	(-4.313)	(-0.850)	(-0.785)	(-4.602)	(0.610)	(-2.359)
R&D/TA	2.742***	2.853***	2.219***	2.209***	2.719***	2.528***	2.696***
	(55.96)	(58.47)	(15.93)	(15.89)	(53.74)	(14.90)	(19.12)
MTB	-4.63e-17***	-6.38e-17***	-9.64e-18	5.69e-18	-5.21e-17***	2.24e-18	8.33e-18
	(-4.928)	(-6.808)	(-1.571)	(0.876)	(-4.593)	(0.253)	(1.163)
Dividend dummy	-0.0718***	-0.191***	0.0907***	0.0853***	-0.0762***	0.0191	0.0255
	(-10.26)	(-25.66)	(5.771)	(5.431)	(-10.27)	(1.096)	(1.486)
Stock traded/GDP	-0.000741***	-0.000233***	0.000247**	0.000139	-0.000420***	-0.000238	-9.23e-05
	(-16.13)	(-2.621)	(2.573)	(1.187)	(-8.091)	(-1.246)	(-0.921)
Ln(GDP per capita)	-0.210***	-0.0310	-0.0664***	-0.142***	-0.189***	0.0628***	0.00450
	(-12.22)	(-1.210)	(-8.495)	(-5.728)	(-11.73)	(4.417)	(0.596)
Real Interest Rate	0.000450	-0.0128***	4.31e-05	-0.000915	0.00662***	0.000792	-0.000353
	(0.274)	(-5.908)	(0.0793)	(-0.923)	(3.827)	(0.413)	(-0.616)

Legal Origin (UK)	-0.168*** (-7.241)		-0.170*** (-14.74)		-0.179*** (-7.815)	0.0566** (2.391)	-0.333*** (-27.03)
Legal Origin (FR)	-0.0654** (-2.359)		-0.128*** (-8.728)		-0.0722** (-2.327)	-0.0411** (-2.106)	-0.195*** (-12.49)
Legal Origin (GE)	0.108*** (4.334)				0.119*** (4.779)		
Constant	-0.870*** (-4.610)	-3.303*** (-12.34)	-3.510*** (-27.49)	-3.653*** (-14.27)	-1.127*** (-6.304)	-4.545*** (-22.40)	-3.261*** (-24.54)
Year effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
FF48 Industry effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Country effect		Fixed		Fixed			
Number of observations	174,017	174,017	62,990	62,990	157,139	32,428	63,505
Adjusted R^2	0.332	0.346	0.279	0.289	0.338	0.287	0.284

Figure 2 Fitted Plots Graph (Total sample)

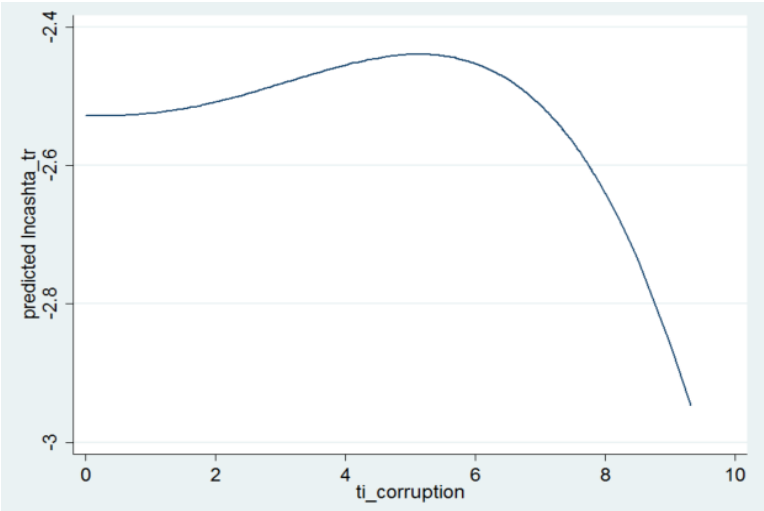

Figure 1 Fitted Plots Graph with 95% CI (Total sample)

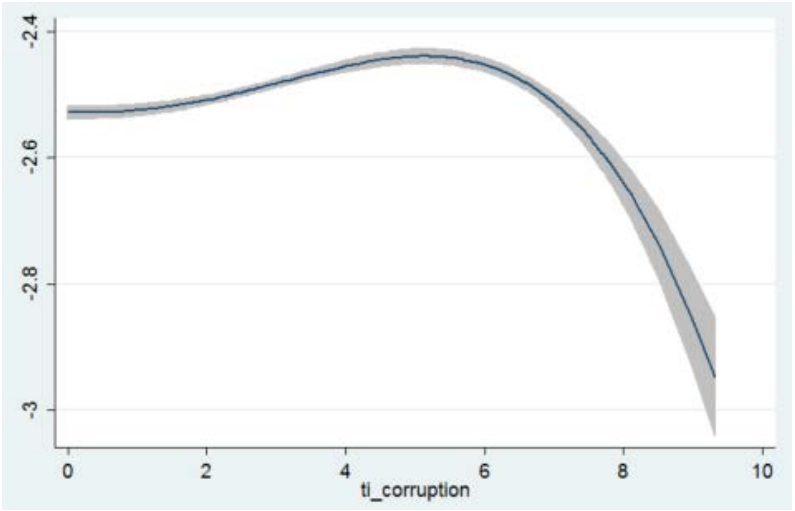

Figure 3 Fitted Plots Graph (Corruption < 5)

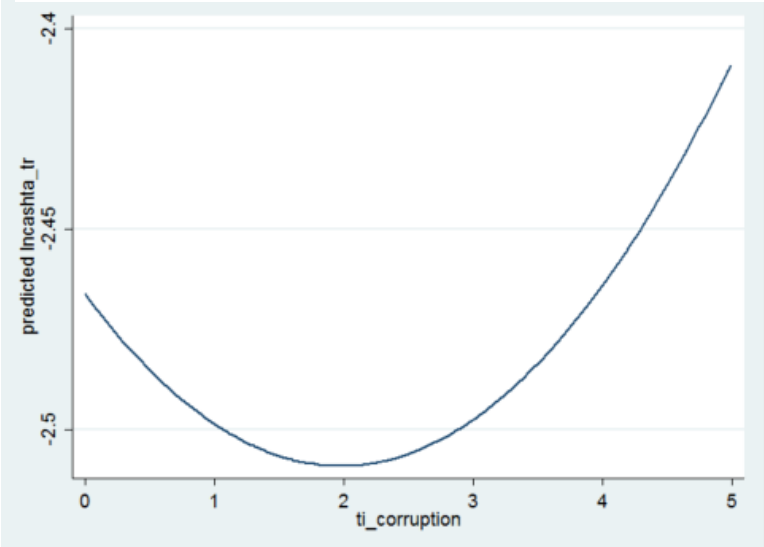

Figure 4 Fitted Plots Graph (Corruption > 5)

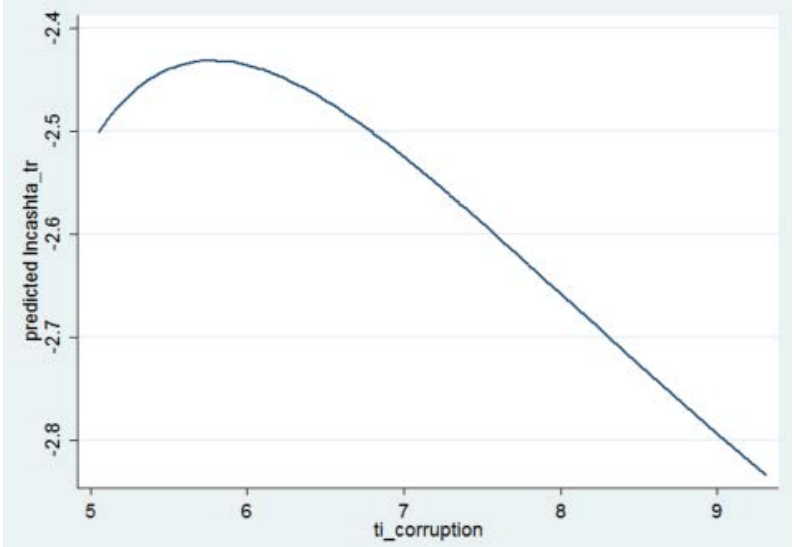

Table 5. 2 Stages Least Squares Regression results for the effect of political corruption on corporate cash holdings

The dependent variable is the natural logarithm of cash and cash equivalent by total assets. We used a two-stage model to solve the endogeneity issue, and the instrument variable is the urban population density in the largest city. All variables are winsorized at the 1% level. VIFs of all variables are below 10. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Ln(Cash/TA)	**(1) 1st stage TI Corruption**	**(2) 2nd stage Ln(Cash/TA)**	**(3) 2nd stage Ln(Cash/TA)**	**(4) 2nd stage Ln(Cash/TA)**
TI Corruption (Estimated)		-0.939***	-0.553***	-1.106***
		(-35.35)	(-19.16)	(-4.337)
TI Corruption^2		0.191***	0.0801***	0.102***
		(30.06)	(11.31)	(11.52)
TI Corruption^3		-0.0138***	-0.00592***	-0.00600***
		(-31.17)	(-12.16)	(-9.899)
Largest City Population Ratio	-0.0134***			
	(-114.2)			
Ln(TA)	0.0575***	0.0346***	0.0399***	0.0623***
	(76.75)	(32.44)	(37.33)	(4.213)
NWC/TA	-0.00725	2.184***	2.216***	2.231***
	(-0.837)	(201.6)	(204.0)	(203.3)
FCF/TA	-0.107***	-0.748***	-0.726***	-0.760***
	(-12.63)	(-70.65)	(-69.79)	(-25.97)
CPX/TA	-0.989***	-0.385***	-0.0374	-0.403
	(-32.38)	(-9.779)	(-0.932)	(-1.572)
Leverage	0.00600	0.160***	0.244***	0.259***
	(0.759)	(16.30)	(24.82)	(26.15)
Industry sigma	0.000591***	0.00214***	-0.000422***	-0.000200
	(6.905)	(20.18)	(-3.121)	(-0.994)
R&D/TA	0.271***	3.517***	2.918***	3.143***
	(7.984)	(82.85)	(65.27)	(37.96)
MTB	2.40e-16***	6.80e-17***	2.50e-17***	1.16e-16*
	(56.94)	(11.83)	(4.442)	(1.869)
Dividend dummy	0.235***	-0.00700	-0.0210***	-0.0136
	(47.75)	(-1.117)	(-3.323)	(-0.224)

Stock traded/GDP	0.00105*** (40.23)	-0.000427*** (-11.58)	-0.000332*** (-8.352)	0.000665** (2.400)
Ln(GDP per capita)	-1.332*** (-720.5)	-0.212*** (-12.99)	-0.343*** (-20.91)	-0.823** (-2.383)
Real Interest Rate	0.00271*** (6.844)	-0.00553*** (-11.31)	0.000193 (0.381)	-0.00124 (-1.055)
Legal Origin (UK)			-0.240*** (-11.24)	
Legal Origin (FR)			-0.119*** (-5.281)	
Legal Origin (GE)			0.0392* (1.827)	
Constant	16.19*** (835.8)	0.388** (2.119)	1.131*** (6.079)	6.820* (1.657)
Spearman's Rho		0.0589***	0.0484***	0.001
Year effect			Fixed	Fixed
FF48 Industry effect			Fixed	Fixed
Country effect				Fixed
Number of observations	258,089	252,534	252,534	252,534
Adjusted R^2	0.766	0.264	0.313	0.326

Table 6. 2 Stages Least Squares Regression results for the effect of political corruption on corporate cash holdings

This table shows the result of Propensity Score Matching(PSM). In logit regression in Panel A, we use 4 dummy variables as dependent variables. Pooled 50% Dummy variable has value 1 if corruption index is higher than the median of total sample, otherwise 0. Pooled 25% Dummy variable has value 1 if corruption index is higher than 25%, but has 0 when corruption index is lower than 75%. Emerging 25% Dummy variable has value 1 if corruption index is higher than 25% in developed countries sample, but has 0 when corruption index is lower than 75% in developed countries sample. Developed 25% Dummy variable has value 1 if corruption index is higher than 25% in frontier/emerging countries sample, but has 0 when corruption index is lower than 75% in frontier/emerging countries sample. In Panel B, the dependent variable is the natural logarithm of cash and cash equivalent by total assets. We used propensity score matching to solve the endogeneity issue. Treatment group and control group are matched by firm size (Ln(TA)) in same year and same industry. All variables are winsorized at the 1% level. VIFs of all variables are below 10. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Logit Regression

Ln(Cash/TA)	**(1) Pooled 50% Dummy**	**(2) Pooled 25% Dummy**	**(3) Emerging 25% Dummy**	**(4) Developed 25% Dummy**
Ln(TA)	0.0987*** (106.57)	0.0873*** (68.03)	-0.0409*** (-15.36)	0.0659*** (44.16)
Constant	-0.5863*** (-90.09)	-0.5424*** (-59.71)	0.2895*** (14.21)	-0.4199*** (-39.52)
Number of observations	543,943	285,639	63,903	190,253
Adjusted R^2	0.0155	0.012	0.0027	0.0075

Panel B. Propensity Score matching estimator

	Firm Year Observation	**Treated**	**Controls**	**Difference**	**t-stat**
Pooled 50% Dummy	526,497	-2.5411	-2.6340	0.0929***	17.34
Pooled 25% Dummy	275,851	-2.6088	-2.5995	0.0072	-1.29
Emerging 25% Dummy	62,613	-2.6053	-2.4665	-0.1388***	-9.71
Developed 25% Dummy	182,281	-2.4845	-2.5197	0.0087***	4.07

Table 7. OLS Regression results for the effect of political corruption on corporate cash holdings operating performance when using cash

This table shows the result of ROA model. We examine the effect of political corruption on the operating performance when using cash. The dependent variable is ROA that is operating income by total assets. We separate our sample into three intervals. First interval contains samples with corruption index lower than 2.94, second interval contains samples with corruption index from 2.94 to 5.17, and third interval contains samples with corruption index more than 5.17. We also separate second interval into Developed and Emerging from Model (3) to (6). All variables are winsorized at the 1% level. VIFs of all variables are below 10. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

ROA (Operating income/TA)	**(1) Developed Low**	**(2) Developed Low**	**(3) Developed High**	**(4) Developed High**	**(5) Emerging Low**	**(6) Emerging Low**	**(7) Emerging High**	**(8) Emerging High**
Cash/NA_{t-1}	-0.00971**	-0.00996**	-0.0754***	-0.0746***	-0.0321***	-0.0315***	-0.0845***	-0.0855***
	(-2.365)	(-2.423)	(-15.17)	(-14.94)	(-5.583)	(-5.463)	(-8.376)	(-8.433)
$\text{TI Corruption}_{t-1}$	-0.00132	-0.00355	-0.00226*	-0.00801***	0.00246***	0.00200	-0.00151	0.000996
	(-0.496)	(-0.738)	(-1.682)	(-2.628)	(3.640)	(0.660)	(-1.418)	(0.333)
Cash/NA_{t-1} x $\text{TI Corruption}_{t-1}$	-0.0116***	-0.0114***	0.0174***	0.0171***	0.00301***	0.00292***	0.0103***	0.0105***
	(-3.626)	(-3.551)	(10.46)	(10.28)	(2.875)	(2.787)	(6.916)	(7.003)
Ln(NA)	0.0154***	0.0152***	0.0120***	0.0124***	0.00962***	0.00989***	0.0103***	0.0105***
	(54.00)	(51.47)	(44.24)	(44.26)	(33.15)	(33.64)	(30.96)	(31.30)
PPE/NA	-0.0263***	-0.0254***	-0.0275***	-0.0268***	-0.0144***	-0.0142***	-0.0134***	-0.0124***
	(-11.80)	(-11.35)	(-13.05)	(-12.68)	(-6.004)	(-5.924)	(-5.170)	(-4.758)
ROA_{t-1}	0.508***	0.508***	0.651***	0.650***	0.465***	0.462***	0.466***	0.462***
	(154.9)	(154.6)	(222.8)	(221.8)	(104.1)	(103.2)	(93.10)	(91.90)
Constant	-0.0885***	-0.0695***	-0.0710***	-0.0577***	-0.0834***	-0.0648***	-0.0401***	-0.0431*
	(-7.996)	(-5.462)	(-7.419)	(-4.256)	(-7.646)	(-3.184)	(-3.092)	(-1.721)
Year effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
FF48 Industry effect	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Country effet		Fixed		Fixed		Fixed		Fixed
Number of observations	74,405	74,405	74,069	74,069	39,588	39,588	31,956	31,956
Adjusted R^2	0.405	0.411	0.526	0.532	0.316	0.321	0.319	0.324

Appendix A. Definitions of Variables

Variable	Definition
Ln(Cash/TA)	The natural logarithm of cash and cash equivalent over total assets
TI_Corruption	Corruption index by Transparency International. We adjust the score by subtracting from 10 for interpretation
Ln(TA)	The natural logarithm of total assets
NWC/TA	(Current assets – Current liabilities)/Total assets
FCF/TA	Free cash flows/Total assets
CPX/TA	Capital expenditure/Total assets
Leverage	Long term liabilities/Total equity
STDEV_FCF/TA	Standard deviation of FCF/TA in same year and same industry
RD/TA	Research and Development expenditure/Total assets
MTB	(Market capitalization + Total liabilities)/Total assets
Dividend Dummy	Dummy variable has value 1 if there was cash dividend of common shares, and otherwise 0
Stock Traded Value/GDP	Value of Stocks traded in a country over gross domestic product
Ln(GDP per capita)	The natural logarithm of per capita GDP
Real Interest Rate	Real interest rate of Treasury bills
Legal Origin(UK)	Dummy variable has value 1 if a country follows UK legal origin, otherwise 0
Legal Origin(FR)	Dummy variable has value 1 if a country follows French legal origin, otherwise 0
Legal Origin(GE)	Dummy variable has value 1 if a country follows German legal origin, otherwise 0
ROA	Operating income/Total assets
Ln(NA)	The natural logarithm of (Total assets – cash and cash equivalent)
PPE/NA	Property, Plant, and Equipment over (Total assets – cash and cash equivalent)

Reference

Ades, A. and R. Di Tella (1999). "Rents, competition, and corruption." The American Economic Review 89(4): 982-993.

Bai, J., et al. "The impact of corruption on taxation and growth: Evidence from the US."

Bliss, C. and R. D. Tella (1997). "Does competition kill corruption?" Journal of political economy 105(5): 1001-1023.

Boubakri, N., et al. (2016). "National culture and privatization: The relationship between collectivism and residual state ownership." Journal of International Business Studies 47(2): 170-190.

Bronars, S. G. and D. R. Deere (1991). "The threat of unionization, the use of debt, and the preservation of shareholder wealth." The quarterly journal of economics 106(1): 231-254.

Campante, F. R. (2014). "Isolated capital cities, accountability, and corruption: Evidence from US states." The American Economic Review 104(8): 2456-2481.

Chang, K. and A. Noorbakhsh (2009). "Does national culture affect international corporate cash holdings?" Journal of Multinational Financial Management 19(5): 323-342.

Chen, Y., et al. (2015). "National culture and corporate cash holdings around the world." Journal of Banking & Finance 50: 1-18.

Choi, J. P. and M. Thum (2005). "Corruption and the shadow economy." International Economic Review 46(3): 817-836.

Chui, A. C., et al. (2002). "The determination of capital structure: is national culture a missing piece to the puzzle?" Journal of International Business Studies 33(1): 99-127.

Chui, A. C., et al. (2010). "Individualism and momentum around the world." The journal of Finance 65(1): 361-392.

Claessens, S., et al. (2008). "Political connections and preferential access to finance: The role of campaign contributions." Journal of Financial Economics 88(3): 554-580.

DeBacker, J., et al. (2015). "Importing corruption culture from overseas: Evidence from corporate tax evasion in the United States." Journal of Financial Economics 117(1): 122-138.

Dittmar, A. and J. Mahrt-Smith (2007). "Corporate governance and the value of cash holdings." Journal of Financial Economics 83(3): 599-634.

Dittmar, A., et al. (2003). "International corporate governance and corporate cash holdings." Journal of Financial and Quantitative analysis 38(1): 111-133.

Doidge, C., et al. (2007). "Why do countries matter so much for corporate governance?" Journal of Financial Economics 86(1): 1-39.

Duchin, R. and D. Sosyura (2012). "The politics of government investment." Journal of Financial Economics 106(1): 24-48.

Dudley, E. and N. Zhang (2016). "Trust and corporate cash holdings." Journal of Corporate Finance 41: 363-387.

Eun, C. S., et al. (2015). "Culture and R 2." Journal of Financial Economics 115(2): 283-303.

Faccio, M., et al. (2006). "Political connections and corporate bailouts." The journal of Finance 61(6): 2597-2635.

Fernandes, N. and H. Gonenc (2016). "Multinationals and cash holdings." Journal of Corporate Finance 39: 139-154.

Fisman, R. (2001). "Estimating the value of political connections." The American Economic Review 91(4): 1095-1102.

Friedman, E., et al. (2000). "Dodging the grabbing hand: the determinants of unofficial activity in 69 countries." Journal of public economics 76(3): 459-493.

Goldman, E., et al. (2009). Fraudulent earnings manipulation and its impact on rivals, Working paper, Indiana University and INSEAD.

Griffin, D., et al. (2017). "National culture: The missing country-level determinant of corporate governance." Journal of International Business Studies: 1-23.

Grinblatt, M. and M. Keloharju (2001). "How distance, language, and culture influence stockholdings and trades." The journal of Finance 56(3): 1053-1073.

Guiso, L., et al. (2008). "Social capital as good culture." Journal of the European Economic Association 6(2-3): 295-320.

Hellman, J. S., et al. (2003). "Seize the state, seize the day: state capture and influence in transition economies." Journal of Comparative Economics 31(4): 751-773.

Hofstede, G. (2003). Culture's consequences: Comparing values, behaviors, institutions and organizations across nations, Sage publications.

Huntington, S. P. (1968). "The bases of accommodation." Foreign Affairs 46(4): 642-656.

Johnson, S., et al. (2000). "Why do firms hide? Bribes and unofficial activity after communism." Journal of public economics 76(3): 495-520.

Kalcheva, I. and K. V. Lins (2007). "International evidence on cash holdings and expected managerial agency problems." The Review of Financial Studies 20(4): 1087-1112.

Karolyi, G. A. (2016). "The gravity of culture for finance." Journal of Corporate Finance 41: 610-625.

Klasa, S., et al. (2009). "The strategic use of corporate cash holdings in collective bargaining with labor unions." Journal of Financial Economics 92(3): 421-442.

Leff, N. H. (1964). "Economic development through bureaucratic corruption." American behavioral scientist 8(3): 8-14.

Li, J. and J. R. Harrison (2008). "Corporate governance and national culture: a multi-country study." Corporate Governance: The international journal of business in society 8(5): 607-621.

Liu, X. (2016). "Corruption culture and corporate misconduct." Journal of Financial Economics 122(2): 307-327.

Matsa, D. A. (2010). "Capital structure as a strategic variable: Evidence from collective bargaining." The journal of Finance 65(3): 1197-1232.

Mauro, P. (1995). "Corruption and growth." The quarterly journal of economics 110(3): 681-712.

Mironov, M. (2015). "Should one hire a corrupt CEO in a corrupt country?" Journal of Financial Economics 117(1): 29-42.

Mo, P. H. (2001). "Corruption and economic growth." Journal of Comparative Economics 29(1): 66-79.

Myers, S. C. and R. G. Rajan (1998). "The paradox of liquidity." The quarterly journal of economics 113(3): 733-771.

Opler, T., et al. (1999). "The determinants and implications of corporate cash holdings." Journal of Financial Economics 52(1): 3-46.

Perotti, E. C. and K. E. Spier (1993). "Capital structure as a bargaining tool: The role of leverage in contract renegotiation." The American Economic Review: 1131-1141.

Pinkowitz, L., et al. (2006). "Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis." The journal of Finance 61(6): 2725-2751.

Porta, R. L., et al. (1998). "Law and finance." Journal of political economy 106(6): 1113-1155.

Ramirez, A. and S. Tadesse (2009). "Corporate cash holdings, uncertainty avoidance, and the multinationality of firms." International Business Review 18(4): 387-403.

Shao, L., et al. (2010). "National culture and dividend policy." Journal of International Business Studies 41(8): 1391-1414.

Shao, L., et al. (2013). "National culture and corporate investment." Journal of International Business Studies 44(7): 745-763.

Shleifer, A. and R. W. Vishny (1993). "Corruption." The quarterly journal of economics 108(3): 599-617.

Shleifer, A. and R. W. Vishny (1994). "Politicians and firms." The quarterly journal of economics 109(4): 995-1025.

Smith, J. D. (2016). "US political corruption and firm financial policies." Journal of Financial Economics 121(2): 350-367.

Stulz, R. M. (2005). "The limits of financial globalization." The journal of Finance 60(4): 1595-1638.

Svensson, J. (2003). "Who must pay bribes and how much? Evidence from a cross section of firms." The quarterly journal of economics 118(1): 207-230.

Tanzi, V. (1998). Corruption around the world: Causes, consequences, scope, and cures. Staff Papers, 45(4), 559-594.

Tahoun, A. (2014). "The role of stock ownership by US members of Congress on the market for political favors." Journal of Financial Economics 111(1): 86-110.

Zheng, X., et al. (2013). "Collectivism and corruption in bank lending." Journal of International Business Studies 44(4): 363-390.