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Essays on Political Economy and Finance

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A dissertation submitted in satisfaction of the requirements for the degree of
Doctor of Philosophy in Finance

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ABSTRACT

The thesis aims to explore the impact of political institutions on financial and investment policies. It contains three essays examining various aspects of political economy and its intersection with finance. In the first essay, we study how local political corruption and political uncertainty interact in their impact on corporate cash holdings within the United States. We find robust evidence that firms located in states with higher corruption scores react to increases in local political uncertainty by increasing cash holdings more than those in less corrupt settings. This behavior suggests that firms in more corrupt settings find it expedient to raise cash to facilitate the influence of officials in the face of local political risk. Our findings point to a potential channel through which different jurisdictions experience the entrenchment and persistence of corruption.

Following on from the evidence of political influence in the first essay, in the second essay, we explore a potential channel through which corruption could activate. In particular, the second essay finds that politically connected firms in the United States increase cash holdings and cash savings more than non-connected firms when faced with rising political uncertainty. We argue that connected firms respond in this manner to influence policymakers so as to navigate the uncertainty that could emerge from new policies and to adjust policies in the interest of the firm. To validate this argument we show that the amount of cash savings by connected firms located in more corrupt states when faced with uncertainty is positively associated with firms' political spending on campaign contributions and lobbying expenses.

In the third essay, we investigate the influence of generalized trust on labor regulation. Our findings show that OECD countries with a high level of trust chose to implement less stringent labor dismissal laws, suggesting that trust acts as a substitute for labor laws. We find that in a within-country analysis, trust acts as a substitute for labor laws in countries that are exposed to a low level of corruption whilst trust acts as a complementary for labor laws in countries that are exposed to a greater level of corruption. Furthermore, we validate the substitution effect by showing that trust positively relates to higher foreign direct investment flows. Our findings imply that having strong political institutions that protect the workforce through informal institutions could improve economic outcomes.

DECLARATION

I declare that this thesis is comprised of only my original work toward the PhD. It has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own.

The work presented in Chapter 2 under the title "*Political uncertainty, corruption, and corporate cash holdings"* was submitted to the Journal of Corporate Finance and it is currently under revision at the invitation of the editor. The co-authors are my supervisors, Dr. David Morelli and Dr. Jaideep Oberoi.

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Chapter 1:
Introduction

Political economy in finance explores the consequences of the structure of political institutions and the distribution of political power on the functioning of financial systems. Since Becker and Stigler's (1974) seminal work, economists have recognized that regulators are likely to act in a way to serve the private interest rather than the interest of the public. Hence, the core of political economy and finance is based on the private interest view where policymakers influence business activities through policy changes, regulatory burden, and expropriation of public resources in order to maximize their own interests. Although extensive literature documents the legal theory perspective on economic and financial development (following La Porta et al. 1997), the political theory perspective raises the necessity to examine the impact of political institutions on financial outcomes since politics is the link between laws and financial outcomes (Pagano and Volpin, 2005).

A great deal of previous research into political economy and finance has focused on political connections (Faccio, 2006; Claessens et al., 2008; Bertrand et al., 2014) and political corruption (Fisman and Gatti, 2002; Fisman and Svensson, 2007; Caprio et al., 2013). These studies document empirical evidence of value destruction due to expropriation risk and the firm's ability to navigate this risk through political connections. Zingales (2017) argues that a firm's response to expropriation risk is based on its political power. In particular, he states that there is an equilibrium between the power of the state and the power of the firm. If the state has more power than the firm, the state would expropriate the firm by asking for higher returns from the firm or by confiscating private property. If the firm is more powerful than the state, the firm would influence the state in setting policies. In recent years, there has been an increasing amount of literature in studies based in the United States (US), highlighting lobbying, campaign finance, and explicit use of bribes as mechanisms through which firms influence the state in the regulatory process.

Another aspect of political economy that is less explored is concerned with the role of culture and its influence on political institutions. Cultural values such as morality and trust evolve slowly over time, and Tabellini (2008) posits that these values influence the functioning of current institutions. In a society with a high level of trust, politicians are more likely to act in the interest

of the public and less likely to engage in corrupt practices. At the firm level, Becker and Stigler (1974) state that trust between employer and employee becomes relevant in a more corrupt setting. A relatively small body of literature following Pagano and Volpin (2005) and Perotti and von Thadden (2006) emphasizes the distribution of power in setting stronger regulations for labor in the context of electoral voting and union power. However, there is a lack of evidence on the role of cultural values such as trust in the design of labor laws across countries.

This thesis aims to explore the influence of formal and informal political institutions on firm financial and investment policies by answering three questions in political economy and finance (1) How do firms respond to local political corruption and local political uncertainty? (2) How do politically connected firms influence governments? (3) How does generalized trust substitute formal labor regulation?

1.1 Aims of the thesis and contribution to the literature

The main aim of the first and the second essays is to explore to what extent interventions by governments on firm activities and firms' influence on policymaking impact firms' decision-making. In the first essay (*Political uncertainty, corruption, and corporate cash holdings*), we investigate how US firms in more corrupt environments respond to political uncertainty relative to those in less corrupt environments and find that they hold more cash in the face of greater political uncertainty. We argue it is plausible to conclude that when faced with political uncertainty in a corrupt environment, firms increase their liquid assets in order to ease the process of influence over policymakers. Briefly stated, our argument is as follows. If political uncertainty necessitates raising cash and corruption entails reducing cash, then firms faced with increasing political uncertainty in corrupt environments should be expected to increase cash by a lower amount than firms in less corrupt settings. However, we observe the contrary. We might plausibly conclude that when faced with political uncertainty in a corrupt environment, firms increase their liquid assets in order to ease the process of influence over policymakers.

Through the first essay, we make two key contributions to the literature. Firstly, existing studies explore the individual impact of corruption and uncertainty on cash level, while we examine the joint influence, and document findings in contrast to the previous empirical evidence

on expropriation risk and liquidity. Secondly, to the best of our knowledge, ours is the first study to examine the interaction effect of corruption and uncertainty at a national level. Since most studies in this area are based on the international level, addressing potential institutional factors is a difficult task. By focusing on the US context, we are able to control for institutional factors and also employ an objective measure of corruption as opposed to subjective measures, and a measure of uncertainty that captures the change in political institutions across different tiers of the system as opposed to binary election variables.

In the second essay (*Political connections, uncertainty, and corporate cash holdings),* we document a potential channel through which corruption could activate in the US context. In particular, we study how politically connected firms influence regulators in times high political uncertainty. We examine how politically connected vs non-connected firms respond to national level uncertainty, and we find that connected firms increase cash level and cash savings more than non-connected firms. Since exposure to political risk prompts connected firms to increase political spending to gain information advantage and to influence public officials to adjust policies in the interest of the firm, in order to accommodate this expense, connected firms would increase cash more than non-connected firms. Additional tests linking political spending (campaign contributions and lobbying) and cash savings by firms in more corrupt states relative to non-corrupt states exposed to uncertainty, further support the hypothesis that connected firms increase cash holdings to influence politicians.

The main contribution of the second essay is the use of liquidity channels for political influence. Although previous studies argue that connected firms hoard cash to gain political favors, there is a lack of evidence as to how this comes into effect. By using political uncertainty as an exogenous shock to firm liquidity, we document a possible channel through which connected firms adjust liquidity for political influence. Additionally, we extend the literature surrounding campaign contributions and lobbying activities as mechanisms through which firms adjust financial policies for influence.

The first and the second essays are important because they point to a channel for the persistence and entrenchment of corruption. While the global literature on rent-seeking and corruption is well established, there also exists a broad literature that jointly studies the interrelationship between political instability and corruption (see, e.g., Campante et al., 2009; Ferraz and Finan, 2011;

Fredriksson and Svensson, 2003; Shleifer and Vishny, 1993). Political instability can be seen along a spectrum, with the most extreme version involving regime change through violence. We are more interested in political risk that presents in the form of rapid policy and regulatory changes. The above literature distinguishes this type of risk as a means for corrupt politicians to extract rents. However, we document a phenomenon whereby firms could be choosing the expediency of corruption over other alternatives.

The main aim of the third essay (*Trust and labor laws*) is to show the substitutability between formal political and legal institutions and informal institutions. We examine the association between trust and employee dismissal laws across OECD countries and report a negative relationship, suggesting trust can be a substitute for formal laws protecting employees against unfair dismissals. The rationale for this argument is built on the premise that in a society with a high level of trust that promotes moral obligation, the government is less likely to implement job security policies that reduce a firm's flexibility to discharge employees. Furthermore, we document that in within-country analysis, trust is a substitute in countries with strong political institutions and a complement in countries with weak political institutions. To validate the substitutability proposition, we find trust has a substitution effect on foreign direct investments.

We contribute to an emerging literature that explores the influence of cultural values, norms, and beliefs on formal regulation. Following the seminal work by Knack and Keefer (1997) on the political economy of trust, most of the existing studies that link trust and regulation find that a high level of trust has a negative influence on shareholder protection laws, business regulation, and regulation of new entrants. However, there is a lack of evidence as to how trust influences labor laws across countries, and we believe it is important to document this relationship as it highlights the importance of having strong political institutions that protect the workforce through informal institutions.

1.2 Road map

The remaining chapters of the thesis are organized as follows. Chapter 2 presents the first essay, titled "Political uncertainty, corruption, and corporate cash holdings". Following on from the evidence of political influence from Chapter 2, in Chapter 3 using political connections we

explore a potential channel through which corruption could activate. Chapter 3 presents the second essay, titled "Political connections, uncertainty, and corporate cash holdings". Chapter 4 presents the third essay, titled "Trust and labor laws". Chapter 5 concludes the thesis. Reviews of the literature tailored to each essay are presented within their respective chapters.

Chapter 2:
Political uncertainty, corruption, and corporate cash holdings

2.1 Introduction

Corporate risk management entails ensuring the availability of state-contingent resources to avert financial distress or to avoid missing profitable investment opportunities. Higher risk, such as that generated by political uncertainty, usually compels a firm to hold more cash and liquid assets. Corruption also exposes a firm to risk, however, in this case, conventional wisdom advises financial policies that constrain access to liquid assets, to mitigate the risk of expropriation. In this chapter, we examine this apparent contradiction by studying the cash holdings of firms in the United States (US). Given that corruption and political uncertainty can often (though not always) co-exist, how do firms respond to the joint incidence of these risk sources?

The notion that political uncertainty necessitates raising cash follows from risk management theory based on costly external financing (Froot et al., 1993), and has empirical validation in the literature (Julio and Yook, 2012; Gungoraydinoglu et al., 2017). Similarly, the idea that the presence of corruption would induce firms to reduce their liquid assets (particularly cash) has established theoretical (Myers and Rajan, 1998) and empirical (Caprio et al., 2013; Smith, 2016) support.

Since firms adopt contradictory risk management policies to mitigate political corruption and political uncertainty, their combined influence on cash holdings is not obvious. A firm operating in a more corrupt environment has two possible reactions to uncertainty. On the one hand, when faced with increasing uncertainty, if firms wish to avoid paying bribes to corrupt public officials, firms would shield their liquid assets by further reducing their level of cash holding below its optimal level. In such a situation, even if firms want to increase cash levels as a buffer to mitigate uncertainty, firms located in highly corrupt states face constraints given that they are more likely to be expropriated by corrupt public officials. We name this the shielding hypothesis. In contrast, if firms wish to influence policymakers in order to mitigate political risk, they would increase access to cash following a rise in political uncertainty, at a higher rate in a more corrupt environment. We name this the liquidity hypothesis. We examine these two competing hypotheses and find evidence supporting the liquidity hypothesis.

The US provides a natural setting for our study. First, there is a significant variation in the legislative, executive, and judicial branches of state governments that determines the quality of political institutions (Alt and Lassen, 2003). This in turn is reflected in variations in the culture of corruption across states. Second, the political alignment between the executive (the President), legislative (the Congress), and local branches of government has an influence on the implementation of policies across states. Given that this degree of alignment can potentially change every two years, it is possible to construct a rich dataset to exploit the heterogeneity in both local corruption and political uncertainty across states and over time.

To measure state-level political uncertainty we employ the political alignment index (PAI) developed by Kim et al. (2012), who note that states that are more aligned to the President are exposed to rapid policy changes. Under this measure, firms in those states that are more aligned with the ruling federal government are exposed to higher political risk than those in less aligned states.

Our main measure of corruption is based on convictions of public officials for corruption-related offenses (Fisman and Gatti, 2002; Dass et al., 2016; Smith, 2016; Huang and Yuan, 2021). A key advantage of using this measure is that it allows us to consider an objective measure of corruption thanks to the role of federal courts that are more likely to be uniform and independent of local influence (Glaeser and Saks, 2006). While studying the US with cross-state convictions data is not free from criticism, the alternatives pose potentially more problems: to either try and disentangle institutional effects from cross-country objective indicators or to rely solely on perception-based measures that are subject to sampling problems. Outside the US, Ferraz and Finan (2011) analyze audit information at the local government level in Brazil to address the same challenges. Smith (2016) makes a compelling case for the use of federal court convictions for corruption (scaled by population) as a proxy for the level of local political corruption by providing examples of corruption cases and different forms of bribery.

Using 34,126 firm-year observations of 2,602 unique firms over the sample period from 1998-2016, we find robust evidence that firms in states with high corruption scores hold more cash as a response to rising political uncertainty relative to those in states with lower corruption scores. For instance, on average, firms located in Louisiana (high corruption score) increase their cash-to-

assets ratio by 3.07 percentage points more than firms located in Minnesota (low corruption score) in response to higher political uncertainty (upper quartile).

We pay due attention to endogeneity concerns. One possible issue is that local corruption and uncertainty could be correlated with economic conditions that prevail in a particular state. Furthermore, the level of cash holdings and corruption could be endogenous. To address these issues, we first control for state characteristics and state-fixed effects. Subsequently, we control for endogeneity with the help of two instrumental variables that are associated with state-level corruption. Our results remain robust in both cases.

The corruption measure based on convictions could be affected by the persistent nature of corruption, and by enforcement concerns, such as when some federal judges are nominated by state politicians. To address these concerns, we alternatively employ a long-term proxy from conviction data as well as a state corruption score using survey data from Boylan and Long (2003). Similarly, we consider an alternative measure for PAI, based only on members of Congress from the state and excluding the role of governors and state legislatures (Antia et al., 2013). Our findings remain consistent across all these additional tests.

As a further test to address endogeneity, we conduct a difference-in-difference-in-differences (DDD) analysis for a subsample of firms relocating their headquarters. We find that firms changing headquarters from a low corrupt to a high corrupt state increase cash reserves for rising political uncertainty. In addition to PAI, we use gubernatorial elections as a proxy for political uncertainty. We find that firms facing higher levels of corruption increase cash holdings when they relocate to an election state.

In further analysis, we explore whether financially constrained firms are more susceptible to corruption and uncertainty. Using two standard categorization schemes, we partition the sample into financially constrained and unconstrained firms, providing findings in support of our predictions.

This study makes several contributions to the literature. There exists a rich and growing academic literature on the effects of both political uncertainty and corruption, separately, on firms. Within the US, several authors have documented the impact of political uncertainty or corruption on firm value, financial policies, and investments (Dass et al., 2016; Smith, 2016; Huang and Yuan,

2021; Nguyen et al., 2020; Duong et al., 2020; Jens, 2017).[1] This chapter analyzes how they interact in their impact on firms' financial policies. Our work also complements the international evidence of Julio and Yook (2016), who show that the decline in foreign direct investments due to political uncertainty is more pronounced for countries with high levels of corruption, while Gungoraydinoglu et al. (2017) find that a decrease in firms' external finance due to political uncertainty is mitigated by the existence of strong political institutions. In a current study, Afzali et al. (2021) study, independently of us, the effect of policy uncertainty on the moral behavior of firms using international survey data. Similar to us, they also find partial support for the increase in bribery when political uncertainty increases. We exploit cross-state heterogeneity within the US to examine, with the use of objective measures of corruption, how political corruption and political uncertainty jointly affect a firm's cash holdings. In doing so, we highlight firm policies that point to the potential for further entrenchment of corruption.[2]

Overall, our results indicate that firms hoard cash to influence public officials in the face of rising political uncertainty. We complement the findings of Smith (2016) by accounting for changes in the level of local political risk. We report that firms located in highly corrupt areas do not only increase cash holdings when faced with political uncertainty but do so more than those in less corrupt environments. In the US, states' proximity to political power may change every two years with mid-term elections and the uncertainty that results from higher government intervention threatens to increase the level of expropriation in the state. To mitigate this high expropriation risk, firms increase rather than decrease cash holdings. Although Smith (2016) finds support mainly for the shielding hypothesis, we show how exposure to policy risk can bring the liquidity hypothesis into play.

Most studies on the relationship between firm financial policies in the presence of political uncertainty and corruption are based on international data, with some exceptions (Ferraz and Finan, 2011; Xu et al., 2016). This could potentially make it difficult to address the many

[1] In an international context similar evidence exists on corruption (Fisman and Svensson, 2007; Nguyen and van Dijk, 2012) and uncertainty (Boutchkova et al., 2012; King et al., 2021) separately.

[2] Several authors have also examined the nexus between political corruption and political uncertainty (Acemoglu *et al.*, 2003) and in terms of their influence on issues such as policy formation (Fredriksson and Svensson, 2003) and regulatory compliance (Damania et al., 2004). This chapter is focused on firm policies.

institutional factors that determine these outcomes. By studying state-level variation within the US it is easier to control for some of the factors and to also employ objective or more easily comparable measures of corruption and uncertainty, as well as accounting variables. We collect a sizable dataset consisting of high-quality proxies for both corruption and uncertainty. We complement existing studies that often rely on perception-based measures. Similarly, our proxy for political uncertainty captures the change in political institutions across different tiers of the system compared to the binary election variable used by, for instance, Jens (2017) and Julio and Yook (2016).

Finally, we contribute to the broader literature studying firm financial policies, in particular cash holdings. This literature links to risk management policies (Opler et al., 1999; Bates et al., 2009; Harford et al., 2014; Qiu, 2019) and agency issues (Dittmar et al., 2003; Dittmar and Mahrt-Smith, 2007; Pinkowitz et al., 2006). Our focus is on cash holdings because cash can most easily be transformed into private benefits (Myers and Rajan, 1998). We show the non-linear manner in which political uncertainty and corruption impact firm policies. Our research highlights that the coincidence of corruption and uncertainty exacerbates firm risks even among developed countries with strong political institutions. By demonstrating the interplay between opposing policies arising from different sources of risk, we hope to enrich our understanding of the complex balance of incentives faced by firms when determining financial policies.

The remainder of this chapter is organized as follows. Section 2.2 provides an overview of the literature relating to the connections between corruption, political uncertainty, and cash holdings, and also provides the hypothesis development. Section 2.3 describes the data used while section 2.4 discusses the methodology adopted along with the empirical findings in addition to some robustness tests. Section 2.5 concludes the chapter. Additional information relating to the data is reported in the Appendix.

2.2 Literature review and hypothesis development

Corruption is defined as the misuse of public office for private gains. Research into the causes and impact of corruption at the firm level has gained pace in recent years. The main aim of this research is to explore the impact of political corruption and political uncertainty on firm cash

holdings. Therefore this section will outline the theoretical and empirical studies on corruption and political uncertainty, and motives of cash holdings followed by hypothesis development.

2.2.1 Political corruption and uncertainty

Up until the late 1960s, it was widely believed that corruption can enhance efficiency by allowing individuals to cut through bureaucratic procedures and ill-functioning institutions. This "grease the wheels" hypothesis advanced by Leff (1964) and Leys (1965) is known to be true in some developing countries, where bribing enables individuals to get work done when there are burdensome regulatory systems (Bardhan, 1997). However, the empirical evidence has rejected this hypothesis reporting evidence to the contrary that corruption "sand the wheels". Many cross-country studies have shown that corruption reduces investment and economic growth (Mauro, 1995; Mo, 2001), discourages foreign direct investment (Wei, 2000), and lowers the level of productivity (Lambsdorff, 2003).

Most of the literature on corruption is built on the agency model theory. Principal-agent model of corruption focuses on the relationship between the principal, i.e. the government, and the agent, i.e. an official who takes bribes from private individuals who need a service or goods which are delivered by the government. The model was introduced by Becker and Stigler (1974) and was later applied by Rose-Ackerman (1978). Shleifer and Vishny (1993) define government corruption as “the sale by government officials of government property for personal gain”. Using the principal-agent model they explain that corruption is detrimental to the development of an economy. They draw on two scenarios where public officials sell goods to private individuals (or the buyers) which leads to corruption without theft or corruption with theft. In corruption without theft, officials sell government goods at a government price and charge a bribe, in this the official keeps the bribe and returns the price to the government. The issue in this is that the price paid by the buyer is much higher than buying it from the open market. In corruption with theft, officials sell the goods at the government price and charge a bribe, but the entire amount is kept by the official, and nothing is returned to the government. In this form of corruption, the price paid by the buyer is much lower than buying from the open market, thus it’s more attractive to the buyer. Since it benefits the buyer, the buyer has no incentive to take any action or inform the government of this illegal practice. In this form of independent monopoly, corruption with theft can only be reduced if there is more competition. Therefore, government institutions play a major role in

combating corruption. Aidt (2003) posits that the persistence of political corruption is largely attributable to three key features, namely, the discretionary power of public officials that gives authority to administer regulations or design policies, the power to extract rents, and the existence of weak institutions thereby providing an incentive for public officials to extract rents.

Although exploring corruption across countries enables one to understand the determinants, strategies, and impact on the macro and micro levels, it limits our understanding of the dynamics of corruption at a national level. Even though the very definition of corruption is universal, it may vary from country to country. For instance, bribery in most countries is considered to be illegal while in some countries it may not be perceived as illegal but rather as a method to increase the efficiency of a transaction (Bardhan, 1997). Most of the cross-country studies have used perception-based measures such as the Corruption Perception Index published by Transparency International and the indicator for Control of Corruption included in the World Bank's World Governance Indicator. Some studies have used experience-based measures such as survey-based research[3] to estimate corporate corruption. As Mauro (1995) noted, using international data makes it difficult to measure corruption consistently and accurately across different countries and cultures. Therefore it is important to consider the local customs and regulations when studying the effect of corruption (Depken and Lafountain, 2006).

Despite ample studies at the macro level, empirical evidence surrounding corruption and the firm outcome is limited. It is a well-known fact that corruption in the form of bribery is higher in poor countries than in rich countries. It is also known that in poor countries, politicians bribe more from those firms that have the ability to pay. Svensson (2003), using bribery data collected from Ugandan private firms, suggests that "the more a firm can pay; i.e. higher are its current and expected future profits, the more it must pay". Firms operating in high corrupt environments experience an adverse effect on firm efficiency compared to firms in less corrupt environments. Using BEEPS database on private firm level survey of 14 countries in Central and Eastern Europe, Hanousek et al. (2019) show that firms that do not bribe might lose contracts to

[3]Sharma and Mitra (2015) using World Bank Enterprise Survey data related to Indian firms, find that bribe works as a tax on profitability of firms and encourages inefficiency, while Hanousek et al., (2019) using Business Environment and Enterprise Performance Survey analyze the effect of corruption on firm efficiency.

firms who bribe in a corrupt environment. This result in the under-utilization of labor and capital and leads to lower efficiency.

While many studies examining the impact of corruption on the firm argue that corruption hinders growth, Bai et al. (2019) using data from firms in Vietnam claim a notable finding where firms in industries with faster employment growth are exposed to a faster decrease in bribe rate. This implies a reverse link between corruption and growth. They also note that the reduction in bribery is greater for firms that can shift their operations to a different location. The strategy is more interesting and applicable to countries with a decentralized system of corruption where there is heterogeneity in the bribery rates across different jurisdictions. Building on this strategy, Huang and Yuan (2021) argue that firms that are located in one state are exposed to high extortion risk due to the reduced bargaining power that they have. They suggest extortion risk as a channel of corruption given that it reduces firms' incentive to innovate.

There is a growing literature that analyzes the interference of expropriation risk on firm financial policies, investments, innovation and governance, and information disclosure. Stulz (2005), in his twin-agency model, posits that states use the power to expropriate firms' profits through outright confiscation of regulations that favor the politicians who are aligned with the current ruler. Firms adopt various strategies to mitigate state expropriation through investing, contracting, and financing policies. Investing in negative NPV projects makes it costly for state extraction. As per contracting policies, having complicated financial instrument agreements may prevent a state from extracting because the consequences of those instruments can be unforeseen. As per financing policies, debt holders are less exposed to extraction. The degree of expropriation is low if firms borrow from banks that are close to the states. If firms collapse, then it affects the state if the state has ownership in the banks.

Based on the twin-agency model, Caprio et al. (2013) and Smith (2016) analyze the impact of corruption on firm financial policies. Using data from 109 countries, Caprio et al. (2013) determine that firms in countries that have a higher likelihood for political extraction (based on the ICRG survey) hold less liquid assets as a way of shielding, investing more in hard assets and payout more as dividends relative to those firms located in countries with a lower risk of extraction. The authors presume that cash and marketable securities can be easily converted into private benefits and are most likely to be targeted by politicians and thus should be sheltered the most. Extending this

theory to a national level, Smith (2016) explores the causality between U.S. state-level corruption and firm financial policies. Using district-level conviction data as a proxy for corruption, he shows that firms that are domiciled in high corrupt states hold significantly less cash and have greater leverage compared to those firms in less corrupt states. The study hypothesizes that firms that do not want to pay bribes in a corrupt environment and focus on improving firm value can do so by altering their financial policies. This can be achieved by reducing the firm liquidity (i.e. holding less liquid assets in the balance sheets) thereby having less cash to pay as bribes. Fan et al. (2012) find that firms in highly corrupt countries with weaker laws tend to use more leverage, arguing that this relationship holds due to the level of expropriation, as it is more difficult to expropriate debt holders than equity holders.

Durnev and Fauver (2011) find that firms in high-expropriation-risk countries have less incentive to engage in good governance practices and disclose more information. When firms do not report truthful information it becomes difficult for the state to expropriate profits. The study also notes that the reduction in firm value from the direct risk of expropriation is greater than the effect of the decline in governance practices. This evidence indicates that strategies used by firms to reduce government extraction are detrimental to its growth; maintaining below-optimal liquid assets increases firms' illiquidity and lack of information disclosure reduces the value of the firm.

Several empirical studies document corruption deters innovation activities. Huang and Yuan (2021) and Ellis et al. (2019) using U.S firm innovation data make similar arguments that firms that engage in innovative activities interact more with government officials and they are more likely to be expropriated by rent-seeking officials. These firms need to acquire different services such as operating licenses, safety inspections, building permits or approval by regulatory agencies. The more they interact with officials with discretion to allocate these resources, the more susceptible firms become to extortion. Ellis et al. (2019) show that firms headquartered in corrupt districts make significantly fewer patents and lower quality patents than firms in non-corrupt districts. Using two instrumental variables; ethnic diversity within a state population and the level of corruption in the state where the firm founder grew up, authors find a positive and significant relation to corruption in the firm's headquarters and negative relation between instrumented corruption and innovation. Huang and Yuan (2021) determine two economic channels through which corruption affects innovation; these are high extortion risk and the decreasing threat of

competition. Findings show a stronger negative effect on a firm's R&D expenditures for firms that are more geographically dispersed (a measure of extortion risk). Outside the US, Gan and Xu (2019) find that Chinese firms domiciled in provinces with stronger anti-corruption efforts are likely to invest more in R&D activities. The authors argue that in a corrupt environment, there is more space for rent-seeking activities thus easier to influence firms through various policies. Thus, firms tend to respond to corruption by using informal network ties and using more non-market strategies such as bribing and lobbying.

Although this line of literature points towards a shielding approach adopted by firms in a persistently corrupt environment, the evidence is lacking in the understanding of how this approach can be reconciled to liquidity demands in the face of changes in the political environment. In the economics literature, the links between corruption and uncertainty have been studied extensively. For instance, Acemoglu et al. (2003) argue that countries with weak (extractive) political institutions are susceptible to volatility and political instability. Several authors document that this relationship has an influence on policy formation and regulatory compliance (Fredriksson and Svensson, 2003; Damania et al., 2004).

In recent years there has been extensive research on the impact of political uncertainty on financial policies. Pástor and Veronesi (2012) develop a theoretical framework that shows that uncertainty surrounding government policies gives rise to political risk, which in turn can lead to a decrease in the level of investment. Gungoraydinoglu et al. (2017) show that political uncertainty increases financial constraints. In such a context, those firms that have difficulty accessing external finance are more likely to reserve cash (Bates et al., 2009; Opler et al., 1999; Harford et al., 2014).

A limited number of empirical studies have examined the effect of political risk on cash holdings. Most of these studies employ the economic policy uncertainty (EPU) index developed by Baker et al. (2016) as a proxy. A recent study by Duong et al. (2020) shows that growing cash reserves in US firms can be explained by rising policy uncertainty, as firms hoard cash due to a precautionary motive. They find that a rise in uncertainty leads to an increase in firms' cash-to-assets ratios in the following year. They further argue that higher cash balances mitigate the impact of policy uncertainty on firms' investments. Hankins et al. (2019) compare the impact of policy uncertainty shocks (using the EPU index) and partisan conflict shocks (using the Partisan Conflict Index developed by Azzimonti, 2018) on cash holdings. They show that these are two distinct

measures and that firms respond in different ways to these shocks, reducing cash holdings immediately after policy shocks while increasing cash holdings after partisan shocks.

2.2.2 Motives of cash holdings

In a perfect capital market, there is no benefit of holding cash. If the cash flow is low, firms can raise funds at zero cost. Since there is no liquidity premium in these markets, holding liquidity assets have no opportunity cost. Keynes (1936) argues that accumulating cash is irrelevant if firms can access capital markets and use those funds to support investment decisions. Therefore, firms only need to hold sufficient cash to meet transaction needs. The economics and finance literature identifies four motives for holding cash; transaction motive, precautionary motive, agency motive, and tax motive.

The precautionary motive of holding cash arises when firms have difficulties in raising cash from the capital market or hedging opportunities due to imperfect capital and insurance markets. Firms with growth opportunities, uncertain cash flows, and limited access to capital markets should accumulate more cash. Kim et al. (1998) and Opler et al. (1999) were the first to determine the impact of firm characteristics on cash holdings. Using the book-to-market ratio as a proxy for growth opportunities, they show that firms with higher ratios hold more cash on the balance sheet. Uncertainty of cash flows measured using various proxies such as variability of operating cash flow and free cash flow (Kim et al, 1998) and industry cash flow volatility (Opler et al. 1999), also have a positive impact on the cash balance. Using the theory proposed by Almeida et al. (2004) on a firm's propensity to save cash out of cash flow, Han and Qiu (2007) find that the US constrained firms compared to unconstrained firms increase cash holdings as a response to an increase in cash flow volatility. Growing cash holdings in US firms over several decades are also associated with precautionary motives. Bates et al. (2009) show that the increase in cash in US firms from 1980 to 2006 is mostly among firms that do not make dividend payments, firms in recent IPO listing cohorts, and firms in industries with the greatest idiosyncratic risk.

The transaction motive of reserving cash depends on the basis that firms do not have to liquidate assets to make payments thereby saving the transaction cost of raising funds. Firms operate at an optimal level of cash holding in order to support normal operating activities. An

optimal level is where a firm does not hold more than enough cash since there is a cost to holding too much cash. In line with transaction motive, Opler et al. (1999) show that large firms that have access to capital markets and higher credit ratings hold less cash.

The agency motive of cash holding suggests that entrenched managers hold excess cash rather than paying it out to shareholders or directing it towards investments. Financially constrained firms need to hold cash during uncertain time periods but there is a conflict between this precautionary motive and firm managers wanting to hold cash for their personal benefits, which then becomes an issue of corporate governance. Maintaining a high cash balance facilitates managers to utilize cash for investment projects by allowing them to avoid market discipline. Cross-country evidence shows that corporates located in countries that have poor investor protection rights hold more than double the amount of cash than firms in strong investor protection countries (Dittmar et al., 2003). Further, Dittmar and Mahrt-Smith (2007) determine the value effects of corporate governance on cash holdings. They use stock returns to value cash holdings and anti-takeover provisions to proxy for managerial entrenchment and monitoring from institutional block holders to measure corporate governance. The theory is built on the premise that firms with higher corporate governance should have higher cash value. They interact the change in cash by both governance measures on stock returns and find that the value of poorly governed firms is worth less than well-governed firms. Pinkowitz et al. (2006) provide cross-country evidence on agency motive by exploring the impact of investor protection on the value of cash. To measure investor protection the authors use two components; legal rights (anti-director rights index of La Porta et al., 1998) and quality of institutions (expropriation risk, corruption, rule of law, and political risk). They show that the value of cash holdings is low for firms in low investor protection countries since part of the cash is expropriated by insiders for private benefits.

Tax motive suggests that multinational firms hold more of their earnings in cash in order to avoid adverse tax consequences when repatriating income. Foley et al. (2007) document that US multinational firms with foreign subsidiaries maintain large amounts of cash. However, in a recent study Pinkowitz et al. (2016) compare the cash holdings of US multinationals and foreign multinationals, and argue that US firms do not hold more cash than foreign firms. This shows that tax motive cannot be considered as a motive for US firms' high cash balance.

2.2.3 Hypothesis development

Theoretical works by Myers and Rajan (1998) and Stulz (2005) suggest that exposure to political corruption compels firms to channel cash and marketable securities into assets that cannot be extracted easily, such as property, plant and equipment, and inventory. Since liquid assets can be easily converted into private benefits, they are more likely to be targeted by corrupt politicians. McChesney (1987) argues that such expropriation can occur in the form of targeted taxation and regulatory threats.

Since firms adopt contradictory risk management policies to mitigate political corruption and political uncertainty, their combined influence on cash holdings is not obvious. In a more corrupt environment, an increase in uncertainty leads to more expropriation as corrupt officials use their discretionary power to introduce and implement policies that are favorable to them. A firm operating in such an environment has two possible reactions to uncertainty, hence we examine two competing hypotheses: shielding and liquidity hypothesis.

Under the shielding hypothesis, faced with increasing political uncertainty in a corrupt environment, if firms wished to avoid paying bribes to public officials[4], they would shield their liquid assets by further reducing the level of cash holding below its optimal level. This is consistent with the theoretical work of Myers and Rajan (1998) and Stulz (2005), and the empirical evidence of Smith (2016), Caprio et al. (2013), and Xu et al. (2016). In such a situation, even if firms want to increase cash levels as a buffer to mitigate uncertainty, firms located in highly corrupt states face constraints given that they are more likely to be expropriated by corrupt public officials.

By contrast, according to the liquidity hypothesis, if firms wished to influence policymakers in order to mitigate political risk, they would increase access to cash following a rise in political uncertainty, at a higher rate in a more corrupt environment. Previous studies show that firms located in a highly extractive environment increase liquidity for tunneling (Pinkowitz et al. 2006), and use cash to pay bribes and kickbacks around election cycles to gain benefits from the government (Mironov and Zhuravskaya, 2016). Anecdotal evidence indicates that US firms use

[4] Anecdotal evidence suggests that US public officials use regulations to bribe firms in return for their vote in passing bills that are favorable to the firms. In 2009, a member from the Pennsylvania Senate was convicted for taking bribes from an energy company based within the state to vote in favor of a utility deregulation bill.

cash to pay bribes to public officials. For instance, in December 2005, a contractor was charged with fraud and conspiracy for giving cash and gifts to a public official in exchange for favorable influence for his company in obtaining contracts in Atlanta.[5] Similarly, in September 2011, a CEO of a healthcare organization was convicted for paying bribes to three New York state regulators in return for beneficial treatment for his company.[6] Although bribery transactions expose firms to legal complications, being involved in such activities enables firms to derive benefits that cannot otherwise be obtained (see Cheung et al., 2021).

We have identified a clear two-sided hypothesis. In a highly corrupt state, when faced with high political risk, firms would trade off the need for increased cash against the risk of expropriation and thus raise less cash than their counterparts (in a low corrupt environment). Alternatively, firms in highly corrupt states could raise cash by more than their counterparts in low corrupt settings in order to manage political risk through political influence.

2.3 Data and variables description

2.3.1 Data

The sample consists of all publicly listed firms incorporated in the US. We obtain firm historical financial data from Bloomberg. We exclude firms in the financial sector (SIC 6000-6999) as these firms need to meet a statutory capital requirement that is different from non-financial firms, and firms in the utility sector (SIC 4900-4999) since these firms are subject to state-specific regulations. Furthermore, firm-year observations with non-positive assets and sales are excluded, as too are firms with fewer than four observations. After applying these restrictions the total sample consists of 34,126 observations from 2,602 unique firms over the period extending 1998-2016.[7] We collect historical firm headquarters data from the 'edgar' R package developed by Lonare and Patil (2020). The package provides a function to download 10-K filings from the

[5] Source: https://www.chron.com/news/houston-texas/article/Atlanta-contractor-charged-with-fraud-1514083.php

[6] Source: https://www.nytimes.com/2012/05/08/nyregion/david-p-rosen-hospital-executive-sentenced-in-bribery-case.html

[7] Since this data from Bloomberg is often missing prior to 1998, we begin the sample from 1998.

Securities and Exchange Commission (SEC) and extract the business address of all publicly listed firms.

The dependent variable, namely cash-to-assets ratio, is equal to cash and cash equivalents divided by total assets. We control for firm characteristics identified in the existing literature highlighting the determinants of cash holdings (e.g., Opler et al., 1999; Bates et al., 2009). These include firm size, leverage, net working capital, capital expenditure, dividends, book-to-market value, cash flow, research and development, and acquisitions. These controls are defined in Appendix 1. The two main independent variables of interest, namely political corruption and political uncertainty, are described in sections 2.3.2 and 2.3.3, respectively.

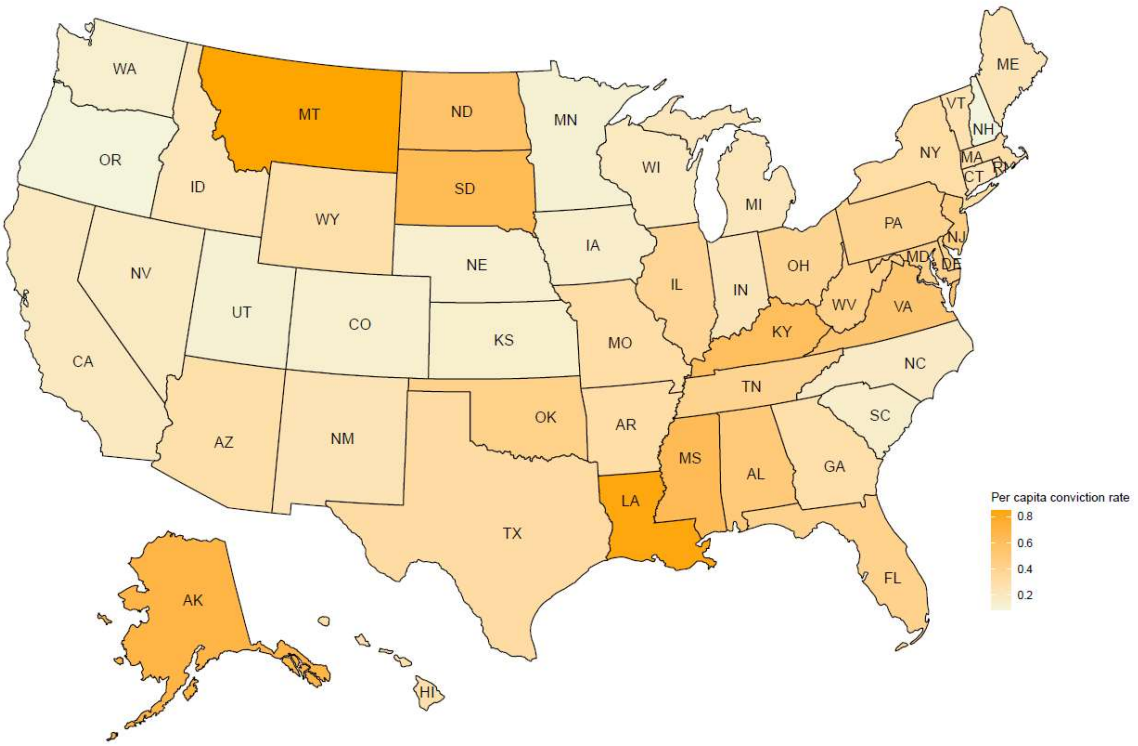
2.3.2 Political corruption

Annual conviction data issued by the Department of Justice (DOJ) Public Integrity Section is used to construct the main proxy for corruption. DOJ provides data on an annual basis on the number of corruption convictions of public officials for 94 federal judicial districts in the US. The data covers corruption cases prosecuted by the DOJ on various crimes such as conflicts of interest, fraud, campaign-finance violations, and obstruction of justice. A district with a high number of convictions is assumed to have a culture of corruption influencing corporate operations in the district (Fisman and Gatti, 2002).

We follow a similar approach as Dass et al. (2016) and Huang and Yuan (2021) to construct the main proxy for corruption. To calculate the state-level per capita conviction rate, we divide the raw number of conviction cases by total state population (per 100,000 capita). This allows us to create a time-varying measure of corruption across states. In a few cases where the number of convictions is not reported, a value is assigned by taking the average of the previous year and the following year. Consistent with previous studies, corruption level in the state that the firm is domiciled is considered as the firm-level measure of interest. This is achieved by matching headquarter data for all the firms in the sample over the sample period. Figure 2.1 shows that on average Louisiana, Montana, South Dakota and Mississippi have a higher per capita conviction rate. These rates are consistent with the studies that use the same data source (Dass et al., 2016; Huang and Yuan, 2021).

The use of conviction data is well supported in the literature. One of the main advantages of this approach is that, compared to survey-based measures that are based on opinion, conviction data facilitates the construction of an arguably objective measure. In particular, the data is standardized and verifiable. Although corruption can be persistent, the time-varying feature of conviction data allows us to apply it in a panel study. Despite these benefits, there are certain criticisms associated with conviction data. For instance, lower numbers of convictions may arise due to lack of prosecutorial resources and low legal enforcement. Glaeser and Saks (2006) argue that by using federal convictions the situation can be mitigated because, as compared to local regulation, the federal judicial system is more isolated and likely to treat everyone in the same way.

Figure 2.1: Average annual per capita conviction rate



This graph shows the annual average per capita conviction rate for each state over the period from 1998 – 2016. States with darker color reflects higher conviction rates which means higher level of corruption.

2.3.3 Political uncertainty

The Political Alignment Index (PAI) as developed by Kim et al. (2012) is used as a proxy for political risk. PAI is a state-level measure of alignment with the president's party, constructed by giving equal weights to the portions of each of the state delegations in the two chambers of Congress that are aligned with the president's party, and to the president's party's control of state policies.

The measure is constructed based on the concept of unified versus divided government. Several studies have argued that under a divided government the probability of policy changes is low compared to a unified government. Fowler (2006) and Bechtel and Fuss (2008) note that under a divided government policy risk is lower compared to a unified government. This is because, under a divided government, where there exists a partisan conflict between the executive and legislative branches, it reduces the probability of policy changes. When making policies, a divided government forces the parties to negotiate, and this limits the range of policy changes that are otherwise seen in a unified government with full control. Extending this to the US state level, Kim et al. (2012) show that states that become more aligned to the ruling party are exposed to higher political uncertainty, as legislators in these states use their power to introduce and sponsor bills more rapidly. Therefore, greater proximity to political power acts as a source of policy risk, hence higher PAI implies higher uncertainty and vice versa.

The distinct advantage of using PAI as a proxy is that it captures the uncertainty that arises due to the influence of local political actors in policymaking at the different tiers of the political system that goes beyond the election cycles (Colak et al., 2021). PAI is thus more comprehensive in comparison to binary election proxies. PAI has been widely used as a proxy for state-level policy risk. Bradley et al. (2016) and Aabo et al. (2020) provide evidence on the impact of state proximity to political power on the cost of debt and informational advantage of institutional investors, respectively.

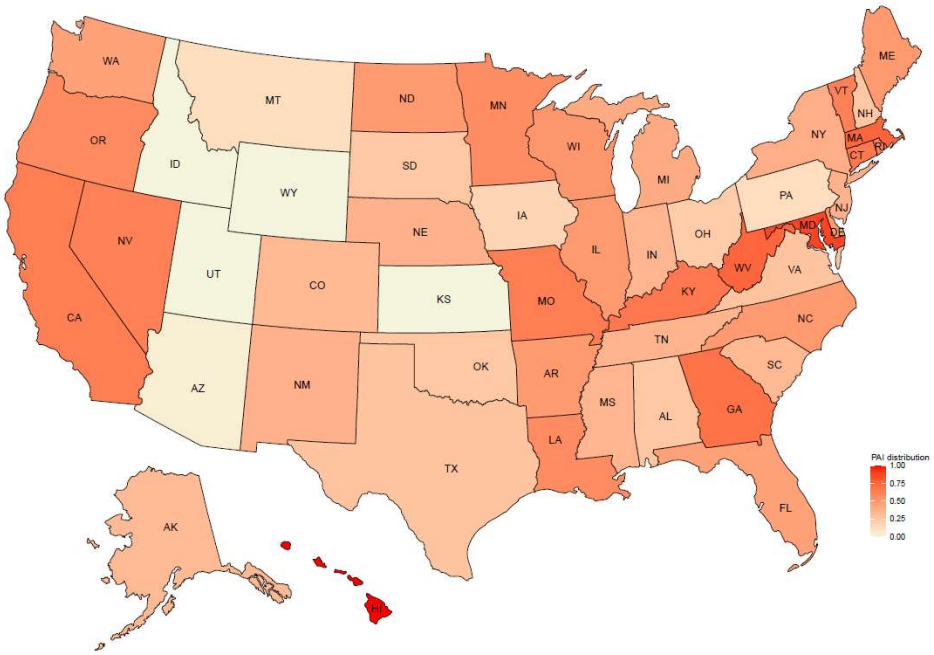
The PAI for each state every two years is calculated using the following formula.

$$\text{PAI} = (1/4)*\textit{SENATORS} + (1/4)*\textit{REPRESENTATIVES} + (1/4)*\textit{GOVERNORS} + (1/4)*[(1/2)*\textit{STATE SENATORS} + (1/2)*\textit{STATE REPRESENTATIVES}] \quad (2.1)$$

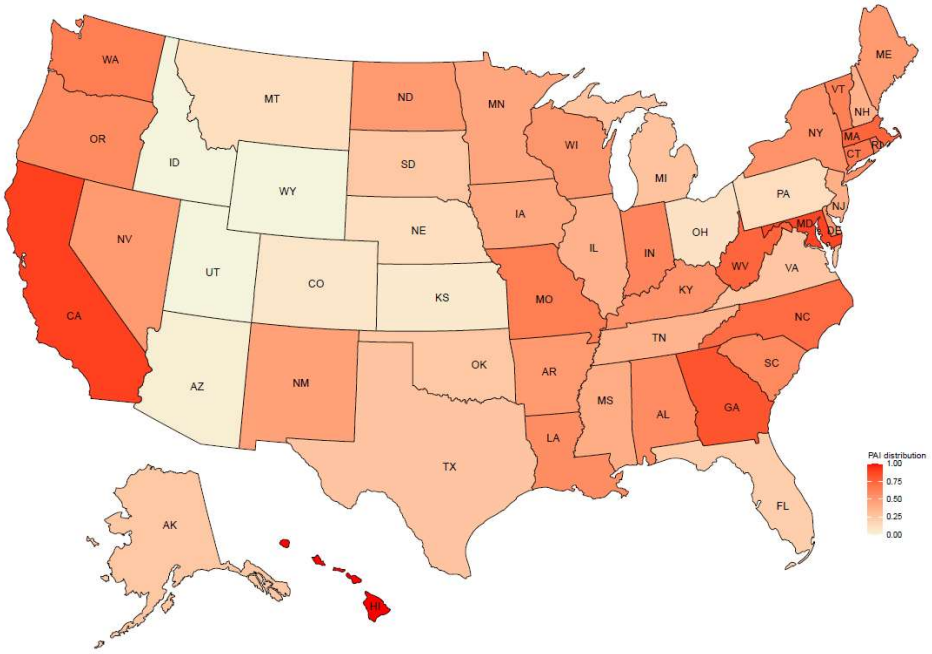
We calculate PAI for each state every two years due to the fact that the political map can change every second year with mid-term elections. In the above formula, *SENATORS* is the percentage of the state's two senators in Congress that belong to the president's party; *REPRESENTATIVES* is the percentage of the state's House of Representatives in Congress that belong to the president's party; *GOVERNOR* is an indicator equal to 1 if the Governor belongs to the same party as the president, and 0 otherwise; *STATE SENATOR* is an indicator equal to 1 if the percentage of members of the state senate belonging to the president's party is > 50%, and 0 otherwise; and *STATE REPRESENTATIVES* is an indicator equal to 1 if the percentage of state representatives in the state house belonging to the president's party is > 50%, and 0 otherwise.

Figure 2.2: Biyearly shift in Political Alignment Index

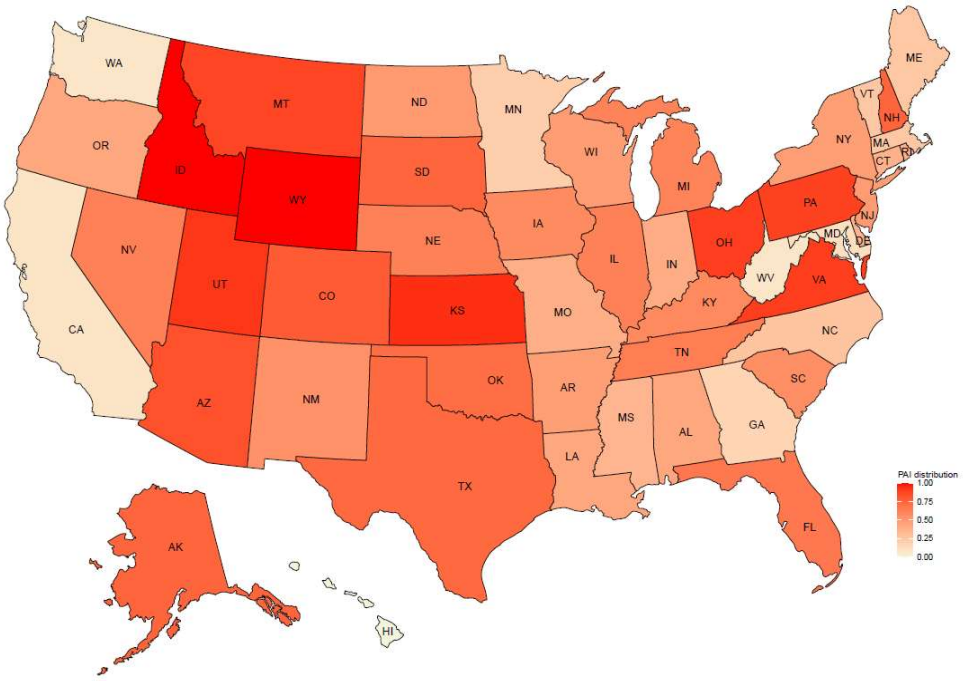
Panel A: PAI in 1998



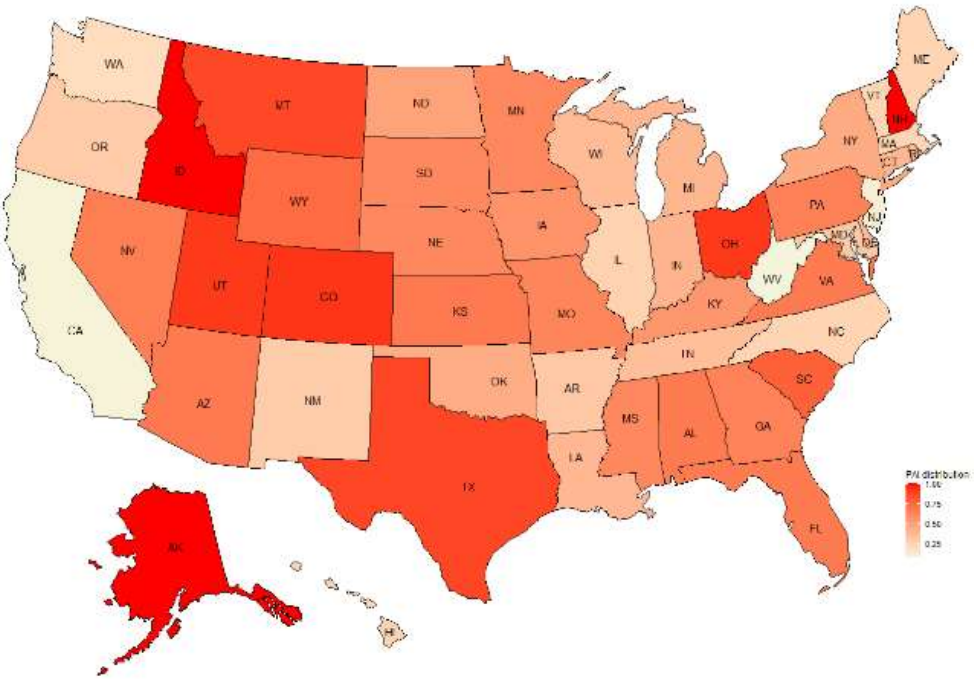
Panel B: PAI in 2000



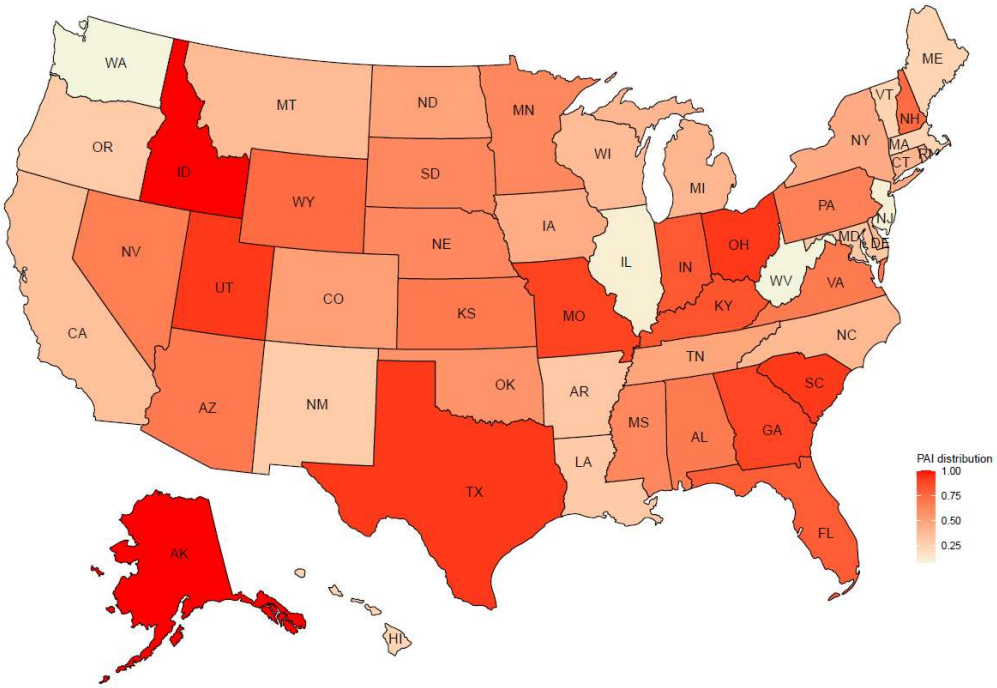
Panel C: PAI in 2002



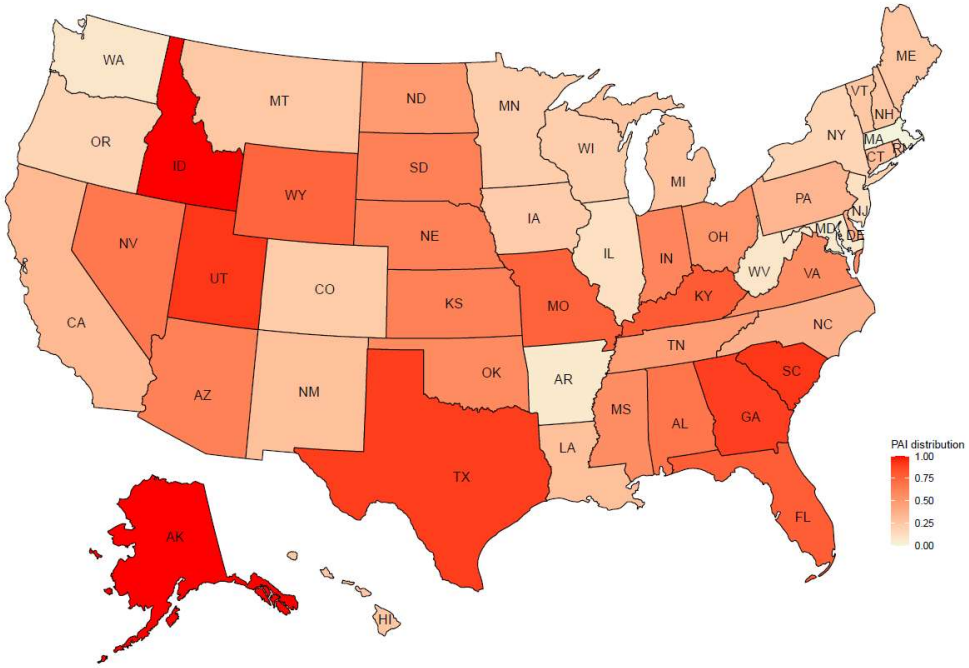
Panel D: PAI in 2004



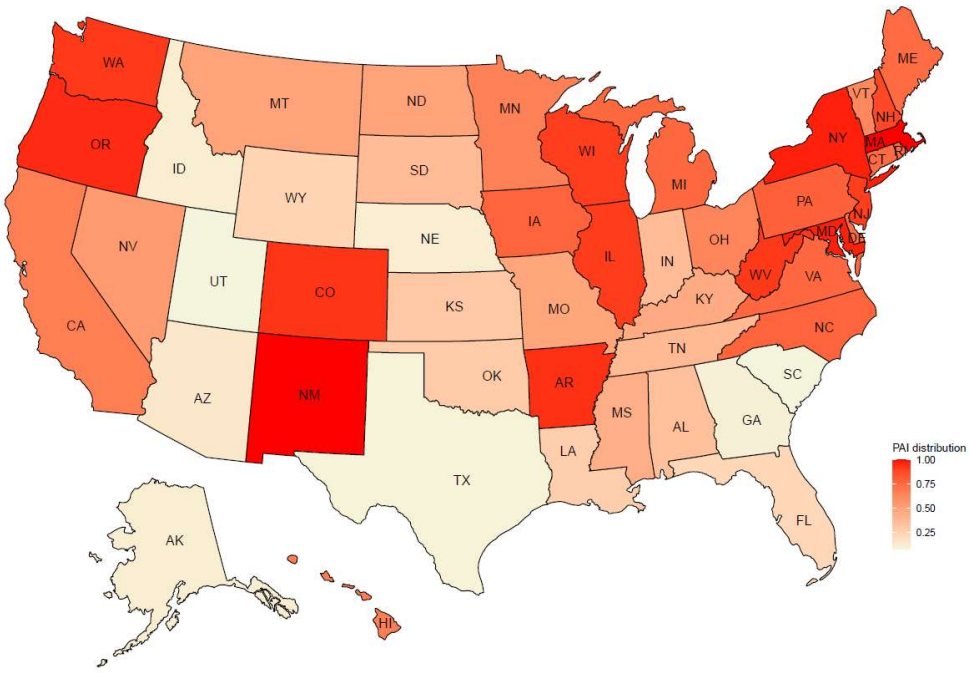
Panel E: PAI in 2006



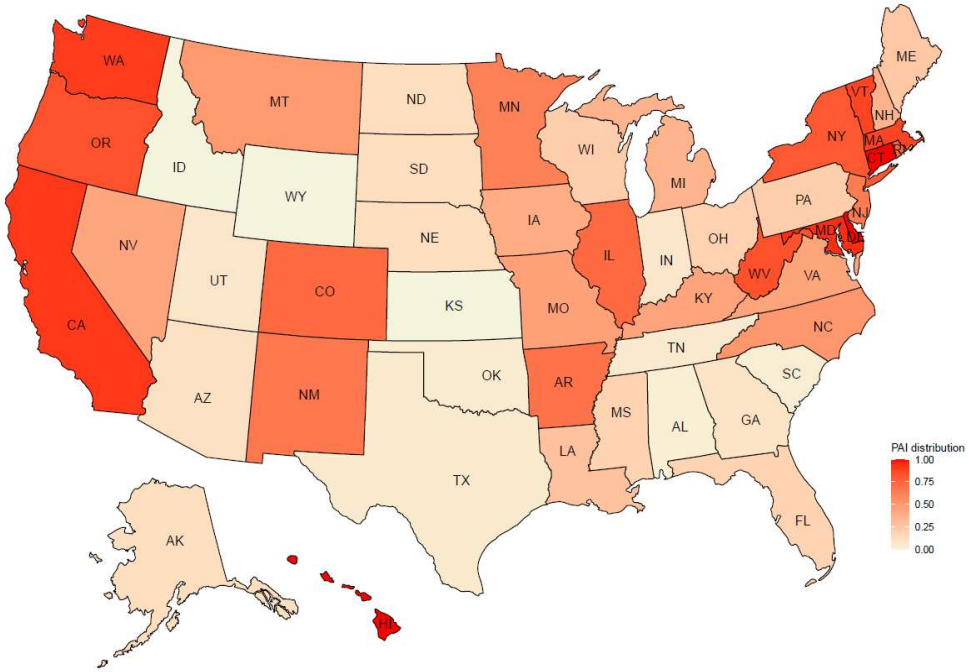
Panel F: PAI in 2008



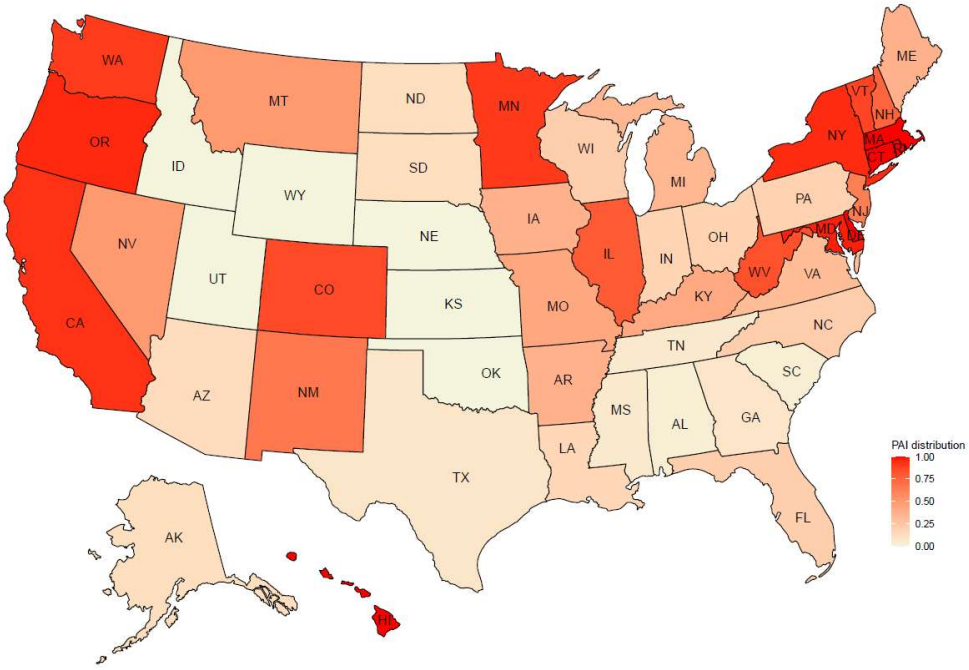
Panel G: PAI in 2010



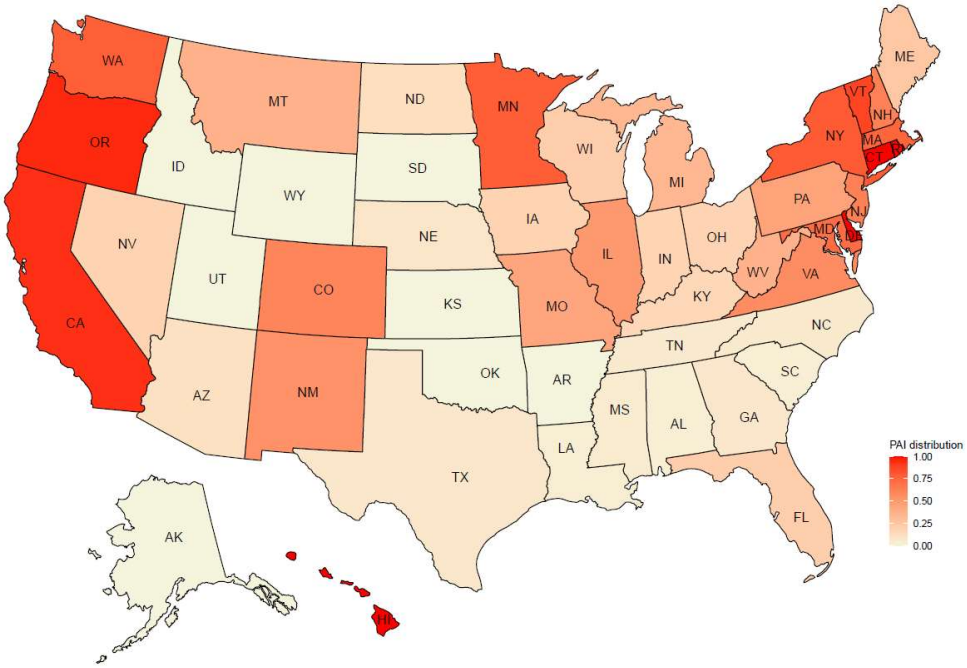
Panel H: PAI in 2012



Panel I: PAI in 2014



Panel J: PAI in 2016



Panel A to J show the biyearly shift in the political map over the period from 1998-2016. The darker orange reflects a high PAI (high uncertainty) and lighter beige reflects low PAI (low uncertainty).

Various databases are employed to obtain the necessary data for the construction of the PAI. Ideological data of the members in the two chambers of Congress is obtained from Voteview: Congressional Roll-Call Votes Database.[8] Governor's party affiliation data, state senate and house of representative ideology data is extracted from State Partisan Balance Data.[9] Figure 2.2 shows how PAI shifts across states every two years.

Taken together, Figure 2.1 and Figure 2.2 portray the heterogeneity across US states in corruption and the biyearly change in political uncertainty. Although corruption is persistent across states, political alignment changes every two years which creates political uncertainty across states.

[8] Available at https://voteview.com/
[9] Available at https://doi.org/10.7910/DVN/LZHMG3, Harvard Dataverse, V1

2.3.4 Summary statistics

Table 2.1 contains the summary statistics and correlation coefficients with respect to both the dependent and independent variables used in the main analysis. According to Panel A, the mean cash-to-total assets ratio is 16%, consistent with the recent cash holding study by Duong et al. (2020). The average firm log size is 5.40, leverage ratio is 30%, capex-to-total assets ratio is 5% and book-to-market ratio is 3.70. The main proxy for corruption shows that on average there are 0.3 convictions per 100,000 population at the state-level every year. Huang and Yuan (2021) report a similar rate. The mean PAI is 0.51. Panel B, which reports the correlation between all the variables, shows that corruption is negatively correlated (significant at 1% level) and political uncertainty is positively correlated (significant at 1% level) with cash holdings, which is consistent with prior literature. Corruption and political uncertainty are negatively correlated, implying that in high corrupt states there is lower political uncertainty on average.

Table 2.1: Descriptive statistics and correlation coefficients

Panel A: Descriptive statistics					
Statistic	Mean	SD	Pctl(25)	Median	Pctl(75)
CORR	0.30	0.18	0.18	0.26	0.38
PAI	0.51	0.31	0.22	0.50	0.80
CASH	0.16	0.18	0.03	0.09	0.21
SIZE	5.40	2.79	3.48	5.67	7.44
LEV	0.30	0.61	0.01	0.17	0.34
CAPEX	0.05	0.06	0.01	0.03	0.06
DIV	0.38	0.48	0.00	0.00	1.00
NWC	-0.13	1.41	-0.04	0.08	0.23
BM	3.70	8.15	1.19	1.67	2.79
CFLOW	-0.22	1.12	-0.05	0.06	0.10
ACQ	0.02	0.05	0.00	0.00	0.01
R&D	0.07	0.19	0.00	0.00	0.06

Panel B: Correlation coefficients												
	CORR	PAI	CASH	SIZE	LEV	CAPEX	DIV	NWC	BM	CFLOW	ACQ	R&D
CORR	1											
PAI	-0.15	1										
CASH	-0.09	0.08	1									
SIZE	0.04	-0.02	-0.26	1								
LEV	0.05	-0.04	-0.42	0.20	1							
CAPEX	0.03	-0.08	-0.17	0.23	0.07	1						
DIV	0.06	-0.05	-0.21	0.47	0.07	0.15	1					
NWC	0	0	-0.05	0.09	-0.32	-0.03	0.07	1				
BM	-0.05	0.04	0.28	-0.20	-0.05	0.01	-0.10	-0.25	1			
CFLOW	0.05	-0.04	-0.16	0.46	-0.07	0.34	0.24	0.22	-0.08	1		
ACQ	0.03	0	-0.16	0.43	0.12	0.01	0.20	0.02	-0.07	0.22	1	
R&D	-0.13	0.09	0.38	-0.20	-0.20	-0.15	-0.21	0.05	0.29	-0.26	-0.08	1

This table reports descriptive statistics (Panel A) and correlation coefficients (Panel B) for the main variables used in the analysis. The sample contains 34,126 firm-year observations of 2,602 US firms over the period from 1998-2016. All the firm variables are winsorized at 1% and 99% level to minimize the effect of outliers. Variable definitions are provided in Appendix 1.

2.4 Results

2.4.1 Baseline results

In this section we test the effect of corruption and political uncertainty on cash holdings. We estimate the following pooled ordinary least squares (OLS) regression:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 PAI_{s,t} + \beta_2 CORR_{s,t} + \beta_3 PAI_{s,t} * CORR_{s,t} + \gamma Firm\ Controls + \alpha_t + \alpha_j + \varepsilon_{i,t+1} \qquad (2.2)$$

The dependent variable, CASH, is cash and cash equivalents scaled by total assets of firm *i* in year *t+1*. The main explanatory variables are PAI which is the political alignment index and CORR which is the per capita corruption conviction rate of state *s* in year *t*. We include a set of firm controls following Opler et al. (1999) and Bates et al. (2009), namely SIZE, LEV, CAPEX, DIV, NWC, BM, CFLOW, ACQ, and R&D. Variable descriptions for firm characteristics can be found in Appendix 1. Year and industry fixed-effects are included to account for macro-economic and

industry-wide trends.[10] In all the regression models, standard errors are clustered by time to control for residual correlation of cash holdings across firms in year *t+1*.

Table 2.2 reports the results for our baseline model. Column 1 only includes the main variables of interest and year and industry fixed effects. The results show that corruption has a significant negative impact on cash holdings, a finding consistent with Smith (2016). Political uncertainty has no effect on cash. Since the net effect of firms' cash holdings depends on the interaction of both variables, we need to consider the results in column 2. The coefficient of the interaction term between PAI and CORR is positive 0.054 and significant at the 5% level. In column 3 we integrate firm control variables, and the coefficient on the interaction term remains positive and significant at the 1% level. To control for various state characteristics that may affect firm cash level, we include state-fixed effects in column 4, and the results remain consistent. Overall, these findings imply that an increase in political uncertainty in more corrupt states is associated with higher cash holding levels in the following year.

Our results are economically significant. For example, using the coefficient on the interaction term of PAI*CORR in column 3, during high political uncertainty, a firm located in Louisiana (high corrupt) holds a cash ratio of 3.07 percentage points more than a firm in Minnesota (low corrupt). This translates into 19% of the sample average cash ratio.[11] The results of the control variables are consistent with the prior literature (e.g., Opler et al., 1999). Firm size, leverage, capital expenditures, dividend dummy, net working capital, and acquisitions are negatively

[10] We do not include firm fixed effect as we are interested in capturing the cross-state variation in corruption. Although conviction data fluctuates annually, a large part of this variation can be ascribed to measurement error, as we do not expect significant changes in corruption from year to year. On the other hand, political uncertainty varies every two years across states and the focus of this chapter is to estimate to what extent firms in more corrupt states relative to low corrupt states respond to this change in uncertainty. To that extent, when we control for firm level unobservable characteristics, by further re-estimating the baseline model using a firm fixed effect model, we find that the results remain consistent (Results are reported in Appendix 3).

[11] The increase in the cash ratio is calculated as 0.71 x 0.054 x 0.8 x 100, which translates to 3.07 percentage points. 0.71 is the difference in average CORR between Louisiana and Minnesota (refer Appendix 2). 0.054 is the coefficient of the interaction term and 0.8 is the 75th percentile of PAI. This increase of 3.07 percentage points is about 19% of the mean cash ratio, which is 0.16 (refer Table 2.1).

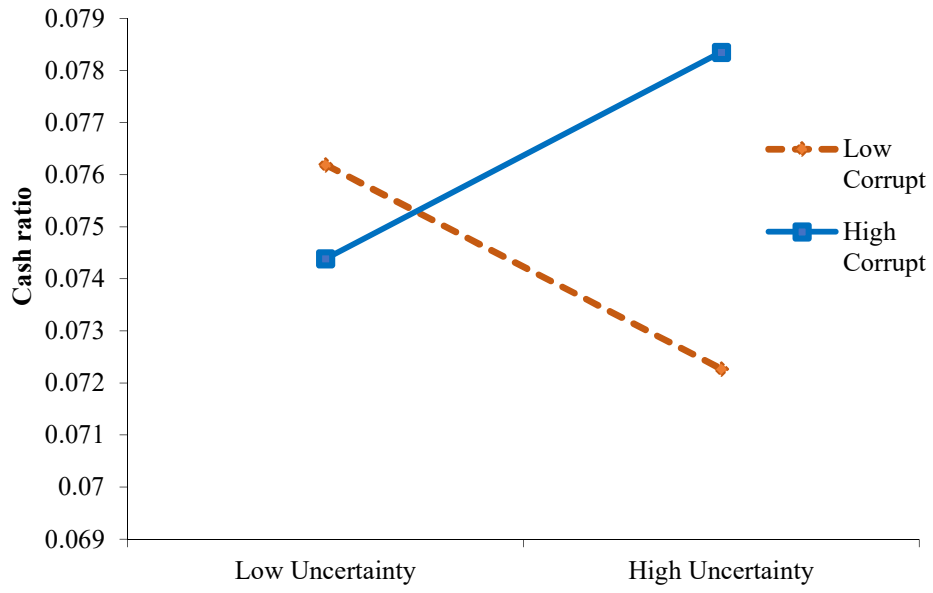
associated with the level of cash holding. Book-to-market ratio and R&D expenses are positively related to cash level.

Table 2.2: Baseline regression results

	Dependent variable: CASH (t+1)			
	(1)	(2)	(3)	(4)
PAI	0.013	-0.003	-0.008	-0.019***
	(0.011)	(0.014)	(0.009)	(0.004)
CORR	-0.039***	-0.065***	-0.047***	-0.024**
	(0.007)	(0.015)	(0.012)	(0.010)
PAI*CORR		0.054**	0.054***	0.068***
		(0.025)	(0.021)	(0.013)
SIZE			-0.011***	-0.012***
			(0.001)	(0.001)
LEV			-0.069***	-0.066***
			(0.006)	(0.006)
CAPEX			-0.294***	-0.284***
			(0.016)	(0.017)
DIV			-0.020***	-0.014***
			(0.003)	(0.003)
NWC			-0.007**	-0.007**
			(0.003)	(0.003)
BM			0.002***	0.002***
			(0.000)	(0.000)
CFLOW			0.003	0.003
			(0.003)	(0.003)
ACQ			-0.272***	-0.264***
			(0.011)	(0.011)
R&D			0.247***	0.233***
			(0.010)	(0.011)
Constant	0.013	0.021	0.111***	0.082***
	(0.015)	(0.016)	(0.014)	(0.020)
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
State effect	No	No	No	Yes
Observations	30,794	30,794	30,794	30,794
Adjusted R^2	0.130	0.131	0.288	0.299

This table presents pooled ordinary least squares estimates from the baseline model. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. PAI is the political alignment index of state *s* at time *t.* CORR is the per capita conviction rate of state *s* at time *t*. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Figure 2.3: Interaction plot between corruption and uncertainty



This figure shows the interaction effect between political corruption and political uncertainty on cash ratio. High Uncertainty is equivalent to the 75th percentile of PAI which is 0.80 and Low Uncertainty is equivalent to the 25th percentile of PAI which is 0.22. High Corrupt is equivalent to the 75th percentile of CORR which is 0.38 and Low Corrupt is equivalent to the 25th percentile of CORR which is 0.18.

Figure 2.3 depicts the interaction effect created using the values from Table 2.2, column 4.[12] The plot clearly shows that when uncertainty is low firms in low corrupt states hold more cash than those in high corrupt states. This relationship changes during high uncertainty where firms in high corrupt states increase cash while those in low corrupt states decrease cash.

2.4.2 Robustness checks

Our findings are still subject to endogeneity concerns. For instance, the results could be driven by economic factors that are associated with corruption, uncertainty, and cash holdings at a local level. We address these issues by adding additional controls (subsection 2.4.2.1) and by adopting two instrumental variables (subsection 2.4.2.2) that are associated with the level of corruption. Subsequently, in order to ensure that our findings are unaffected by possible measurement error

[12] The interaction plot is created using a template from Jeremy F. Dawson's website (http://www.jeremydawson.co.uk/slopes.htm)

and enforcement concerns in conviction data, we construct two additional proxies for corruption (subsection 2.4.2.3). We further test whether the alignment of the Congress members explains the state-level variation in political uncertainty (subsection 2.4.2.4). To establish causality, we run a DDD analysis using firms' headquarter relocation as a quasi-natural experiment (subsection 2.4.2.5). Our results remain robust throughout all these tests.

2.4.2.1 Additional controls

We address the potential omitted variable bias by controlling for local economic conditions by including state-level unemployment rate, GDP growth rate, log of personal income, and minimum wage to the baseline model. Glaeser and Saks (2006) argue that local corruption is correlated with education and income. Further, GDP growth and unemployment rate affect state economic conditions. Table 2.3 shows that all these control variables have a positive influence on cash holdings. The coefficient on the interaction term remains positive and significant. The inclusion of state variables increases the coefficient of the interaction term to 0.072 from 0.068 as reported in the baseline model results in Table 2.2 column 4. This suggests that even after controlling for regional economic conditions our results remain consistent.

2.4.2.2 Instrumental variable (IV) analysis

Despite controlling for regional characteristics, the possibility exists that our results may still remain endogenous. The level of corruption in the state that the firm is located and firm cash holdings could be correlated with other unobservable variables due to possible omitted variable bias. In order to address this endogeneity issue, we adopt an IV approach. Following Johnson et al. (2011) and Dass et al. (2016) we use two instruments for state-level corruption.

The first instrument is the number of days that a person should be resident in a state, as measured in 1970, before being eligible to vote (RESIDENT_VOTE). If a citizen must wait longer to be eligible to vote, this indicates that the state is depriving them of some power to hold politicians accountable. The lack of political accountability is positively associated with corruption.

Table 2.3: Additional state-level characteristics

	Dependent variable: CASH (t+1)
PAI	-0.022***
	(0.005)
CORR	-0.048***
	(0.009)
PAI*CORR	0.072***
	(0.015)
UNEMP	0.005***
	(0.001)
GDP	0.112**
	(0.048)
PI	0.079***
	(0.006)
MIN_WAGE	0.007***
	(0.002)
Constant	-0.757***
	(0.062)
Baseline controls	Yes
Year effect	Yes
Industry effect	Yes
State effect	No
Observations	30,794
Adjusted R^2	0.294

This table displays results from the regression when more state controls are added to the baseline model. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. PAI is the political alignment index of state *s* at time *t.* CORR is per capita conviction rate of state *s* at time *t*. All the state controls are defined in Appendix 1. All the firm controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1.. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

The second instrument, CONSTITUTION_AGE, is the age of the state's current constitution, measured as of 1970. The constitution outlines the set of rules that governs state politics. In order to accommodate changes in socio-cultural factors, a state can amend the existing rules or adopt a new constitution. The latter raises concerns about the quality of the rules that governed the state since new rules may bring new issues compared to the old constitution. Therefore, a higher quality constitution should be able to mitigate the level of corruption. Hence, an older constitution is more likely to be negatively correlated with corruption. Both variables are valid instruments since they relate to state-level corruption but have no direct effect on firm cash holdings.

Table 2.4: Two-stage least squares (2SLS) analysis

	First Stage *CORR* *(1)*	Second Stage *CASH (t+1)* (2)
RESIDENT_VOTE	0.001***	
	(0.000)	
CONSTITUTION_AGE	-0.001***	
	(0.000)	
CORR		-0.223***
		(0.063)
PAI		-0.090**
		(0.036)
PAI*CORR		0.325***
		(0.098)
Constant	0.271***	0.171***
	(0.036)	(0.033)
Baseline controls	Yes	Yes
Year effect	Yes	Yes
Industry effect	Yes	Yes
Weak IV test (F-test)		7778***
Wu-Hausman test		34.79***
Observations	34126	30794
Adjusted R^2	0.220	0.281

This table reports the regression results from two-stage least squares (2SLS) analysis. Column 1 shows the results from first-stage regression by taking CORR as the dependent variable. Column 2 reports the second stage results in which CASH (t+1) is the dependent variable. The coefficients in CORR and CORR*PAI are estimated using predicted values of CORR from the first stage. Two instruments for corruption are RESIDENT_VOTE and CONSTITUTION_AGE. All the firm controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

We re-estimate equation (2.2) by replacing the dependent variable with state-level corruption (CORR) in the first stage of the analysis. It can be seen from the results in Table 2.4 column 1 that the coefficients on both instruments are significant at the 1% level, confirming that RESIDENT_VOTE is positively correlated and CONSTITUTION_AGE is negatively correlated with corruption. In the second stage, using the predicted value of corruption, the coefficient of the interaction term (PAI*CORR) is positive and significant at the 1% level. Column 2 shows the IV diagnostics, indicating that the null hypothesis for both weak instrument and exogeneity can be rejected, confirming that our results are robust after correcting for endogeneity.

2.4.2.3 Alternative corruption measures

The use of judicial conviction rates of public officials is a well-established measure of corruption. However, the use of conviction data has been criticized despite its benefit in terms of it being an objective measure. Boylan and Long (2003) argue that there is a time lag between the crime and conviction, hence the annual change in conviction rate does not necessarily reflect a fluctuation in the level of corruption in a district. Furthermore, there is also a possibility that the most corrupt states have lower conviction rates due to lack of prosecutorial resources. Although DOJ data consist of convictions at the federal level and should reduce the enforcement variations, we further address these concerns by employing alternative measures of corruption.

First, to account for a possible time lag between crimes and convictions, following Glaeser and Saks (2006) and Ellis et al. (2019), we construct a long-term proxy. CORR_RANK is measured by taking the sum of the 5-year trailing convictions divided by the 5-year average population of each state. This is then converted into a percentage where 100% represents the most corrupt. Next, to address possible enforcement concerns we use data from the survey conducted by Boylan and Long (2003) among State House reporters to compare corruption across states. One of the eight questions in the survey asks reporters to rank their state on the overall level of corruption from a scale of 1 (least corrupt) to 7 (most corrupt). The authors construct a score for each state by taking the average of all the responses. We use this score to construct the second alternative corruption measure, CORR_SURVEY.

Table 2.5 reports the findings from the alternative corruption measures. Column 1 shows that the coefficient on the interaction term using CORR_RANK is 0.001, which is much lower than those from the baseline model, yet it remains positive and significant at the 1% level. This indicates that an increase in political uncertainty in more corrupt states, considering possible measurement errors in conviction data, has a significant positive impact on firms' cash holding levels. Column 2 shows the results using CORR_SURVEY. The number of observations in this test is restricted due to the non-availability of survey data from three states, namely Massachusetts, New Hampshire, and New Jersey. The interaction term is still significant at the 5% level, showing that even with the use of perception-based corruption measures, a rise in local uncertainty leads to a greater increase in cash holding in more corrupt states.

Table 2.5: Alternative corruption measures

	Dependent variable: CASH (t+1)	
	(1)	(2)
PAI	-0.019*	-0.016
	(0.011)	(0.014)
CORR_RANK	-0.0005***	
	(0.000)	
PAI*CORR_RANK	0.001***	
	(0.000)	
CORR_SURVEY		-0.010***
		(0.002)
PAI*CORR_SURVEY		0.008**
		(0.003)
Constant	0.123***	0.126***
	(0.016)	(0.018)
Baseline controls	Yes	Yes
Year effect	Yes	Yes
Industry effect	Yes	Yes
Observations	30,794	27,860
Adjusted R^2	0.289	0.286

This table presents pooled ordinary least squares estimates from the baseline model using two alternative proxies for corruption: CORR_RANK and CORR_SURVEY. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. PAI is the political alignment index of state *s* at time *t.* CORR_RANK is the annual corruption rank for state *s* at time *t*. CORR_SURVEY is the state corruption score from Boylan and Long (2003). All the firm controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

2.4.2.4 Alternative political uncertainty measure

Most of the PAI-related uncertainty at the local level emanates as a result of Congressional activities. This is primarily due to the volume of bills introduced and passed by state officials representing the Senate and House of Representatives from states that are more aligned to the president. However, the number of bills that is eventually passed into law is much lower (Bradley et al., 2016). On the other hand, state legislatures and governors do not have an influence in introducing bills, rather they play a significant role in implementing regulations within a state.

Therefore, greater alignment of state officials representing the two chambers of Congress to the ruling government is more likely to induce uncertainty than governors and state legislatures.

In order to test whether uncertainty through federal representation alone can capture the effect of corruption on cash, we construct a modified PAI by excluding state legislatures and governors. We assign equal weights to state officials representing the two chambers of the Congress (similar to Antia et al., 2013), as follows:

$$\text{Modified PAI} = (1/2)*\textit{SENATORS} + (1/2)*\textit{REPRESENTATIVES} \quad (2.3)$$

Table 2.6: Alternative political uncertainty measure

	Dependent variable: CASH (t+1)	
	(1)	(2)
Modified_PAI	-0.017	-0.038**
	(0.012)	(0.017)
CORR	-0.061***	
	(0.014)	
Modified_PAI*CORR	0.075***	
	(0.025)	
CORR_SURVEY		-0.013***
		(0.003)
Modified_PAI*CORR_SURVEY		0.013***
		(0.003)
Constant	0.116***	0.138***
	(0.016)	(0.022)
Baseline controls	Yes	Yes
Year effect	Yes	Yes
Industry effect	Yes	Yes
Observations	30,794	27,860
Adjusted R^2	0.288	0.286

This table presents pooled ordinary least squares estimates from the baseline model using an alternative proxy for political uncertainty, Modified PAI. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. Modified_PAI is the political alignment index of state *s* at time *t*. CORR_SURVEY is state corruption score from Boylan and Long (2003). All the firm controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Column 1 in Table 2.6 reports that the coefficient on the interaction term with the Modified_PAI is 0.075 (significant at 1%) and it is larger than the effect from PAI from the

baseline model. This supports the notion that much of the uncertainty that amplifies the effect of corruption on cash holding stems from federal legislators.

As a robustness check, we re-estimate the baseline model by interacting Modified_PAI with the alternative corruption proxy based on survey results, CORR_SURVEY. This is to ensure that our results remain consistent for both alternative proxies of corruption and uncertainty. Column 2 shows that the interaction term is significant at the 1% level.

2.4.2.5 Headquarters relocation as a quasi-natural experiment

A firm can choose to be established in a state with a high level of corruption to wield considerable influence over legislators by paying bribes. In contrast, if a firm wishes to avoid paying bribes it might choose to be located in a low corrupt state. Although this is not the only consideration in choosing a location, a firm's ability to choose where to base its headquarters raises the concern that the effect of corruption on firm financial policies we have found may be endogenous. To address this, we consider the effect on a firm's financial policies when it changes its headquarter location and experiences a change in the level of corruption from the original state to the relocated state. In this section, we conduct a difference-in-difference-in-differences (DDD) analysis using headquarter relocation events. We conjecture that when firms relocate from a low corrupt to a high corrupt state, the increase in cash holdings due to political uncertainty after the relocation should be higher than firms relocating from a high to low corrupt state.

We begin the analysis by identifying firm relocation events during our sample period. We follow a similar approach as Hoi et al. (2019) and Huang and Yuan (2021). Firms with multiple relocations are excluded from the analysis. In order to be included in the sample, a firm should have a minimum of 3 observations before the relocation and after the relocation. After applying these restrictions, we identify a total of 164 firm relocation events, out of which 89 firms experienced an increase in corruption and 75 firms experienced a decrease in corruption as a result of relocation. We estimate the following DDD firm-year fixed effect regression model.

$$CASH_{i,t+1} = \alpha_i + \beta_1 RELOCATION_{i,t} + \beta_2 POST_{i,t} + \beta_3 HIGH_PAI_{s,t} + \beta_4 RELOCATION_{i,t} * POST_{i,t} + \beta_5 RELOCATION_{i,t} * HIGH_PAI_{s,t} + \beta_6 POST_{i,t} * HIGH_PAI_{s,t} + \beta_7 RELOCATION_{i,t} * POST_{i,t} * HIGH_PAI_{s,t} + \gamma Firm\ Controls + \alpha_t + \varepsilon_{i,t+1} \quad (2.4)$$

To identify the level of corruption, we calculate the median corruption using the CORR_RANK measure. For each relocation event, we compare the CORR_RANK of the original state with the relocated state three years before and three years after the relocation. If the median CORR_RANK in the relocated state is higher than the original state, we categorize it as a corruption-increasing relocation. Hence the dummy variable RELOCATION is equal to 1 if a firm experiences corruption-increasing relocation and 0 if it experiences a corruption-decreasing relocation. POST is a dummy variable which equals 1 for observations after relocation and 0 for observations before the relocation. To capture the effect of political uncertainty we introduce HIGH_PAI, a dummy variable which equals 1 if the PAI of the firm headquarters state in a given year is greater than the annual median PAI and 0 otherwise. The main coefficient of interest is the triple interaction β_7 as it captures the over-time change in cash holdings for the increase in political uncertainty between firms relocating from low corrupt to high corrupt states.

We report the findings in Table 2.7. Column 1 shows that the coefficient on triple interaction term RELOCATION*POST*HIGH_PAI, is positive 0.047 and significant at the 10% level. This means that firms that change headquarters from low to high corrupt states increase cash relative to firms relocating from high to low corrupt states for rising uncertainty.

Having established causal implications to our findings, next we attempt to increase the validity of state-level variation in political uncertainty by combining gubernatorial elections as an exogenous shock to the headquarter relocation analysis. Gubernatorial elections take place every four years, and every year there are at least two elections across various states. Since these are staggered across states it is difficult to minimize the risk that affects the firm behavior. Many studies have used gubernatorial elections as a source of political uncertainty, concluding that it affects firms' IPO decisions (Çolak et al., 2017) and investment decisions (Jens, 2017). In a recent study, Jens and Page (2020) find that firms in states with upcoming gubernatorial elections, increase cash holdings four to five quarters before the election compared to firms in states with no upcoming election. Based on this premise, we construct a proxy to capture the uncertainty in state policies surrounding pre-elections.

Table 2.7: DDD analysis using firm headquarters relocation

	Dependent variable: CASH (t+1)		
	(1)	(2)	(3)
POST	-0.005	0.027**	0.024
	(0.009)	(0.011)	(0.023)
PAI_HIGH	0.012		
	(0.011)		
RELOCATION*POST	-0.016	-0.051**	-0.064**
	(0.018)	(0.019)	(0.025)
RELOCATION*PAI_HIGH	-0.019		
	(0.020)		
POST*PAI_HIGH	-0.006		
	(0.017)		
RELOCATION*POST*HIGH_PAI	0.047*		
	(0.027)		
POST*GUBER_ELEC		-0.069***	-0.054*
		(0.019)	(0.027)
RELOCATION*POST*GUBER_ELEC		0.115***	0.109**
		(0.028)	(0.038)
Baseline controls	Yes	Yes	Yes
Year effect	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes
Observations	2,337	2,337	930
Adjusted R^2	0.538	0.541	0.584

This table displays estimates from difference-in-difference-in-differences (DDD) firm-year fixed effect model based on headquarters relocation as a quasi-natural experiment. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. RELOCATION equals to 1 if a firm relocates its headquarters from low corrupt to a high corrupt state, and it equals to 0 if a firm relocates from high corrupt to a low corrupt state. POST equals to 1 for firm-year observations after the relocation and equals to 0 for observations before the relocation. HIGH_PAI equals to 1 if a firm is located in a state where PAI is greater than the annual median PAI, and 0 otherwise. GUBER_ELEC equals to 1 if a firm relocates from non-election state to an election state, and 0 if a firm relocates from an election state non-election state. We define a state as an election state if there is a gubernatorial election in a state in a given year and year before the election. The sample in column 1 and 2 includes all firm-year observations of relocated firms while the sample in column 3 includes firm-year observations surrounding the relocation event, 3 years before and after the relocation. All the firm controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

First, we identify states with gubernatorial elections that took place during the sample period and classify the year of election and the year before the election as a period of high uncertainty. We recognize these states as election states. We subsequently match these elections with firm headquarter relocation events. If a firm relocates from a non-election state or an election state to

an election state, we classify it as an increasing uncertainty relocation. Similarly, if a firm relocates from a non-election state or an election state to a non-election state, we classify it as a decreasing uncertainty relocation. We create a dummy variable GUBER_ELEC which is equal to 1 for increasing uncertainty relocation and equals 0 for decreasing uncertainty relocation.

We replace HIGH_PAI in equation (2.4) with GUBER_ELEC and re-run the DDD regression. Table 2.7, column 2 shows that the main variable of interest, the triple interaction term, RELOCATION*POST*GUBER_ELEC is positive and significant at 1% level. As the effect from an election is more likely to be higher surrounding the event timeline, we run an additional test by restricting the sample to the event window (i.e. 3 years before the relocation and 3 years after the relocation). Table 2.7, column 3 shows that the triple interaction term remains positive and significant. Overall, this quasi-natural experiment using firm headquarter relocation supports our argument that firms in corrupt states that experience heightened political uncertainty reserve more cash.

2.4.3 Financially constrained firms

According to Almeida et al. (2004) financially constrained firms choose an optimal cash policy to balance the profitability of current and future investments by saving cash out of cash inflows. On the other hand, cash policies of financially unconstrained firms are not influenced by future investments as they are not restricted by financial frictions. Theoretical and empirical work in policy risk suggests that an increase in uncertainty with regard to future policies creates financial frictions, worsening a firm's ability to access external financial markets (Pástor and Veronesi, 2012; Gungoraydinoglu et al., 2017). In light of this argument, Duong et al. (2020) show that when policy uncertainty increases, firms respond by increasing cash savings out of cash inflows. If firms hold back more cash due to high uncertainty, we expect our results to be driven by those firms that are more susceptible to such risk. Therefore, in this section we examine whether the positive association between cash holding levels and the two sources of risk is concentrated among financially constrained firms.

Table 2.8: Effect on financially constrained and unconstrained firms

	Dependent variable: CASH (t+1)			
	Firm size		Payout policy	
	FC	UC	FC	UC
	(1)	(2)	(3)	(4)
PAI	-0.014	-0.002	-0.051***	0.012
	(0.015)	(0.007)	(0.016)	(0.009)
CORR	-0.068***	-0.017	-0.074***	-0.011
	(0.023)	(0.010)	(0.021)	(0.013)
PAI*CORR	0.082**	0.001	0.127***	0.019
	(0.035)	(0.017)	(0.043)	(0.023)
Constant	-0.017	0.150***	0.113***	0.108***
	(0.017)	(0.013)	(0.022)	(0.029)
Baseline controls	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Observations	8,807	9,488	5,667	4,697
Adjusted R^2	0.171	0.351	0.316	0.445

This table presents regression results from subsample of financially constrained (FC) and unconstrained firms (UC) using two standard classification schemes: firm size and payout policy. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. PAI is the political alignment index of state *s* at time *t*. CORR is the per capita conviction rate of state *s* at time *t*. All the firm controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

To conduct this analysis, we divide the full sample into two subsets based on two categories of financial constraint measures as given in the literature. These include firm size and dividend payout ratio. We follow a similar approach as Almeida et al. (2004), and rank the firms based on total assets over the sample period and categorize firms in the bottom (top) three deciles in the distribution as financially constrained (unconstrained) firms. The second measure, dividend payout is built on the theory that financially constrained firms have a low dividend payout ratio (Fazzari et al., 1988). Following Han and Qiu (2007) we identify firms that have paid dividends during the sample period. Out of the total sample, 1067 firms have paid dividends at least once over the period. We calculate the dividend payout ratio as the ratio of dividends to operating income. We rank these firms annually based on the dividend payout ratio and categorize those firms in the bottom (top) three deciles in the distribution as financially constrained (unconstrained) firms.

Columns 1 and 3 in Table 2.8 show that the coefficient on the interaction term CORR*PAI is positive and significant only for the financially constrained subsample. Meanwhile, the findings are not significant for financially unconstrained firms. These results confirm our predictions that financially constrained firms are more susceptible to a high level of corruption and rising uncertainty.

2.5 Conclusion

In this chapter we provide empirical evidence on the impact of political corruption and uncertainty on cash holdings. Although there are a number of studies that examine the nexus between corruption and uncertainty, there is a lack of evidence as to how these two risk sources affect firm policies. Because of the socio-economic factors that contaminate cross-country studies, it is difficult to construct clean proxies to measure these features. By exploiting the heterogeneity that exists in political institutions across US states, we examine the interaction of local political corruption and uncertainty on firm cash holdings.

Using conviction data as a proxy for corruption and political alignment as a proxy for uncertainty, we find that firms in more corrupt states when faced with high uncertainty increase cash levels to a greater extent relative to firms in less corrupt states. The findings remain consistent after controlling for state-level socio economic factors and instrumental variable analysis using two instruments that are associated with state-level corruption. We also use alternative proxies for corruption and uncertainty, and our results indicate that the interaction between all these measures are positively associated with firm cash level. As an identification strategy, we conduct a difference-in-difference-in-differences analysis using a subset of firms that relocate their headquarters over the sample period as a quasi-natural experiment. In all these tests our results remain consistent. Furthermore, we show that our findings are more likely to be driven by financially constrained firms, supporting our interpretation of the results.

Overall, our study contributes to the literature by showing political risk as a possible channel through which corruption affects corporate financial policies.

Chapter 3:
Political connections, uncertainty, and cash holdings

3.1 Introduction

Political uncertainty compels an average firm to increase and hold back liquidity. To a certain extent, heightened uncertainty restricts access to external sources of finance, hence maintaining liquidity ensures a firm's financial flexibility and prevents any adverse cash flow shocks. However, the nature in which firms respond to political uncertainty varies on the level of political capital that firms establish through connections with policymakers. Since politically connected firms have easy access to external sources of finance, it is not obvious how these firms adjust liquidity in times of heightened political uncertainty. Hence, in this chapter, we examine the variation in response to political uncertainty across connected vs non-connected firms in the United States (US).

Our analysis is motivated by theoretical work on risk management policies linked with external sources of finance (Froot et al., 1993) and empirical evidence suggesting a precautionary motive for cash holdings when faced with political risk (Duong et al., 2020; Hankins et al., 2019). Although the relationship between political connections and preferential access to external funds is well established (Boubakri et al., 2012; Claessens et al., 2008; Khwaja and Mian, 2005), the subsequent effect on the level of liquidity is unclear. For instance, easy access to finance reduces the need to hold cash for precautionary motives (Hill et al., 2014), yet it also means that more cash is available as a result of external funds which is likely to be utilized by entrenched managers to build up political capital (Boubakri et al., 2013).

Since the liquidity level of connected firms is influenced by the ultimate motive of their financial policies, in the existence of high uncertainty, these firms can respond in two possible mechanisms. On the one hand, when faced with rising uncertainty, connected firms increase cash less than their non-connected peers since connected firms can maintain financial flexibility by tapping into external funds. On the other hand, exposure to uncertainty prompt connected firms to increase spending on political expenses in order to gain an informational advantage over upcoming policies and to influence policy changes to their benefit. Hence, in order to accommodate this

expense, connected firms would increase cash more than non-connected firms. We test these two competing hypotheses on a sample of politically connected vs non-connected firms in the US and find evidence supporting the latter that connected firms increase cash to influence policymakers.

The firm-level political connection is determined by the annual political expenses incurred by the firm on lobbying activities and campaign finance contributions made through Political Action Committees (PACs). The use of lobbying and campaign finance data as a measure of political connections is well supported in US studies. However, the link between these two sources is not well explored. Notable exceptions include Bertrand et al. (2014) and Kim et al. (2021). The underlying motivation for these studies is that campaign contributions by firms are a strategic long-term investment to gain access to legislators who they later lobby. Therefore in order to build up connections with politicians and influence the policy making process, firms are compelled to invest in both strategies. This suggests that in order to determine the level of connections in the US context, we need to consider the aggregate spending on campaign finance and lobbying activities. Building on this premise, in this chapter we estimate the firm-level connections based on both campaign finance and lobbying expenses data.

For our empirical test, we consider a sample of connected and non-connected firms in the US over the period from 1998 to 2018. The sample of non-connected firms consists of all the firms that do not spend on political expenses in a given year. To measure the level of political uncertainty, we use the Economic Policy Uncertainty (EPU) index, a text-based index developed by Baker et al. (2016). Our findings show that when exposed to high political uncertainty, politically connected firms increase the cash ratio by 43.33 basis points more than non-connected firms. Furthermore, as a source of cash, we also find that connected firms increase their cash reserves in uncertain times. Results remain consistent after controlling for industry attributes associated with political connections and macroeconomic trends. Overall, the findings support our hypothesis that connected firms increase cash to influence policymakers.

Next, we explore whether our results largely occur around presidential and gubernatorial elections. Since the level of uncertainty is higher around close elections, primarily around close presidential elections, connected firms respond to increasing uncertainty by holding more cash in the years following such elections. Given the high stakes associated with battleground states in determining the outcome of presidential elections, we find connected firms located in such states

increase cash relative to non-battleground states, suggesting that they have a greater political incentive to influence policymakers in times of uncertainty.

To further our understanding and validate our political motive hypothesis, we examine how connected firms utilize cash reserves in times of uncertainty for political spending. Given that connected firms are affected by governance issues (Chaney et al., 2011; Aggarwal et al., 2012), firms in areas most prone to governance issues are likely to spend more on political expenses in order to curry favors from public officials. We argue that if connected firms are increasing cash levels and savings to build up political capital, the amount of cash savings when exposed to high political uncertainty should be positively associated with the aggregate amount spent on campaign contributions and lobbying activities, more so in firms located in high corrupt states relative to those in low corrupt states. We find evidence in support of our argument. Furthermore, using the US Supreme Court ruling on Citizen United vs Federal Election Committee (FEC), a regulatory change that led to a rise in the level of legal corruption through means of higher PAC contributions (Coates, 2012), we find that PAC-linked firms in highly corrupt states exposed to high uncertainty increase cash relative to those in low corrupt states post regulatory change.

We make several contributions to the literature. First, we show the use of a liquidity channel for political influence. The fact that cash can be easily converted to personal benefits is well established in the literature (Myers and Rajan, 1998), and Boubakri et al. (2013) argue that politically connected firms across countries hold more cash than non-connected firms since cash is more likely to be utilized by entrenched managers in connected firms to build up their political capital to further their benefits from policymakers. By using political uncertainty as a shock to the level of liquidity, we are able to demonstrate a possible channel through which connected firms adjust liquidity to influence politicians.

Second, our findings provide an extension to the political strategies literature that campaign contributions are mechanisms employed by firms to influence politicians. Using a theoretical model Grossman and Helpman (1992) explain the participation of special interest groups in trade policy formation, and recent work by Kang (2016) quantifies the effect of such participation by firms in lobbying activities on the probabilities of policy enactment. Our findings extend these studies by providing clear evidence of the extent to which firms adjust their financial policies to influence policymakers through campaign contributions and spending on lobbying activities. We

emphasize the level of corruption in the location of the firm as a determinant of its behavior in responding to political risk through political connections, similar to the findings of Amore and Bennedsen (2013).

Finally, existing studies largely consider political connections as a hedging strategy to minimize the political risk related to investments (Wellman, 2017), cost of debt (Bradley et al., 2016), cost of equity (Pham, 2019), IPOs (Colak et al., 2021), and firm value (Akey and Lewellen, 2017). In contrast, we argue political risk prompts connected firms to increase their level of connectedness by saving more cash to pay for campaign contributions and lobbying activities. This subsequently facilitates connected firms to hedge risk.

The remainder of this chapter is organized as follows. Section 3.2 provides an overview of the literature relating to the political connections and also provides the hypothesis development. Section 3.3 describes the data used while section 3.4 discusses the methodology adopted along with the empirical findings in addition to some robustness tests. Section 3.5 concludes the chapter. Additional information relating to the data is reported in the Appendix.

3.2 Literature review

The main aim of this chapter is to explore how politically connected firms navigate political risk by adjusting financial policies. This section will introduce various forms of political connections, explore the reasons for establishing such connections, and finally the benefits and costs of these connections on the firm and macro economy.

3.2.1 Political connections

Over the years empirical studies on corporate political connections have expanded into many dynamics from antecedents, types, strategies, and a recent wave on the impact on firm value and performance. This research contributes to this new wave of literature by exploring how connections attenuate the types of risks that firms are exposed to under corrupt environments when setting firm financial policies. Firms establish various forms of connections for various reasons. There are two forms of connections in the literature; explicit connections (a politician joining a board of directors or a board member becoming a politician) and implicit connections (lobbying

and firm making contributions to election campaigns). The motivation underlying such engagements vary based on institutional factors and firm-level factors. For instance, in countries with a high level of corruption, firms may establish connections with the government to avoid, alter, ally, and accede corruption (Galang, 2012).

Forming business groups, creating self-regulating industry groups, or limiting investment in corrupt environments are activities to *avoid* the negative impact of government corruption. Lobbying to reduce corruption is an *alter* strategy, while political networking, the creation of joint ventures and corporate social responsibility (CSR) activities for constituency building are considered *ally* strategies. Direct bribery and acceptance of bureaucratic delays are considered acceding strategies. This framework developed by Galang (2012) is useful in understanding why firms in certain countries form allies with the government as opposed to bribery or lobbying. The usefulness of political resources is limited in countries like China and Russia where there is a strong centralized government, in such countries in order to prosper firms need to form allies, which is why guanxi and blat networks in China and Russia respectively allow well-connected businessmen to end up being successful. In the US where there is a congressional system (state power is diffused across government agencies), alter strategy is more useful as firms can capture regulatory privileges. This is evident from the findings of Chen et al. (2011); Chinese private firms located in regions with a high likelihood of rent-seeking by government officials, are more likely to establish connections with government officials as a way of safeguarding from expropriation. This implies that forming political connections have dual objectives; to reduce the risk of expropriation and to seek benefits from the government in the form of subsidies, preferential access to finance, or avoiding strict regulations.

In the US, campaign finance and lobbying are well-known mechanisms for influencing policymakers. Ansolabehere et al. (2003) argue that no matter what the motive of campaign contributions is, these should be considered as a political investment where firms expect a return out of it. If there is no discerning return, then campaign contributions cannot be considered as political investment, rather they should be regarded as a form of consumption. One dominant view of this is to consider politicians as "gatekeepers" of public policy where they demand contributions from interest groups by threatening regulatory changes. This resonates with Grossman and Helpman's (1992) theory. This is also the reason behind more contributions raised by congress

members serving in powerful committees than backbenchers. Ansolabehere et al. (2003) present four possible reasons why interest groups donate to a politician. The first is to receive a reasonable return from their investment, around 20%. The second is to buy access to politicians, not directly to policies. Donors get to associate more time with legislators. Although buying access doesn't guarantee that lobbyists can influence policy making, they are in a better position to provide information. The third reason is that donors try to elect politicians who are friendly to them, rather than influencing existing members of congress. The final reason being that even interest groups donate for consumption, they fancy being closer to Washington.

According to Grossman and Helpman's (1992) model of lobbying, every special interest group has a contribution schedule. This maps every policy vector that the government might choose and interest groups target the schedule for each of these policies. Some policies may not collect anything from some lobbyists. The government then sets the policy vector and collects from each lobby for policy choice. When calculating the optimal schedule, lobbyists realize that politicians set these policies to maximize their welfare. Lobbyists offer political contributions to incumbent candidates, with the expectation that once politicians come to power they can influence trade policy. This model has a common agency problem. This is because there are several principals (lobbyists) trying to influence one agent (the government) to take an action that may be costly for the agent to perform. The policy can be inefficient but the government may have to take an action given the up-and-coming elections. The authors argue that resources given by the firm as campaign finance are bribes, hence the lobbying process model could equally be a model of corruption.

3.2.2 Benefits of political connections

As discussed in the previous section, firms may form connections with the government for various reasons. The expectation is that such connections should provide benefits to those connected firms over non-connected firms with higher firm value, lower taxes, greater access to finance, and a better ability to hedge uncertainty. The following section provides a summary of these benefits as outlined in the empirical literature.

3.2.2.1 Firm value

A plethora of studies documents the value effect of being connected to politicians. A seminal study by Faccio (2006) explores the country-level characteristics of political connections using a hand-collected database of over 20,000 firms across 47 countries. A firm is defined as politically connected if at least one of its largest shareholders with over 10% control of the voting shares or one of its top-level officers (CEO, president, vice-president, chairman, or secretary) is a member of parliament, a minister, or is closely related to a top politician or party. This criteria for the identification of explicit form of political connections have been widely used by many researchers. Faccio (2006) finds that political connections are prevalent in countries that are perceived to be more corrupt and in countries that impose restrictions on foreign investments. The study also documents that political ties are more common in those countries with a more transparent system due to greater access to information. The event study shows no significant price impact on a firm's value when politicians enter boards but when a businessman enters politics stock prices increase significantly.

In the US context, there is value effect evidence using both implicit and explicit forms of connections. Some of the early work using implicit connection employ event studies; for example, Roberts (1990) shows that an unexpected death of a prominent Senator (Henry Jackson) led to a decline in firm value of firms that donated to election campaigns of this member. The rationale here is that the successor does not have the same level of expertise and benefit attached to the contributing firms and hence less importance to the firm, especially in the case of a senior member. He finds that 11 firms that donated to Jackson had lower stock market returns than 3 firms that did not. Similarly, Jayachandran (2006) shows that after Senator Jim Jeffords left the Republican party to stand as an independent party member, firms that contributed more to the Republican party experienced a decline in the market value relative to those Democratic supporters. Using a large dataset of campaign contributions, Cooper et al. (2010) document a significant positive association in firm returns, with a stronger effect for firms contributing to a larger number of candidates that are based in the same state as the firm's location. Similarly, using campaign finance surrounding close congressional elections, Akey (2015) finds a positive reaction on post-election share value for those firms donating to winning politicians and a negative reaction for those firms donating to losing politicians.

A handful of studies use the connection to the executive branch (explicit connection) of the US with contrasting conclusions. In support of the value effect, Brown and Huang (2020) present evidence that corporate executives' meetings with White House officials are associated with higher gains in terms of firm value. Similarly, Goldman et al. (2009) find that political ties of board members lead to a positive abnormal stock return in the event of the nomination of a politically connected member to the board. In contrast to prior evidence, Fisman et al. (2012) find that the values of firms with personal connections to Vice President Richard Cheney are insignificantly different from zero. This suggests that connected firms are unaffected by unfavorable events that potentially restricted Cheney's ability to provide favors for connected firms. This further implies that compared to personal connections, well-established institutional connections through campaign donations and lobbying are better mechanisms to manage rent-seeking in the US.

3.2.2.2 Policy influence and policy-specific return

The underlying motive of lobbying and campaign-contributing firms is to influence policies. However, determining whether these efforts translate to regulatory changes or policy implementation is difficult to measure. Notable exceptions are Kang (2016) and Brown et al. (2015), whose work measures the return of lobbying on policy enactment and policy-specific return through firm political activities. The following paragraphs explain the methodology adopted by these papers and their findings.

Using a structural model, Kang (2016) estimates that the probability of a policy being enacted into law in the US Congress (110th Congress) through lobbying expenditures in the energy sector is only 0.05 percentage points. Although this rate is low, average private returns from lobbying to the lobbying groups (firms & trade associations) account for 137-152%, which is far higher than market returns. The author estimates that the average value of a policy to a particular group is around $500mn, suggesting that even a small probability of policy enactment translates to higher private returns. This is determined by taking the difference between the expected payoff with and without lobbying expenditures. Although it's straightforward to estimate the payoff with lobbying, it's not easy to quantify the payoff without lobbying. In previous studies, if a firm does not get involved in lobbying, it is assumed that the firm will not receive benefits. But this is usually not the case, and Kang (2016) addresses this gap in the literature and considers the strategic reaction

of other interest groups to calculate the expected payoff without lobbying. One key aspect of Kang's study is that the unit of analysis is policies instead of bills. This is a novel approach, and the rationale behind this is that as a bill proceeds through the House and Senate, part of it gets removed and attached to multiple bills, which later on get enacted. More often a bill consists of multiple policies. Using natural language processing methods, Kang (2016) tracks the movement of each policy through bills.

Brown et al. (2015) present policy-specific returns from relational political activities for firms donating to legislators in finance committees In particular, the authors provide evidence that firms contributing to members in the Senate Finance Committee and House Ways and Means Committee (members in these committees are directly involved in tax policies, hence authors identify them as tax-writing members) are associated with lower future cash effective tax rates. Their argument is built on a relational approach which assumes that firm political strategies are a long-term investment where firms build up relationships with well-placed and well-entrenched policymakers consistently over time. Buying access this way ensures early access to information and a continuous relational link with legislators, which in turn translates into a high success rate for firms in terms of policies. In a further analysis, Brown et al. (2015) determine that contributing firms that also engage in lobbying experience lower future taxes. Hence, they consider these two as complementary political strategies.

3.2.2.3 Lax enforcement

Aside from policy influence, being connected to politicians enables access to powerful legislators. Through this access, firms attain all sorts of other benefits such as more government contracts and permissive regulatory actions. These benefits are not necessarily lobbying-linked, implying that they may not be a result of firms lobbying a specific bill or policy with firms receiving a policy benefit due to that policy being enacted. The benefits can be more in terms of general advantages that firms enjoy as a result of being connected.

One such benefit is selective enforcement. Heitz et al. (2021) show that politically driven selective enforcement for environmental polluters under the purview of the Clean Water Act is channeled through politically connected legislators. More specifically, the authors show that firms

who donate to winning politicians in Senate and House close election campaigns are less likely to be enforced with violations and enjoy lower penalties compared to non-connected firms. Similarly, Correia (2014) finds lower SEC enforcement actions and costs incurred by politically connected firms. SEC-linked lobbyists may use their experience to advise their clients in all possible ways to lower the probability of enforcement.

Lobbying provides insurance-like protection for firms that are under allegations. Liu et al. (2020) find that when firms are accused of polluting the environment, those firms with superior environmental CSR rating experience greater loss in valuation upon filing environmental suits, while an increase in lobbying expenditure is associated with lower filing-date valuation losses. This infers that investors perceive being connected to rule-makers as a strategy to ensures favorable litigation outcomes.

3.2.2.4 Access to finance

Evidence on the direct influence of political connections on financial policies is limited and the findings are contradictory. Using a large data set of political connections from 31 countries, Boubakri et al. (2013) analyze the effect on firm cash holdings and find that connected firms with weak corporate governance hold more cash compared to non-connected firms. This implies that managers hold more cash to support political motives, compromising shareholder wealth maximization and profit maximization objectives. These findings complement the results of Caprio et al. (2013) who show that firms hold less cash in countries that have a high likelihood of political extraction. The argument here is that being connected in a corrupt environment helps to mitigate the negative effect of political extraction, thus firms do not have to disgorge cash out of the business. Hence, being connected reduces political extraction and such firms are more likely to hold cash than non-connected firms. In contrast to these findings, Hill et al. (2014) show that politically connected firms through lobbying have low cash holdings compared to non-connected firms. Connected firms have no restrictions in terms of raising external finance (as shown by Boubakri et al. (2012) connected firms experience a lower cost of capital relative to non-connected peers, hence more likely to raise finance easily), and connections help to mitigate future cash flow risks, thereby reducing the cost of illiquidity. This negative association implies that lobbying reduces agency costs related to cash holdings.

Taken together, Boubakri et al. (2013) and Hill et al. (2014) provide contradictory findings in terms of the effect of political connections on cash holdings. One reason could be due to the large sample of both corrupt and non-corrupt countries in the former while the latter only focuses on the US which is perceived to be low corrupt. It could also be that in Boubakri et al. (2013) connections are measured as firm officials being connected to government officials (explicit connections), whilst in Hill et al. (2014) it is the firm contributions to campaign finance (implicit connections). Managers holding more cash in order to fund future political campaigns implies the corrupt intention of the managers, whereas lobbying firms holding less cash implies the corrupt intention of the government as public officials favor these firms when raising external funds. These contradictory findings could arguably be due to different political strategies adopted by firms to reduce the effect of corruption. As proposed by Galang (2012), firms adopt various strategies to mitigate the effect of corruption. Thus, merely analyzing the direct influence of political connections on cash holdings does not infer the economic reason behind a firm's financial policies. Further research is needed to understand the role of connections in cash holdings through the lens of corruption.

3.2.2.5 Reduce political and economic uncertainty

Most of the studies relating to why firms contribute to political activities mainly look at bailouts, government contracts, and financing, yet there is very little evidence to show that connections are mostly established to reduce uncertainties around government policies that would affect the firm activities. Akey and Lewellen (2017) argue that firms' sensitivity toward policy uncertainty coupled with donations to political candidates determines its response to election outcomes. The study provides evidence of an increase in investments and a decrease in leverage by policy-sensitive firms experiencing a "lucky" capital shock from a candidate's close election win that the firm has contributed funds towards, as compared to a firm experiencing an "unlucky" capital shock from a candidate's narrow loss. Similarly, Wellman (2017) presents that investments by connected firms decline at a lower magnitude relative to non-connected peers. This phenomenon is primarily driven by the information advantage channel between policymakers and politically connected firms which helps these firms to mitigate negative outcomes arising from policy uncertainties (Wellman, 2017; Pham, 2019). Using the degree of uncertainty in a firm's

quarterly financial reports, Pham (2019) documents that during increasing economic policy uncertainty, financial reports of connected firms show less uncertain language relative to non-connected peers. Being connected acts as a hedging measure and enables the firm to understand what policies will come into effect, thereby reducing its exposure to uncertainties. The findings of Bradley et al. (2016) further corroborate this argument with U.S. policy risk at the state level where the borrowing cost due to political uncertainty is less severe for firms that support election campaigns.

During an uncertain period, connected firms respond positively to any good news that would benefit their firms. For instance, in 2008, when Timothy Geithner was picked as Treasury Secretary by President-elect Barack Obama, Geithner's connected banks experienced an excess return of 6% at the end of a full trading day after the announcement and cumulative abnormal returns of about 12% after ten trading days (Acemoglu et al., 2016). Furthermore, during the financial crisis cycle (2007 – 2008), US firms spent more on lobbying than on election campaigns, $6bn compared to $700m. As a result, Adelino and Dinc (2014) document that companies that lobbied heavily during the first quarter of 2009 were the largest beneficiaries of the Stimulus Act. Even though the stimulus package was targeted towards the financially distressed firms, those firms that lobbied were not weak per se, yet were more likely to receive funds.

3.2.3 Costs of political connections

Connections do not always yield benefits, for instance, lobbying can sometimes be beneficial if managers align them properly with the firms' strategies, but it can also be detrimental if managers focus on complex, uncertain political processes that could stretch for long periods and generate negative public attention. Cao et al. (2018) find a negative association between lobbying and firm performance. If the purpose of the lobbying process is to influence government agents and receive a positive outcome for the firm, then the success can be determined based on the number of contracts each firm receive as a result of lobbying during a year and the number of bills passed by the US Congress that a firm chooses to lobby. Building on this premise, Cao et al. (2018) evaluate these two success metrics on lobbying expenditure by each firm, though find no evidence to support the notion that a higher amount of lobbying has any benefit on the firm in passing a bill or obtaining more government contracts. Bertrand et al. (2018) provide similar evidence on French

firms controlled by politically connected CEOs, where the ROA of these firms is lower than unconnected firms due to high wage costs given that connected firms recruit more employees during elections.

Philippon (2019) blames lobbying, arguing that it is the potential driver for the decline in competitive pressures in the US markets compared to EU markets. Although we see lobbying in the EU market it is much less in magnitude than US lobbying. This lack of competitiveness along with high concentration across certain American industries has led to serious repercussions for consumers via high prices, lower investment, and lower productivity growth. The author argues that this is largely due to the political setting in the US as opposed to fundamental technological issues. Lower competitiveness is driven by high barriers to entry and weak enforcement. As evident in previous studies, weak enforcement is a result of the prevalence of substantial amounts of lobbying and campaign contributions in the US. Firms that lobby for lower taxes usually become too large. These firms are usually larger, capital intensive, and enjoy lower tax rates. These firms also have a lower marginal product of capital compared to firms that do not lobby. Fundamentally we would expect lower taxes to translate into beneficial incentive effects and to have more investments. Unfortunately, the outcome of lobbying is the opposite and lower tax breaks rarely improve investment and hiring decisions.

Overall, the literature review section provides a detailed account of the benefits and costs of being connected to policymakers. In particular, we make a distinction between studies in the US and other countries. Although the scale of investments in campaign finance and lobbying is low, the return on these investments is greater than the average market return. Such connections help to navigate political risk by allowing firms to raise external finance and improve firm value. Despite value creation benefits, there is no clear evidence as to how connected firms manage their financial policies in order to invest in political expenses. Hence, in this essay, we aim to fill this gap. The following section builds up the hypothesis for the main analysis.

3.2.4 Hypothesis development

As discussed in chapter 2, heightened political uncertainty imposes restrictions on a firm's financial policies, limiting access to external sources of finance (Gungoraydinoglu et al., 2017)

and forcing a cutback in investment level (Pástor and Veronesi, 2012; Jens, 2017). Empirical studies have shown that when political uncertainty increase, firms opt to reserve liquidy as a precautionary measure (Duong et al., 2020; Hankins et al., 2019). This is built on the premise that uncertainty makes it difficult for firms to access external finance, and holding more cash enables firms to maintain financial flexibility and prevent any adverse cash flow shocks (Bates et al., 2009).

The ability of a firm to access external finance differs based on the political capital that the firm has established over a period of time, hence a firm's response to political uncertainty varies across the political connectedness. As discussed in the literature review, the liquidity level of politically connected firms differs from non-connected firms since the former have easy access to external sources of finance and are more likely to be bailed out in times of distress (Boubakri et al., 2012; Claessens et al., 2008; Faccio et al., 2006). However, the findings are contradictory. Hill et al. (2014) argue that since connected firms can raise cash easily, there is a limited necessity to reserve cash for precautionary purposes (as they are exposed to low cash flow risks). In contrast, Boubakri et al. (2013) argue that since connected firms can raise cash easily, more cash available in the firm is likely to be utilized by entrenched managers to build up political capital. The latter part is built on the underlying governance issues in connected firms as shown by Chaney et al. (2011) and Aggarwal et al. (2012).

Since there is contradictory evidence on the level of liquidity across connected vs non-connected firms, there is no clear understanding as to how these firms respond to rising political uncertainty. Hence, we propose that they are likely to adjust liquidity in two possible mechanisms which are not mutually exclusive, and we examine these two competing hypotheses.

During rising political uncertainty, politically connected firms increase cash less than non-connected firms because connected firms are less exposed to cash flow risks since they have easy access to finance. This is consistent with the findings of Adelino and Dinc (2014) who reports that US companies that lobbied heavily during the first quarter of 2009 were the largest recipients of the stimulus package, even though those firms were not in dire financial need or financially distressed. Thus, this reduces the requirement of connected firms to increase cash or to hold back cash for a precautionary motives.

By contrast, connected firms increase cash more than non-connected firms in order to increase spending for political expenses, which later gives connected firms a political advantage over non-

connected peers. Shang et al. (2021) posit that when political uncertainty increases, lobbying firms increase expenses on lobbying activities. One of the reasons underlying this behavior is attributable to their ability to influence policy changes; in general, firms reduce investments, innovation, and IPO activities during a risky periods. However, connected firms, by spending more on lobbying and campaign donations, these firms are in a better position to receive more information on upcoming policy changes and subsequently hedge their risk toward investments and IPO activities (Wellman, 2017; Colak et al., 2021). Another reason is that uncertainty about policies also means that the outcome of the policy is not known in advance, hence lobbying firms are in a better position to influence the outcome in a way that will benefit them (Ansolabehere et al., 2003; Kang, 2016). Therefore, in order to increase political expenses during times of increasing uncertainty, connected firms increase cash more than non-connected firms. This implies that during such periods, the precautionary need for cash for connected firms is greater relative to non-connected firms.

3.3 Data and variables description

3.3.1 Firm financial data

The sample consists of all publicly listed firms incorporated in the US. We obtain firm historical financial data from Datastream. The dataset includes all active and inactive firms in any of the following exchanges: NYSE, NYSE MKT, NASDAQ Global Market, and NYSE Arca. We exclude firms in the financial sector (SIC 6000-6999) as these firms need to meet a statutory capital requirement that is different from non-financial firms, and firms in the utility sector (SIC 4900-4999) since these firms are subject to state-specific regulations. Furthermore, firm-year observations with non-positive assets and sales are excluded, as too are firms with fewer than 3 observations. After applying these restrictions, the total sample consists of 51,484 observations incorporating 4,442 unique firms over the period extending 1998-2018. The dependent variable, namely cash-to-assets ratio, is equal to the natural logarithm of cash and cash equivalents divided by total assets. We control for firm characteristics identified in the existing literature highlighting the determinants of cash holdings (e.g., Opler et al., 1999; Bates et al., 2009). These include firm size, leverage, net working capital, capital expenditure, dividends, book-to-market value, cash flow, and research and development expenditure. These controls are defined in Appendix 1. The

two main independent variables of interest, namely political connections and political uncertainty, are described in sections 3.3.2 and 3.3.3, respectively.

3.3.2 Political connections

Political connections are measured based on the campaign donations and lobbying activities carried out by the firm. The data for these activities are sourced from the Center for Responsive Politics (CRP). Since this data is not directly linked to an individual firm, we follow the approach adopted in the literature to match CRP data with Datastream data. A detailed explanation of the process is given in the following paragraphs.

To make campaign contributions, firms must establish a legal body known as political action committee (PAC). Firm contributions from PACs to politicians are a better way to analyze the level of connections compared to contributions made by individuals because individual ideologies and characteristics can be biased, and is not always for the best interest of the firm (Akey, 2015). PACs are led by a treasurer, frequently a lobbyist, former government employee, or other political specialists, who are hired to make the best use of the PAC's funds. The firm PAC can contribute up to $5,000 to an individual candidate per election and up to $15,000 to the national party committee per election. Although the scale of these contributions is limited by the FEC, firms can spend an unlimited amount of money on fundraising events or running reelection campaigns (to either support or defeat a candidate). This type of spending is known as independent expenditures and is not considered in our analysis.

Politicians are not allowed to personally take donations from firm PACs, they also need to establish election PACs to receive funds. There are two types of politician-specific PACs: election PACs and leadership PACs. Election PACs are used only for elections and are capped at $10,000 per election cycle. Leadership PACs have the same cap, but the funds are not used for elections expenses but used to pass funds to other politicians who need the money for their campaigns.

To establish campaign contributions made by firms to congressional candidates, we construct a relational database using three datasets available in CRP (these datasets are named as CMTE, PAC2CN, and CN). Data variables used in each of the datasets are explained in Figure 3.1. These are publicly available data where CRP organize them for each election cycle (2-year period) based

on campaign contribution data published by the Federal Election Commission (FEC). The FEC is responsible for regulating campaign contributions. The Federal Election Campaign Act requires all donations above the value $200 to be publicly available on the FEC website starting with the 1979-1980 election cycle. We construct the PAC dataset from 1998 to be consistent with lobbying activities since the level of political connectedness is determined by firm involvement in both activities.

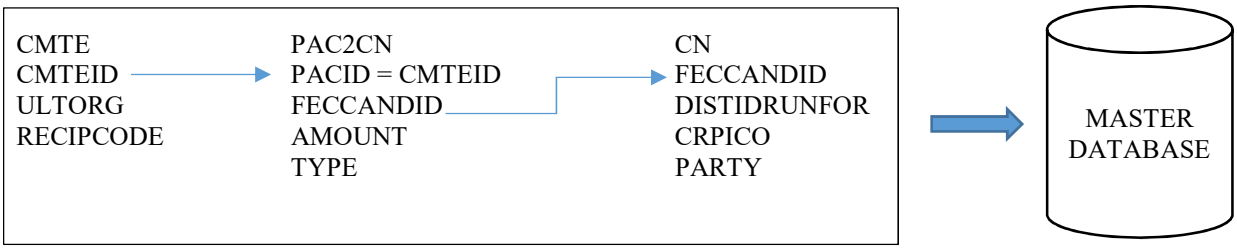
Figure 3.1: CRP datasets

CMTE FEC Committees	PAC2CN PACs to Candidates	CN Candidates
CMTEID Unique ID given by FEC to each political action committee (PAC).	PACID Unique ID assigned by FEC for PAC making the contribution. This is same as CMTEID.	FECCANDID Unique identifier assigned by FEC for each candidate.
PACSHORT Committee name based on PAC's sponsor.	FECCANDID ID of the candidate that PAC contributed during a given election cycle.	DISTIDRUNFOR Four character identifier for the office sought by the candidate which includes two characters for the state of the candidate (Congressional or Presidential).
ULTORG Parent organization of the PAC.	AMOUNT The amount contributed.	CRPICO Type of candidate (I = Incumbent, C = Challenger, O = Open seat).
RECIPCODE A two-character code to identify the type of the recipient. Records that equals to PB refers to firm PACs.	TYPE Type of the transaction.	PARTY The party of the candidate.

We begin the analysis with the CMTE dataset by filtering out only firm PACs (RECIPCODE = PB). Next, we do a fuzzy match of the firm's full name with the ULTORG field in the CMTE table using MS Excel. The full name of the firms in the sample is obtained from Datastream. This firm and PAC matched table is first merged with PAC2CN dataset by the committee ID (CMTEID) and then merged with CN dataset by candidate ID (FECCANDID). This process lead to the creation of a master database which we later use to gather information by various categories such as the amount contributed by firm PACs each year to incumbent candidates and congressional and presidential candidates, and cluster them based on state and party of the candidates. We use the Dplyr package in R for this process and Figure 3.2 depicts the queries used in creating the master database. This process had to be repeated for each election cycle since some PACs change their

names over the sample period. In addition, firms also change their names due to changes in the corporate structure such as mergers and acquisitions. Hence to increase the accuracy of the datasets, we repeat this process for every election cycle.

Figure 3.2: Database queries



Filters

RECIPCODE = "PB"
This refers to firm PACs

TYPE = "24K"
This refers to direct contributions. Other types of transactions such as independent expenditures for the candidate and communication cost against the candidate are excluded from the study. Such transactions are also uncommon among firm PACs.

DISTIDRUNFOR = "! = PRES"
This filter include all the candidates running for congressional elections including both House and the Senate, and exclude candidates running for presidential elections (PRES refers to presidential candidates).

CRPICO = "I"

Lobbying data is available from the CRP on a semi-annual basis from 1998 and a quarterly basis from 2008. The Lobbying Disclosure Act of 1995 made it mandatory for all lobbying firms to file a separate report for each client for each quarterly period, and for those corporations employing in-house lobbyists to file one report covering their in-house lobbying activities on a quarterly period. These reports should be disclosed to the Secretary of the Senate's Office of Public Records. We hand collect these data reported in CRP for each company and match them with the Datastream company list on an annual basis.

To determine the level of political connectedness, following Hill et al. (2014), we construct a measure by considering whether the firm reports political expenses in a given year. Hence,

POL_CONN is a dummy variable that is equal to one if a firm reports either a lobbying expenses or a campaign donation in a given year and zero otherwise.

The use of lobbying and campaign contributions as a measure of firm-level political connection is well supported in the literature (Cooper et al., 2010; Akey, 2015; Hill et al., 2014; Pham, 2019). Lobbying and campaign contributions allow us to capture an objective measure of connection compared to using explicit form of connection. While previous studies use either the degree of lobbying or campaign donations, our measure is constructed by computing the aggregate spending on these activities. The rationale here is that firm donations to incumbent candidates are motivated by their intention to influence those candidates who subsequently vote on the bills that firms lobby. Therefore in order to build up connections with politicians and influence the policy making process, firms are compelled to invest in both strategies. A limited number of studies including Bertrand et al. (2014) and Kim et al. (2021) show evidence of this link between campaign contributions and lobbying. Hence in our measure of firm-level political connection, we consider the total amount spent by firms on both these activities.

3.3.3 Political uncertainty

We use the EPU index developed by Baker et al. (2016) as a proxy for national-level policy uncertainty. EPU is calculated monthly based on the frequency of newspaper articles that cover a large spectrum of economic policy uncertainties surrounding both monetary and fiscal policy, regulatory changes, and elections. To construct the index, the authors rely on the 10 largest newspapers in the US and search the digital archives of each newspaper from January 1985 to count the number of articles that contain of the following terms: ‘‘uncertainty’’ or ‘‘uncertain’’; ‘‘economic’’ or ‘‘economy’’; and one of the following policy terms: ‘‘Congress’’, ‘‘deficit’’, ‘‘Federal Reserve’’, ‘‘legislation’’, ‘‘regulation’’ or ‘‘White House’’ (Baker et al. 2016). The validity of the index is established by employing various mechanisms such as human audit (comparing computer-generated EPU index with the time-series behavior of human readings of newspaper articles), measuring political leaning of the newspaper and finally comparing EPU with other forms of uncertainty (eg: stock market volatility using VIX, uncertainty word counts from Beige Book released prior to Federal Open Market Committee meetings, uncertainty word counts

in 10-K filling under Risk Factors section, and large stock market jumps). Taken together, all these steps ensure the accuracy of EPU as a measure that captures the level of political uncertainty.

The application of the index as a political uncertainty measure within the US political context is numerous. For example, using EPU, Gulen and Ion (2016); Wellman (2017); Pham (2019); Duong et al. (2020) show that political uncertainty has an impact on investments, cost of equity, and cash holdings, respectively. Following these studies, EPU is determined by calculating the average EPU over a 12-month period in each fiscal year t and assigning it to each firm in year t.

3.3.4 Summary statistics

Summary statistics and the correlation coefficients of the full sample are presented in Table 3.1. According to panel A, the average cash-to-assets ratio is 21%. The average firm size is 6.09, total leverage ratio is 23%, and capital expenditures-to-assets ratio is 5%. The average EPU is 4.74. Politically connected firms on average spend $1,1128,961 on lobbying and campaign finance activities, with a median of $220,000 and a very large standard deviation of $2,574,490. According to Panel B, correlation coefficient matrix, EPU is positively correlated with cash ratio and significant at 1% level.

Table 3.2 shows the summary statistics of politically connected vs non-connected firms. To split the total sample into these two groups, we construct a time-invariant political connection measure, POL_CONN_FIRM. This is a dummy variable that is equal to one if a firm's total number of observations for either lobbying or PAC donations is greater than 25% of the sample period, and zero otherwise. The 25% cut-off is arbitrary, yet the rationale for setting a band is to consider firms that are actively engaged in lobbying and campaign activities.

Based on POL_CONN_FIRM measure, there are 934 politically connected firms actively engaged in campaign donations and lobbying activities during the sample period. The table shows that politically connected firms have larger total assets, leverage, cash flows, and profitability ratio relative to non-connected firms. This implies that larger firms are more likely to be engaged in lobbying and campaign donation activities. Consistent with the findings of Hill et al. (2014), connected firms on average hold less cash (16% cash-to-assets ratio compared to 23% of non-connected firms). The mean difference in cash ratio is statistically significant at 1%. Furthermore,

a higher leverage ratio (28%) and cash flow ratio (4%) of connected firms imply that such firms hold less cash due to easy access to capital markets.

Table 3.1: Descriptive statistics and correlation coefficients – full sample

Panel A: Descriptive statistics

Statistic	N	Mean	Median	SD	Pctl (25)	Pctl (75)
CASH	51,484	0.21	0.12	0.23	0.03	0.3
SIZE	51,484	6.09	6.10	2.12	4.61	7.55
LEV	51,484	0.23	0.19	0.24	0.02	0.36
CAPEX	51,484	0.05	0.03	0.06	0.02	0.06
DIV	51,484	0.37	0.00	0.48	0	1
NWC	51,484	0.05	0.05	0.2	-0.05	0.17
BM	51,484	2.32	1.63	2.1	1.18	2.55
CFLOW	51,484	-0.004	0.07	0.28	0.004	0.11
R&D	51,484	0.05	0.00	0.11	0	0.1
ROA	51,441	0.01	0.07	0.25	0	0.12
EPU	51,484	4.74	4.85	0.27	4.51	4.98
PAC+Lobby ($)	11,132	1,128,961	220,000	2,574,490	60,000	860,012

Panel B: Correlation coefficients

	CASH	SIZE	LEV	CAPEX	DIV	NWC	BM	CFLOW	R&D	ROA	EPU
CASH	1.00										
SIZE	-0.30	1.00									
LEV	-0.51	0.34	1.00								
CAPEX	-0.23	0.13	0.11	1.00							
DIV	-0.25	0.40	0.13	0.10	1.00						
NWC	-0.24	-0.05	-0.12	-0.03	0.08	1.00					
BM	0.38	-0.09	-0.19	0.00	-0.04	-0.23	1.00				
CFLOW	-0.15	0.23	-0.06	0.30	0.13	0.19	0.14	1.00			
R&D	0.50	-0.24	-0.30	-0.21	-0.23	-0.08	0.31	-0.21	1.00		
ROA	-0.21	0.34	0.03	0.20	0.32	0.24	0.19	0.79	-0.27	1.00	
EPU	0.02	0.08	0.03	-0.07	0.02	-0.04	-0.08	-0.06	0.01	-0.04	1.00

This table reports descriptive statistics (Panel A) and correlation coefficients (Panel B) for the main variables used in the analysis. The sample contains 51,484 firm-year observations of 4,442 US firms over the period from 1998-2018. All the firm variables are winsorized at 1% and 99% level to minimize the effect of outliers. Variable definitions are provided in Appendix 1.

Table 3.2: Politically connected firms vs non-connected firms

	Politically connected firms				Non connected firms				Difference in means		
Statistic	N	Mean	Median	SD	N	Mean	Median	SD	Diff	t-stat	
CASH	13,997	0.16	0.08	0.19	37,487	0.23	0.14	0.24	-0.07	34.11	***
SIZE	13,997	7.79	7.91	1.87	37,487	5.45	5.52	1.83	2.34	-127.23	***
LEV	13,997	0.28	0.26	0.22	37,487	0.22	0.15	0.24	0.06	-29.31	***
CAPEX	13,997	0.05	0.04	0.05	37,487	0.05	0.03	0.06	0.00	-1.85	*
DIV	13,997	0.54	1.00	0.50	37,487	0.30	0.00	0.46	0.24	-50.69	***
NWC	13,997	0.03	0.02	0.16	37,487	0.06	0.06	0.21	-0.03	20.41	***
BM	13,997	2.27	1.67	1.87	37,487	2.34	1.61	2.17	-0.07	3.37	***
CFLOW	13,997	0.04	0.07	0.19	37,487	-0.02	0.06	0.30	0.06	-27.89	***
R&D	13,997	0.04	0.00	0.08	37,487	0.06	0.00	0.12	-0.02	26.63	***
ROA	13,989	0.06	0.08	0.18	37,452	-0.01	0.06	0.27	0.07	-34.21	***
MKT_SHARE	13,997	0.05	0.01	0.11	37,487	0.01	0.00	0.06	0.04	-44.20	***
N_IND_ACTIVE	13,916	24.32	23.00	18.27	36,892	25.45	26.00	18.70	-1.13	6.14	***
EPU	13,997	4.75	4.85	0.27	37,487	4.74	4.85	0.27	0.01	-5.86	***

This table reports descriptive statistics for the main variables used in the analysis across politically connected vs non-connected firms. The sample contains 13,997 firm-year observations of 934 connected firms, and 37,487 firm-year observations of 3,508 non-connected firms over the period from 1998-2018. All the firm variables are winsorized at 1% and 99% level to minimize the effect of outliers. Variable definitions are provided in Appendix 1

To better understand the correlation between EPU and cash ratio across politically connected vs non-connected firms, we plot the annual average cash ratio and EPU over the sample period in Figure 3.3. Although the average cash ratios of both types of firms are highly correlated over the years, the correlation between EPU and cash ratio of connected firms is much higher at 0.18 relative to 0.04 for non-connected. This provides an early indication to the hypothesis that in times of high political uncertainty, connected firms hold more cash relative to non-connected peers. In Figure 3.4, we take the average of political spending by connected firms on PACs and lobbying activities by year and plot it against the average of EPU by year. There is a clear rise in political spending in times of heightened uncertainty.

Figure 3.3: Cash ratio and EPU across connected vs non-connected firms

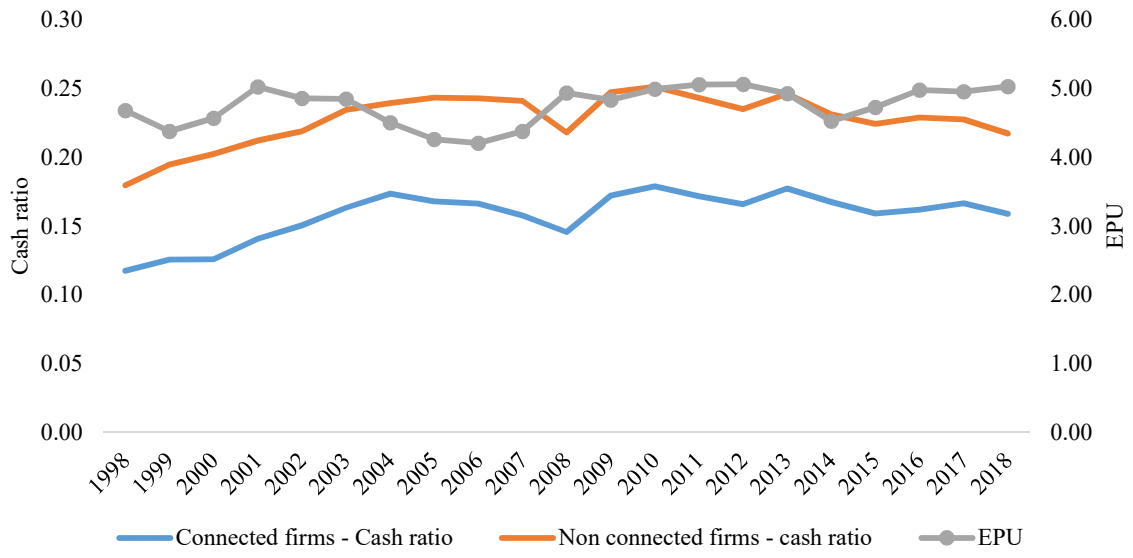
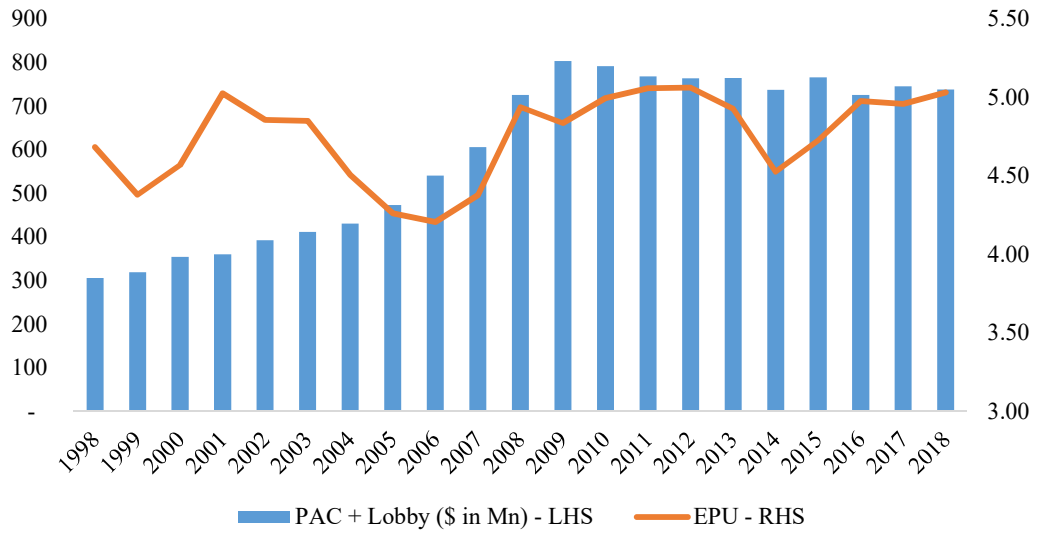


Figure 3.4: Political spending and uncertainty



3.4 Results

3.4.1 Baseline results

To estimate whether politically connected firms respond differently relative to non-connected firms in periods of high political uncertainty, we use the following model to show the conditional effect of political connections and uncertainty on the firm cash holdings.

$$lnCASH_{i,t+1} = \alpha_0 + \beta_1 POL_CONN_{i,t} + \beta_2 EPU_t + \beta_3 POL_CONN_{i,t} * EPU_t + \gamma_1 Firm\ Controls + \gamma_2 Industry\ Controls + \alpha_j + \varepsilon_{i,t+1} \quad (3.1)$$

The dependent variable is the natural logarithm of cash and cash equivalents scaled by total assets in time t+1. POL_CONN is a dummy variable equal to one if a firm reports either a lobbying expense or a campaign donation in a given year and zero otherwise. The natural logarithm of EPU is added to measure political uncertainty. The main variable of interest is the interaction term between EPU and POL_CONN. The coefficient of the interaction term, β_3, captures the difference in cash holding ratio from low to high uncertainty periods for politically connected firms, compared to the difference in cash holding ratio from low to high uncertainty periods for politically non-connected firms. Since we hypothesize that connected firms hold more cash relative to non-connected firms in times of high uncertainty, we expect $\beta_3 > 0$.

A vector of firm controls includes SIZE, LEV, CAPEX, DIV, NWC, BM, CFLOW and R&D. Variable descriptions for firm characteristics can be found in Appendix 1. In addition, two industry controls are added to the model since a firm's incentive to participate in political activities could be driven by the activities of its industry peers. Hence we include MKT_SHARE (firm's sales scaled by total industry sales for a given year) and N_IND_ACTIVE (number of politically active firms in a firm's industry with either PAC contributions or lobbying expenses for a given year). Firm and industry fixed-effects are included to account for within-firm and industry-wide trends.

Adding year fixed-effect would enable us to control for macro-economic trends that are associated with cash level and uncertainty. With the inclusion of EPU in the model, it is not possible to add year-fixed effects since it would absorb the explanatory power of EPU. Hence, as an alternative to year-fixed effects, we add three variables to control for general economic conditions. The first variable, following Julio and Yook (2012), is an indicator variable to account for general election years (GEN_ELEC). The second variable is the annual GDP growth rate

(GDP_GROWTH). Finally, we include a macroeconomic uncertainty measure developed by Jurado et al. (2015); this is a comprehensive index constructed based on unobservable outcomes of 132 macro indicators.

The estimated coefficients are reported in Table 3.3. Columns 1 and 4 show that the interaction term is positive and significant after controlling for firm level, industry level, and macroeconomic variables. Column 3 shows that the interaction term is 0.087 and the results are significant at a 5% level. This result is economically significant, for example, the interaction term of 0.087 translates to 43.33 basis points increase in cash for connected firms, more than the increase in cash for non-connected firms.[13] In column 4, we re-run the model with an alternative political uncertainty measure, EPU_HIGH. This is a dummy variable equal to one if EPU in a given year is above the 75th percentile over the sample period, and zero otherwise. The results of the control variables are consistent with the prior literature (e.g., Opler et al., 1999). Firm size, leverage, capital expenditures, and net working capital are negatively associated with the level of cash holding, and the book-to-market ratio is positively related to cash level. Column 3 and 4 in Table 3.3 reflects that controlling for macro variables improves the size of the coefficient on the interaction term. Unconditionally firms hold more cash in the year following a general election and hold less cash in years of high GDP growth rates, and the sign of macroeconomic uncertainty does not seem to have a consistent influence on the cash level.

As an alternative to the dependent variable, we estimate the interaction effect of political uncertainty and political connections on cash savings, ΔCASH. This is measured by calculating the difference between cash in year *t* and *t+1*, scaled by total assets in year *t*. Table 3.4 shows that the coefficients on EPU*POL_CONN and EPU_HIGH*POL_CONN are positive and significant at 5% and 1% respectively. Our findings suggest that when exposed to high political risk, connected firms save more cash than non-connected firms. Results are consistent after controlling for firm, industry, and macroeconomic variables. Our results extend the findings of Jens and Page (2020) who document that an average firm response to political uncertainty during gubernatorial elections is to increase cash savings. We show that politically connected firms have a greater requirement to save cash than non-connected firms.

[13] The 43.33 basis point increase is the difference between the increase in cash holdings for politically connected firms and that for non-connected firms. The difference is calculated as 0.087*4.98, which translates to 43.33 basis points. 0.087 is the coefficient on the interaction term (EPU*POL_CONN), 4.98 is the 75th percentile of EPU.

Table 3.3: Political uncertainty, connections and cash holdings

	Dependent variable: lnCASH (t+1)			
	(1)	(2)	(3)	(4)
POL_CONN	-0.278	-0.358*	-0.376*	0.024
	(0.205)	(0.206)	(0.206)	(0.030)
EPU	0.216***	0.191***	0.181***	
	(0.021)	(0.021)	(0.021)	
EPU_HIGH				-0.008
				(0.010)
EPU * POL_CONN	0.072*	0.084*	0.087**	
	(0.043)	(0.043)	(0.043)	
EPU_HIGH * POL_CONN				0.047**
				(0.020)
SIZE	-0.056***	-0.082***	-0.075***	-0.092***
	(0.014)	(0.015)	(0.015)	(0.015)
LEV	-0.988***	-0.969***	-0.966***	-0.934***
	(0.057)	(0.056)	(0.056)	(0.056)
CAPEX	-2.299***	-2.095***	-2.138***	-2.009***
	(0.166)	(0.168)	(0.168)	(0.167)
DIV	-0.023	-0.029	-0.025	-0.023
	(0.026)	(0.026)	(0.026)	(0.026)
NWC	-0.417***	-0.343***	-0.346***	-0.328***
	(0.071)	(0.072)	(0.072)	(0.071)
BM	0.037***	0.040***	0.043***	0.043***
	(0.004)	(0.004)	(0.004)	(0.004)
CFLOW	-0.096***	-0.113***	-0.102***	-0.081**
	(0.033)	(0.033)	(0.033)	(0.033)
R&D	0.051	-0.036	-0.018	-0.070
	(0.093)	(0.096)	(0.096)	(0.096)
MKT_SHARE		-0.951**	-0.980***	-0.936**
		(0.378)	(0.377)	(0.370)
N_IND_ACTIVE		0.013***	0.012***	0.008***
		(0.001)	(0.001)	(0.001)
GEN_ELEC			0.032***	0.102***
			(0.007)	(0.008)
JLN_INDEX			0.715***	-1.118***
			(0.111)	(0.152)
GDP_GROWTH				-0.084***
				(0.004)
Industry effect	Yes	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes	Yes
Observations	51,484	50,808	50,808	50,808
Adjusted R^2	0.692	0.695	0.695	0.698

This table presents regression estimates from the baseline model. The dependent variable, lnCASH (t+1) is natural logarithm of cash-to-assets ratio in the following year. EPU is the economic policy uncertainty at time *t*. POL_CONN is a dummy variable which equals to one if a firm reports either a lobbying expenses or a campaign donation in a given year and zero otherwise. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by firm. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Table 3.4: Political uncertainty, connections and cash savings

	Dependent variable: ΔCASH			
	(1)	(2)	(3)	(4)
POL_CONN	-0.057*	-0.066**	-0.065**	0.004
	(0.030)	(0.030)	(0.030)	(0.004)
EPU	0.026***	0.023***	0.011***	
	(0.003)	(0.004)	(0.004)	
EPU_HIGH				-0.011***
				(0.003)
EPU * POL_CONN	0.014**	0.015**	0.015**	
	(0.006)	(0.006)	(0.006)	
EPU_HIGH * POL_CONN				0.013***
				(0.004)
Firm controls	Yes	Yes	Yes	Yes
Industry controls	No	Yes	Yes	Yes
Macro controls	No	No	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes	Yes
Observations	51,484	50,808	50,808	50,808
Adjusted R^2	0.152	0.155	0.156	0.156

This table presents regression estimates from the baseline model. The dependent variable, ΔCASH is the difference in cash in time *t* and *t+1,* scaled by total assets in time *t*. EPU is the economic policy uncertainty at time *t.* POL_CONN is a dummy variable that equals one if a firm reports either a lobbying expense or a campaign donation in a given year and zero otherwise. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by firm. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Figure 3.5 depicts the interaction effect created using the values from Table 3.3, column 3.[14] The plot clearly shows that the association between uncertainty and cash ratio is positive, but it is much higher for connected firms than non-connected firms.

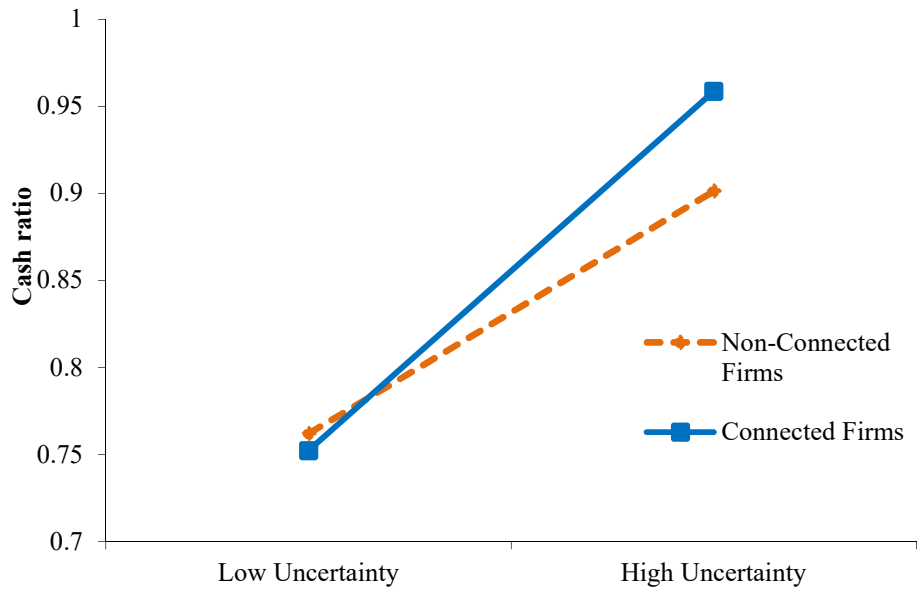
3.4.2 Robustness checks

In the previous section, we provide evidence indicating that politically connected firms increase cash level and cash savings when faced with rising political risk. In this section, we aim to determine whether our findings are consistent after controlling for possible size effect of connected firms using a propensity score-matched sample (section 3.4.2.1). In order to ensure that

[14] The interaction plot is created using a template from Jeremy F. Dawson's website (http://www.jeremydawson.co.uk/slopes.htm)

our results are driven by national level uncertainty, we re-estimate the baseline model using alternative political uncertainty measures at state-level (section 3.4.2.2).

Figure 3.5: Interaction plot between uncertainty and political connections



This figure shows the interaction effect between political uncertainty and political connections on cash ratio. High Uncertainty is equivalent to the 75th percentile of EPU which is 4.98 and Low Uncertainty is equivalent to the minimum value of EPU which is 4.21.

3.4.2.1 Propensity score matching method

As discussed in the literature review, a firm's decision to fund political campaigns or engage in lobbying activities is motivated by its need to influence policymakers. Despite this argument, there is also a possibility that the decision to engage in such activities and establish a political connection is likely to be driven by the characteristics of the firm. To address this self-selection bias, we conduct a propensity score-matched sample of firms where the covariates are balanced between a treatment group and a control group. The matching process allows us to create a subset of observations from the original dataset, and correct execution leads to a new sample where the treatment is not associated with covariates, and the method achieves a distributional balance between the treatment and the control group in terms of the confounder. The treatment group consists of politically connected firms and the control group consists of non-politically connected

firms with similar firm-level characteristics to those in the treatment. In particular, we match firm-years observations of connected firms with non-connected firms. This process ensures that any difference between the two groups in terms of firm characteristics is reasonably controlled.

We begin the analysis by estimating a logit model where the independent variable is POL_CONN, a dummy variable that equals to one for firm-year observations with either lobbying or PAC expenses and zero otherwise. The independent variables in the logit model include all the firm and industry controls in equation 3.1. Using the nearest neighbor matching approach (following Rosenbaum and Rubin, 1983), without replacement and with a caliper of 1%[15,16], we match each treatment observation (POL_CONN = 1) with a control observation (POL_CONN = 0). This process generates 7,943 matched pairs of treatment and control firm-year observations. Table 3.5 Panel A reports the Welch t-tests that compare the firm characteristics across politically connected and non-connected firms. All the independent variables are not statistically different across the two groups suggesting that the matching process has been successful in achieving a reasonable covariate balance.

We estimate the effect of political uncertainty separately on a subsample of matched connected and non-connected firms, and we find that both types of firms increase cash savings as a response to uncertainty. Importantly, as reported in Panel B, the size of the coefficient for connected firms is 0.037 which is larger than the size of non-connected firms which is 0.029, suggesting a greater need for connected firms to save cash.

[15] Matching without replacement means that each control unit is matched to only one treated unit, while with replacement enables control units to be used multiple times to be matched with multiple treated units. Given the large sample size we opted to use without replacement.

[16] Caliper matching refers to matching a treated unit to a control unit within a range or a distance (caliper). Hence caliper is the difference in the predicted propensity score between the treated and control unit. Two units will be matched only if they are within the defined distance, and any treated units without the control units within the distance/caliper will not be matched, and hence discarded. In the initial analysis, we conduct the matching without a caliper and this resulted in a covariate imbalance. Following Hoi et al. (2019), adding a caliper of 1%, improved the covariate balance. This also means that the number of observations in the treated group reduced from 11,107 in the original dataset to 7,943, discarding 3,164 units from the treated group.

Table 3.5: Propensity-score matching analysis

Panel A: Covariate balance between politically connected vs non-connected firms

	POL_CONN = 1 (N = 7,943)	POL_CONN = 0 (N = 7,943)		
	Mean	Mean	Diff	t-stat
SIZE	7.40	7.39	0.009	-0.367
LEV	0.28	0.28	0.003	-0.856
CAPEX	0.05	0.05	0.000	-0.210
DIV	0.49	0.50	-0.001	0.159
NWC	0.04	0.04	0.003	-0.982
BM	2.20	2.22	-0.016	0.563
CFLOW	0.04	0.04	0.000	-0.071
R&D	0.04	0.04	0.001	-0.500
MKT_SHARE	0.03	0.03	0.000	0.291
N_IND_ACTIVE	25.30	25.30	0.006	0.020
EPU	4.76	4.76	0.001	0.834

Panel B: Regressions using propensity-score matched sample

	Dependent variable: ΔCASH	
	Politically connected	*Non-connected*
	(1)	(2)
EPU	0.037***	0.029***
	(0.007)	(0.006)
Firm controls	Yes	Yes
Industry controls	Yes	Yes
Firm effect	Yes	Yes
Industry effect	Yes	Yes
Observations	7,540	7,464
Adjusted R^2	0.16	0.36

This table presents a subsample of politically connected vs non-connected firms. A propensity score-matched method is used to generate the sample. A propensity score for each firm-year observation is determined using logistic regression where the dependent variable is POL_CONN, is a dummy variable that equals to one if a firm reports either a lobbying expense or a campaign donation in a given year and zero otherwise. EPU is the economic policy uncertainty at time *t*. The dependent variable in Panel B is ΔCASH is the difference in cash in time *t* and *t+1,* scaled by total assets in time *t*. All the firm variables are winsorized at 1% and the coefficients are not reported for brevity. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by firm. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

3.4.2.2 Alternative uncertainty measures

In the previous subsection we establish that connected firms increase cash by more than non-connected firms as a response to heightened political uncertainty. We argue that the rationale for this increase in the cash holding by these firms is to influence policymakers in such a way that they can mitigate the political risk. In order to validate this argument, we do further investigation by examining whether connected firms respond to the local political uncertainty in a similar manner as aggregate political uncertainty. Cooper et al. (2010) argue that firms benefit by contributing to candidates that hold office in the same state as the firm's headquartered location. Hence, in the event of rising local uncertainty, connected firms would increase cash to influence local politicians.

We test this by employing two state-level political uncertainty measures; political alignment index (PAI) and number of congressional bills (CONG_BILLS). The first measure, PAI is the same measure we used in Chapter 2. As described in section 2.3.3, PAI is a measure of alignment with the president's party, constructed by giving equal weights to the portions of each of the state delegations in the two chambers of Congress that are aligned with the president's party, and to the president's party's control of state policies. Higher PAI indicates higher uncertainty. The second measure, CONG_BILLS is the natural logarithm of the number of bills introduced by politicians from a given state in a given year serving in the U.S House of Representatives and Senate. Since politicians aligned to the ruling party is more likely to introduce bills, higher number of bills are likely to increase uncertainty. Connected firms located in the same state as congress members who introduce these bills may have an advantage over those non-connected firms.

Table 3.6 presents the findings. Our results do not support the claim that local uncertainty affect local connected firms to increase cash ratio or cash savings to influence politicians. In all the four columns, the interaction terms are insignificant. Although, the political capabilities of an average firm is likely to be constrained at the local level (Wellman, 2017), it is possible that politically connected firms are less exposed to local uncertainty. The following section examining the uncertainty surrounding general and local level elections further corroborate our findings.

Table 3.6: Alternative political uncertainty measures

Dependent variable:	*lnCASH (t+1)*		*ΔCASH*	
	(1)	(2)	(3)	(4)
PAI * POL_CONN	0.06		-0.008	
	(0.037)		(0.005)	
CONG_BILLS * POL_CONN		0.006		-0.001
		(0.036)		(0.005)
Firm controls	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes	Yes
Observations	50,808	46,754	48,335	46,264
Adjusted R^2	0.698	0.701	0.155	0.154

This table presents estimates from the baseline model by replacing uncertainty with two state-level measures; PAI and CONG_BILLS. PAI is the political alignment index of state *s* at time *t.* CONG_BILLS the natural logarithm of the number of bills introduced in Congress by home state politicians for a given year. POL_CONN, is a dummy variable that equals to one if a firm reports either a lobbying expense or a campaign donation in a given year and zero otherwise. The dependent variables; lnCASH (t+1) is natural logarithm of cash-to-assets ratio in the following year. ΔCASH is the difference in cash in time *t* and *t+1,* scaled by total assets in time *t*. All the firm variables are winsorized at 1% and the coefficients are not reported for brevity. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by firm. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

3.4.3 Political uncertainty around election cycles and the effect of battleground states

Having addressed endogeneity implications to our findings, next we attempt to increase the validity of national-level variation in political uncertainty by testing whether firms' response varies around presidential and gubernatorial election cycles. Furthermore, we test whether connected firms' response varies depending on whether the firm is located in a battleground or a non-battleground state.

3.4.3.1 Presidential and gubernatorial elections

Julio and Yook (2012; 2016) argue that firms adjust investment decisions around the timing of national elections. The outcome of an election can affect regulations and federal and state policies, which in turn can affect firm financial policies. Given that major shifts in the political map occur

around presidential elections, we examine whether our results are stronger around these election cycles. We create a dummy variable GEN_ELEC which is equal to 1 for election years and zero otherwise.

Gubernatorial elections take place every four years, and every year there are at least two elections across various states. Since these are staggered across states it is difficult to minimize the risk that affects the firm behavior. Many studies have used gubernatorial elections as a source of political uncertainty, concluding that it affects firms' IPO decisions (Çolak et al., 2017) and investment decisions (Jens, 2017). In a recent study, Jens and Page (2020) find that firms in states with upcoming gubernatorial elections increase cash holdings four to five quarters before the election compared to firms in states with no upcoming elections. Based on this premise, we create a dummy variable, GUB_ELEC which is equal to 1 if a firm is located in a state with a gubernatorial election year and zero otherwise.

Although elections create some form of uncertainty, it should be less if the outcome of the election can be predicted well in advance. Therefore, we predict that close election years create higher uncertainty than non-close election years, and subsequently, firms should raise more cash in those years. To determine the level of closeness in an election, we follow a similar approach to Jens (2017). We take the difference in the percentage of votes received by the first and second-place candidates.[17] If the vote difference is in the lowest tercile of the sample vote differential, we consider it a close election. Applying this approach to both presidential and gubernatorial elections, we create two dummy variables, GEN_CLOSE_ELEC and GUB_CLOSE_ELEC.

Table 3.7 summarizes the results from the triple interaction terms. We observe a significant effect on cash ratio only around close general elections. Interestingly, cash savings decrease around general elections and close general elections. Results are inconsistent during gubernatorial elections. This suggests that politically connected firms are more susceptible to national-level uncertainty than state-level uncertainty, hence they increase the cash ratio as a response to mitigate the associated risk.

[17] Vote differences in popular votes for both presidential and gubernatorial elections are collected from Dave Leip's website (https://uselectionatlas.org/).

Table 3.7: Results around presidential and gubernatorial elections

Dependent variable:	*lnCASH (t+1)*				*ΔCASH*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GEN_ELEC * EPU * POL_CONN	0.075				-0.027**			
	(0.087)				(0.015)			
GEN_CLOSE_ELEC * EPU * POL_CONN		0.607***				-0.061**		
		(0.202)				(0.030)		
GUB_ELEC * EPU * POL_CONN			-0.054				-0.021	
			(0.062)				(0.014)	
GUB_CLOSE_ELEC * EPU * POL_CONN				0.142				-0.044
				(0.169)				(0.030)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,808	12,311	50,655	14,389	48,335	12,236	48,187	12,467
Adjusted R^2	0.698	0.662	0.698	0.656	0.157	0.237	0.155	0.192

This table reports regression estimates around presidential and gubernatorial elections. GEN_ELEC is a dummy variable equals to 1 for general election years, and 0 otherwise. GEN_CLOSE_ELEC is a dummy variable equals to 1 for close election years and 0 for non-close election years. GUB_ELEC is a dummy variable equals to 1 for gubernatorial election years, and 0 otherwise. GUB_CLOSE_ELEC is a dummy variable equals to 1 for close gubernatorial election years and 0 for non-close gubernatorial election years. Election closeness is determined by the vote differential (if the difference in percentage vote received by the first and second place candidates is in the lowest tercile of the sample vote differential). The dependent variables, lnCASH (t+1) is cash-to-assets ratio in the following year. ΔCASH is the difference in cash in time *t* and *t+1,* scaled by total assets in time *t*. All the firm, industry and macro controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered at firm level. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

3.4.3.2 Battleground states

As shown in the previous section, connected firms respond to uncertainty surrounding close presidential elections by increasing the cash ratio. We extend this analysis by examining whether political incentives vary across battleground states (also known as swing states) and non-battleground states. In the United States, the outcome of a presidential election is determined by the Electoral College system, where the winner-take-all method within a state receives all the votes in the Electoral College. States that are divided between Democrats and Republicans are referred

to as battleground or swing states, and these states play a crucial role in determining the outcome of the presidential elections. Due to these high stakes, presidential candidates invest more time and resources in these battleground states. These may often come in policy favors, for instance, Gulen and Myers (2022) show evidence of selective enforcement of an economically important regulation at the state level, where firms located in a swing state are less likely to find a regulated facility in violation of the Clean Water Act. Even within a state, connected firms are likely to receive political favors relative to non-connected firms (Heitz et al., 2021). Building on this, we propose that politically connected firms in battleground states have a political incentive to influence politicians due to favorable policies and regulatory changes that are directed to these states to increase the chances of re-election. Therefore, we expect politically connected firms to increase cash in battleground states relative to those in non-battleground states when faced with uncertainty.

We begin the analysis by classifying a state as a battleground using data from Gulen and Myers (2022), which report these data based on the outcome of each presidential election from 1976 to 2016. In our sample, there are five presidential elections (2000, 2004, 2008, 2012, and 2016). We identify a state as a battleground if it appears as a battleground state in at least 4 election cycles, thus we focus on the frequency in which a state becomes a non-partisan. This classification leads to 13[18] battleground states and 37 non-battleground states. We estimate the effect of political uncertainty separately on a subsample of firms located in battleground and non-battleground states, and in Table 3.8 column 1 we report the findings that politically connected firms in battleground states increase cash ratio as a response to uncertainty, relative to non-connected firms. Interestingly, column 2 shows that the findings are insignificant in non-battleground states.

Overall, this analysis provides preliminary evidence that connected firms' response to uncertainty using liquidity is motivated by their political strategies, rather than a precautionary strategy. In the following section, we provide a possible mechanism through which influence takes effect.

[18] Battleground states: Colorado, Florida, Iowa, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New Mexico, Ohio, Pennsylvania, Virginia, and Wisconsin

Table 3.8: Battleground vs non-battleground states

Dependent variable:	*lnCASH (t+1)*	
	Battleground states	*Non-Battleground states*
	(1)	(2)
EPU * POL_CONN	0.176**	0.056
	(0.085)	(0.049)
Firm controls	Yes	Yes
Industry controls	Yes	Yes
Macro controls	Yes	No
Industry effect	Yes	Yes
Firm effect	Yes	Yes
Observations	13,597	37,211
Adjusted R^2	0.659	0.713

This table reports regression estimates for sub sample of firms in battleground and non-battleground states. The dependent variable, lnCASH (t+1) is cash-to-assets ratio in the following year. All the firm, industry and macro controls from the baseline model are included in the regression and coefficients are not reported for brevity. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered at firm level. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

3.4.4 Evidence for the political motive hypothesis

Having established our argument that connected firms increase cash levels and savings in times of high political uncertainty to influence politicians, we next look at a possible mechanism through which this takes place.

Agency issues and weaker corporate governance are inherent to politically connected firms (Chaney et al., 2011; Aggarwal et al., 2012). Such firms located in areas that exacerbate governance issues have a greater tendency to build up political capital. Dass et al. (2017) argue that firms headquartered in more corrupt US states are prone to governance issues relative to firms in less corrupt states. Therefore, if connected firms in more corrupt states use cash to expedite the process of policy making that is affected due to uncertainty relating to future policies, such firms should save more cash in order to facilitate this process. Our argument for political influence is as follows. If cash is being increased to influence politicians, then the amount spent by connected firms on campaign contributions and lobbying activities should be positively associated with the

amount of cash saved by these firms. Based on this premise, we estimate the model in equation (3.2) on the sample of connected firms.

$$\ln(PAC + Lobby)_{i,t} = \alpha_0 + \beta_1 CORR_HIGH_{s,t} + \beta_2 EPU_t + \beta_3 \Delta CASH_{i,t} + \beta_4 CORR_HIGH_{s,t} * EPU_t * \Delta CASH_{i,t} + \gamma_1 Firm\ Controls + \gamma_2 Industry\ Controls + \alpha_j + \varepsilon_{i,t} \quad (3.2)$$

The dependent variable is the natural logarithm of the sum of campaign donations and lobbying expenses for firm *i* in year *t*. To measure state-level corruption, similar to Chapter 2, we use conviction data of corrupt public officials.[19] More specifically, CORR_HIGH is a dummy variable that equals to one if the firm is located in a state with a per capita conviction rate above the median value for the year and zero otherwise. The change in cash level, ΔCASH is used as a proxy for a firm's propensity to save cash.[20] This is calculated by taking the difference between cash in *t+1* and *t*, scaled by total assets in year *t*. Following previous studies (Cooper et al., 2010; Wellman, 2017; Pham, 2019), determinants of political connections are added as control variables. These include three firm controls; SIZE, BM and CFLOW (since firm size and resources influence a firm's capacity to engage in political activities). Furthermore, the two industry controls in equation 3.1 are added to the model.

The main variable of interest is the coefficient on the interaction term *CORR_HIGH*EPU*ΔCASH*. This captures the difference-in-difference-in-differences (DDD) effect, that is, the net changes in political spending for connected firms through cash saving, exposed to high political uncertainty in more corrupt states. We expect β_4 to be positively associated with the dependent variable. This means that during high uncertainty, a connected firm's cash savings in a given year in high corrupt states influences the amount of money it spends on political activities.

[19] The annual conviction data obtained from the U.S Department of Justice, Public Integrity Section, are scaled by the state population to compute the state-level conviction rate. We match these data with firms based on the head-quarter of the firm.

[20] Using a cash saving model, Almeida et al. (2004) show that firm's propensity to save cash out of cash flows is positively related for financially constrained firms.

Table 3.9: Political influence during high uncertainty

	Dependent variable: ln (PAC + Lobb)			
	Full sample		*High corrupt*	*Low corrupt*
	(1)	(2)	(3)	(4)
CORR_HIGH		0.783*		
		(0.435)		
EPU	0.129** *	0.196***	0.015	0.164**
	(0.048)	(0.070)	(0.066)	(0.073)
ΔCASH		1.926	-4.643**	3.111*
		(1.642)	(2.344)	(1.868)
CORR_HIGH * EPU		-0.167*		
		(0.093)		
CORR_HIGH * ΔCASH		-5.606**		
		(2.716)		
EPU * ΔCASH		-0.418	1.008**	-0.656*
		(0.344)	(0.488)	(0.391)
CORR_HIGH * EPU * ΔCASH		1.240**		
		(0.569)		
SIZE	0.594***	0.599***	0.568***	0.638***
	(0.048)	(0.049)	(0.060)	(0.068)
BM	0.0123	0.011	0.024	0.002
	(0.014)	(0.015)	(0.020)	(0.020)
CFLOW	-0.1693	-0.151	-0.091	-0.1743
	(0.115)	(0.118)	(0.195)	(0.151)
MKT_SHARE	1.149*	1.060	0.684	1.38
	(0.670)	(0.672)	(0.775)	(1.138)
N_IND_ACTIVE	0.015***	0.016***	0.013***	0.018***
	(0.004)	(0.004)	(0.004)	(0.006)
Industry effect	Yes	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes	Yes
Observations	11,107	10,492	5,623	4,869
Adjusted R^2	0.789	0.791	0.802	0.790

This table presents regression estimates from the analysis of political strategies. The dependent variable ln (PAC + Lobb), is the natural logarithm of the sum of campaign donations and lobbying expenses for firm *i* in year *t*. EPU is the economic policy uncertainty at time *t.* ΔCASH is the difference in cash in time *t* and *t+1,* scaled by total assets in time *t*. CORR_HIGH is a dummy variable that equals to one if the firm is located in a state with a per capita conviction rate above the median value for the year and zero otherwise. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by firm. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

In Table 3.9 column 1, we document that increase in uncertainty has a positive impact on political expenses. This is consistent with Shang et al. (2021) and Antia et al. (2013), showing that politically connected firms increase their level of alignment to the policymakers to navigate the uncertainty surrounding new policies that would affect the firm's investment decisions. Column 2 reports evidence supporting the political motive hypothesis, namely that the triple interaction term is positively associated with PAC donations and lobbying expenses (significant at 5% level). The coefficient on the triple interaction is 1.240, implying that on average political spending by connected firms through cash savings in more corrupt states is higher by 18.52 basis points.[21] We find compelling evidence when we split the sample across high and low corrupt states. Interestingly, cash savings during periods of high uncertainty for connected firms in high corrupt states is positively associated with political spending. In contrast, this association is negative in low corrupt states. These results are reported in Table 3.9 columns 3 and 4.

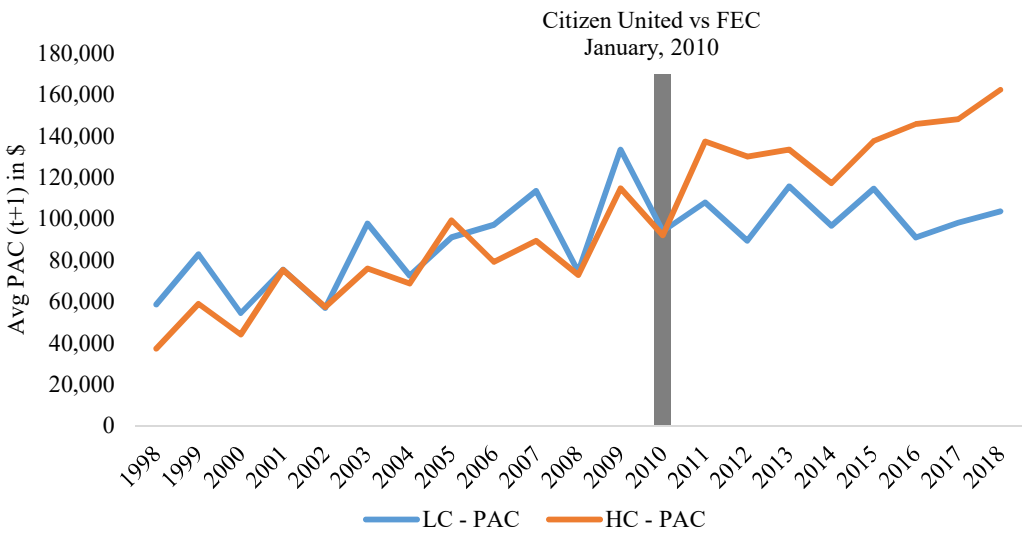
Next, we examine firms' response to a landmark ruling by Supreme Court that had a significant influence on campaign contribution as an exogenous shock to political connections. In January 2010, US Supreme Court ruled in Citizen United vs FEC (CU), that the government was prohibited from restricting independent expenditures from corporations, labor unions, and other associations. Although the CU changed the law only for independent expenditures, contributions through corporate PACs and lobbying activities increased in both amount and frequency (Coates, 2012). As shown by Albuquerque et al. (2020), CU announcement had a significant negative impact on the returns of the connected firms relative to non-connected firms.

The general concession among political scientists is that CU led to an increase in the level of legal corruption as more corporate treasuries could directly spend on elections. Based on this premise, we split the sample of corporate-linked PACs into high and low-corrupt states and plot the average annual PAC contributions in year *t+1* over the sample period. Figure 3.5 shows that up to 2010, PAC contributions made by firms located in high and low-corrupt states are highly correlated, and we can observe a breaking point beyond CU ruling. More specifically, connected firms in high corrupt states increase the amount spent on PAC contributions more than connected

[21] 18.52 = 1.24*4.98*0.03, where 1.24 is the coefficient on the tripe interaction term, 4.98 is the 75th percentile of EPU and 0.03 is the mean value of ΔCash.

firms in low corrupt states. This difference in response across corruption levels further supports our argument that campaign contributions are a form of influencing politicians.

Figure 3.6: PAC contributions across high and low corrupt states



Since this regulatory change affects a connected firm's ability to engage in political activities, it should also influence the amount of cash held up to pay for these activities. We expect firms in high corrupt states to respond positively to political uncertainty in the two years after the CU relative to the two years before the ruling. To test this argument, we study the cash holdings of firms contributing to PACs two years before and two years after the CU ruling over a 5-year time window from 2008 to 2012. The main variable of interest is the interaction term *postCU*CORR*EPU* and we expect the coefficient on this term to be positive. The variable postCU is an indicator variable that equals to zero for firm-year observations in years 2008 and 2009 and, equals to one for firm-year observations in years 2011 and 2012. CORR is the per capita conviction rate of state *s* in year *t*. The coefficient of the triple interaction term captures the difference in cash holdings of connected firms exposed to high political uncertainty in high-corrupt and low-corrupt states following the regulation. We control for firm characteristics that are associated with the level of cash holdings, similar to the once included in equation 3.1.

Table 3.10: Political influence after Citizens United

	Dependent variable: CASH	
	(1)	(2)
postCU	6.372**	6.372***
	(2.980)	(0.011)
EPU	-0.172***	-0.172***
	(0.032)	(0.027)
CORR	-0.667**	-0.667*
	(0.310)	(0.248)
postCU * EPU	-1.254**	-1.254***
	(0.589)	(0.002)
postCU * CORR	-7.997**	-7.997***
	(3.863)	(0.003)
CORR * EPU	0.133**	0.133*
	(0.063)	(0.049)
postCU * CORR * EPU	1.576**	1.576***
	(0.763)	(0.002)
SIZE	0.008	0.008
	(0.009)	(0.013)
LEV	-0.149***	-0.149**
	(0.025)	(0.032)
CAPEX	-0.247***	-0.247**
	(0.044)	(0.048)
DIV	0.001	0.001
	(0.006)	(0.012)
NWC	-0.188***	-0.188*
	(0.029)	(0.061)
BM	0.003	0.003
	(0.003)	(0.006)
CFLOW	0.026*	0.026
	(0.014)	(0.016)
R&D	-0.075	-0.075
	(0.059)	(0.086)
Industry effect	Yes	Yes
Firm effect	Yes	Yes
Cluster SE by	Firm	State & Year
Observations	7,388	7,388
Adjusted R^2	0.845	0.845

This table presents regression estimates from the analysis on political strategies. The dependent variable CASH is cash-to-assets ratio in time *t.* postCU is a dummy variable that equals to zero for firm-year observations in years 2008 and 2009 and, equals to one for firm-year observations in years 2011 and 2012. CORR is the per capita conviction rate of state *s* in year *t*. EPU is the economic policy uncertainty at time *t.* All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Results are presented in table 3.10. Column 1 shows that the triple interaction term is positive 1.576, and significant at 5% level. The results are economically significant, this translates to a

difference of 5.42 percentage points in the increase of cash level for firms in high corrupt states relative to those in low corrupt states post-regulatory change.[22]

3.5 Conclusion

In this chapter, we provide empirical evidence on the impact of political uncertainty on the cash holdings of politically connected and non-connected firms. Although previous studies into political connections argue that connected firms hoard cash to gain political favors, there is a lack of evidence as to how this comes into effect. Using political uncertainty as an exogenous shock, we find that US firms who contribute to political campaigns and those who engage in lobbying activities increase cash levels and savings when exposed to uncertainty relative to non-contributing and non-lobbying peers. We argue that connected firms respond in this manner to influence politicians, and we show empirically that connected firms in more corrupt states save more cash in order to increase political spending relative to connected firms in less corrupt states when faced with high uncertainty.

These findings provide unique insights into the value of political connections in the US in navigating political risk associated with the level of liquidity.

[22] The difference is computed using 1.576*4.98*0.69 = 5.42. In this formula, 1.576 is the coefficient on the interaction term, 4.98 is the 75th percentile of the EPU and 0.69 is the difference in average CORR in Louisiana (0.808) and Minnesota (0.117).

Chapter 4:
Trust and Labor Laws

4.1 Introduction

Rigid labor laws in most developed countries aim to reduce the power of employers in arbitrary dismissal and restrict their ability to hire workers on temporary work contracts. In general, such policies are considered beneficial for the employees as well as for the company. Employees feel secure in their job as they are shielded against any uncertainty in the job market. As a result, they are more encouraged to invest in training and improve their skills. This in return benefits the company as workers become more receptive to technological advancements leading to an increase in productivity level. However, strict employment protection might have the opposite effect as it could deter companies (especially multinational companies) from investing in new markets as they lack the flexibility to easily withdraw and adapt to unsuccessful ventures. Further, at the firm level, strong labor regulations could encourage employees to shirk resulting in lower levels of overall productivity.

The regulation of employee dismissal varies tremendously across countries. For example, in flexible labor markets in countries such as the US, Japan, and New Zealand, fixed-term contracts are allowed for jobs of permanent nature and the law does not specify the maximum duration of a contract. In contrast, countries such as France, Mexico and Luxembourg, with rigid laws, fixed-term contracts are permitted only for temporary work and the law requires a severance pay much greater than those in countries with flexible labor markets. The variability of such regulations is the result not only of historical political decisions but also of economic policies adopted for sustaining and encouraging investment and growth.

The existing studies on the political economy of labor regulation recognise that the cross-country variation in labor laws can be explained by the legal origin (Botero et al., 2004), proportional electoral systems (Pagano and Volpin, 2005), employee's bargaining power (Saint-Paul, 2002), and financial wealth (Perotti and Von Thadden, 2006). In this study, we explore how cultural traits – specifically, generalized trust, could explain the variation in labor dismissal laws across countries. Further, in line with other studies, we examine whether trust can substitute for formal regulations and investigate the link between the emergence of different employment protection laws and the existence of well-established informal institutions. Our work is hence

linked to the institutional economics literature which has put forward the idea that societies characterized by high levels of trust are less dependent on formal institutions to enforce agreements (e.g. Knack and Keefer, 1997).

Anecdotal evidence shows that high social capital[23] countries choose to adopt less-stringent labor laws yet protect their workers through other mechanisms. For instance, "the flexicurity model" which originated in the Netherlands, and was first implemented in Denmark, and was more recently adopted in the rest of the northern Europe, is built on the concept of providing a flexible and secure job market, particularly for fixed-term and temporary workers (Bekker and Mailand, 2019). The general belief in the success of the model is largely attributable to the level of trust in these countries (Blanchard et al., 2014). Japanese "lifetime employment" guarantees job security without a legal contract which is solely based on the mutual understanding between the employer and employee (Allard, 2005). This suggests that there is a cultural element that goes beyond existing legal and political explanations that could influence a nation to adopt a certain aspect of laws and standards at the workplace. Despite this evidence, there is a lack of understanding of how social and cultural traits such as generalized trust influence labor regulations.

In line with the institutional economics literature we propose that the level of trust in a society acts as a substitute for labor laws that are intended to protect the workforce. Knack and Keefer (1997) posit that societies characterized by high levels of trust are less dependent on formal institutions to enforce agreements. The role of trust in economic development is vital as every commercial transaction has some element of trust. Gambetta (2000) defines trust as the expectation that another person or an institution will perform an action that is beneficial to us, or not detrimental to us, without having to monitor those actions. In the labor market, the employer may trust that the employee will accomplish the task without much monitoring in those jobs that may be difficult to monitor. Similarly, the employee may trust that the employer will not unlawfully discharge them from their jobs thus ensuring job security. In such a context, the trustworthiness that employers and employees place on each other achieves the same goal that labor laws aim to achieve. This is likely to prevail in a society that upholds moral behavior beyond personal ties and among individuals who interact at less regular intervals (Banfield, 1958). Building on this premise,

[23] Coleman (1988) identifies social capital as a feature that emerges in social groups created by a network of strongly interconnected elements. These elements are commonly known as shared trust, norms and values (Putnam, 1993).

in this study, we predict that trusting societies are associated with less stringent regulations of labor.

We begin our analysis by examining the effect of trust on employee protection laws of OECD countries over 34 years from 1985 to 2019. To measure labor laws, we use the Employment Protection Legislation indicator developed by OECD for its member countries. We use an annual index that captures dismissal laws relating to workers under regular contracts and temporary contracts, this allows us to evaluate the time-varying effect of such laws on economic outcomes. Trust is measured using survey data collected from the integrated database of the World Value Survey (WVS) and European Value Survey (EVS). By aggregating at the country and year level, we take the percentage of people who responded that most people can be trusted and construct a time-varying measure of trust by taking the linear interpolation between trust values of the adjacent survey-years.

The main findings show a significant negative association across countries between trust and employee protection laws, suggesting that countries with a high level of generalized trust adopt indeed less stringent formal regulation. Results remain consistent after controlling for legal and political factors that determine labor laws. To address potential endogeneity concerns, following Tabellini (2008) and Cline and Williamson (2016), we use an instrumental variable from linguistics literature that is linked with the level of trust. Furthermore, to sharpen the analysis, we explore whether the substitutability between trust and labor laws is stronger in countries exposed to lower expropriation, greater trade union power, and also during the global financial crisis.

As a variation to our main hypothesis, we examine whether trust and labor laws are substitutes in a within-country analysis. The findings show that trust can be both a substitute and a complementary depending on the level of expropriation in the country. In low-corrupt countries, trust forms a substitute for labor laws, whilst in medium-level corrupt countries, trust acts as a complementary for labor laws. These results support the theoretical and empirical evidence of Carlin et al. (2009) and Aghion et al. (2010) that individuals in uncivic societies develop a low level of trust, and demand for stronger regulations knowing that the government is corrupt and regulations would reduce negative externalities. On the other hand, individuals in civic societies develop a high level of trust and expect rigid regulations.

To validate our argument that across countries trust and labor laws are substitutes, we explore the substitution effect on foreign direct investments. A high level of trust in the destination country should reduce the probability of opportunistic behavior and mitigate inefficiencies linked with incomplete contractual relationships between multinational corporations (henceforth, MNCs) and domestic stakeholders (Guiso et al., 2009; Bhardwaj et al., 2007). Hence a high level of trust should positively influence investment decisions irrespective of how labor regulations affect these decisions. Using US MNCs' investments in OECD countries, we find that FDI flows are positively associated with high-trust countries. However, the simultaneous inclusion of trust and employee protection laws shows that the coefficient on employee protection laws becomes insignificant which is inconsistent with existing empirical evidence which shows a strong correlation between FDI and labor regulations. This result suggests that prior interpretation of labor laws could be confounded when the variation in trust within countries is not considered.

This chapter contributes to the recent literature that links culture, regulation and finance. Cline and Williamson (2016) find that countries with a high level of trust choose to adopt a low level of shareholder protection regulation, and trust influences financial development. Cline and Williamson (2020) document that trust reduces the demand for contract regulation and increases contract efficiency. Cline et al. (2022) report that trust has a negative impact on business regulation and a positive impact on market efficiency. Pinotti (2012) and Davis and Williamson (2016) show that trust and culture affect the regulation of entry by new firms. We contribute to this growing body of literature on the substitutability between formal and informal regulations by focusing on employee dismissal laws.

The remainder of this chapter is organized as follows. Section 4.2 provides an overview of the literature relating to the labor laws, trust and impact of these formal and informal institutions on economic outcomes, and also provides the hypothesis development. Section 4.3 describes the data used while section 4.4 discusses the methodology adopted along with the empirical findings. Section 4.5 concludes the chapter. Additional information relating to the data is reported in the Appendix.

4.2 Literature review

The aim of this chapter is to explore the substitutability between formal and informal institutions in the context of labor regulation. Therefore this section provides an overview of theories that determines cross-country variation in labor laws followed by a review of the economic outcomes of such regulations. Furthermore, this section outlines the literature surrounding trust, particularly determinants, and the impact of trust on regulations, institutions, and economic outcomes.

4.2.1 Determinants of labor laws

The need to regulate the labor market is largely attributable to the inefficiencies in the labor market. The general idea is built on the notion that employers mistreat workers in ways such as; discrimination, unfair treatment of disadvantaged people, poor working conditions, unfair dismissal, hiring workers on short-term contracts which give access to cheap labor, underpaying workers who are not willing to move across the firm, forcing people to work more than they are willing by threatening that failure to do so will result in losing the job, and discrimination towards ill and disable workers. To reduce such unfair practices by employers towards employees, most countries intervene to protect their workforce and increase the efficiency in the labor market.

Government intervention generally takes four forms. First, the government may intervene to endow workers with basic rights in the existing employment relationship such as through minimum wage and maternity leave. The second form may come through regulating employment relationships by restricting the range of feasible contracts and increasing the cost of dismissing workers. Third, governments may empower labor unions to speak collectively and protect strategies put forward by labor unions to negotiate with employers. Finally, governments provide social security benefits for unemployed workers, old age, disabled, sick, and ill workers, in addition to the benefits provided in the event of death.

The variation in government intervention in the labor market can be explained by two dominant theories; political power theory and legal theory. Political theories suggest that laws are imposed by those in power for their benefit (Pagano and Volpin, 2005) and legal theories extend that laws are shaped by each country's legal origin (La Porta et al., 1997; 1998). According to political

power theory, laws relating to workers are shaped by two forms; first, through elections, i.e. the party in power makes decisions regarding the laws (leftist governments are labor-friendly, hence introduce heavier laws to protect workers) and the second is through the influence of interest groups, i.e. labor regulations are receptive to demands of trade unions and hence more extensive when unions are more powerful, irrespective of the fact that which government is in power (Saint-Paul, 2002). Having proper checks and balances limit those in power to use regulations in their favor. Hence, we see fewer regulations in countries with democratically elected governments, constitutions, legislative constraints, and checks and balances. The opposite is true for dictatorship countries.

Seminal work by La Porta et al. (1997, 1998) recognize the fact that laws in different countries are not an indigenous choice, rather these laws are transplanted from a few legal families of traditions. The grounding for legal theories is based on two distinct forms of legal traditions in Western Europe; common law and civil law. Common law originated in England and is structured on juries and independent judges, and emphasizes judicial discretion compared to codes. Common law was later adopted by most of the British colonies including Ireland, the United States, Canada, Australia, New Zealand, India, Pakistan, and other countries in South and East Asia, East Africa, and the Caribbean. Civil law originated from Roman law in Western Europe and was incorporated into civil codes in France and Germany in the nineteenth century. In this legal tradition, the judiciaries are less independent, juries are given less importance, and the emphasis is largely given to procedural codes as opposed to judicial discretion. French civil law was later adopted in other Western European countries such as Spain, Portugal, Italy, Belgium and Holland along with French colonies in North and West Africa, Latin America, and some countries in Asia. Other legal traditions such as the German code became prevalent in Germanic Western Europe and also in Japan, Korea and Taiwan. Countries under U.S.S.R adopted socialist laws and Nordic countries (Sweden, Norway, Denmark, and Finland) adopted Scandinavian laws. It is evident that legal tradition is largely inherited from its colonizers or conquerors rather than as an indigenous choice.

Djankov et al. (2003) in their paper on courts note that countries with different legal traditions employ different institutional technologies for social control of the business. Accordingly, the laws regulating labor under each of these legal traditions would also follow the same pattern as the general style of social control. Civil and socialist law countries would have stronger regulations

for labor compared to common law countries. Further, social security benefits in common law countries are less generous since these countries depend on markets to provide insurance. Using labor markets of 85 countries, Botero et al. (2004) find compelling evidence in support of legal theories as a determinant of cross-country variation in labor laws. To codify labor laws Botero et al. (2004) develop a novel labor law measure that captures three dimensions, namely employment laws, collective relations laws, and social security laws.

In contrast to the legal theory perspective, political theorist of labor regulations argues that political institutions influences the level of labor regulations across countries. Pagano and Volpin (2005) propose higher labor laws in countries with proportional electoral rules and lower labor laws in countries with majoritarian electoral rules. Their model is built on the assumption that in a two-party electoral system, both parties compete for votes by promising to deliver their agenda. The voting behavior of the constituency is determined by both economic interests towards the constituency and by an ideological bias toward the two parties. In a proportional electoral system, where winning a majority of the votes is crucial, political outcomes such as labor laws are produced in favor of the workers by setting up stronger labor laws. Whereas the majoritarian electoral system promotes labor laws that are not in favor of the homogenous groups of employees but rather of rentiers who are ideologically dispersed. Using labor dismissal laws in OECD countries, Pagano and Volpin (2005) present evidence in support of their model.

As legal and political determinants influence the level of labor laws across countries, rigidity in these laws also negatively affects economic outcomes. Empirical evidence within this area shows that tightening EPL reduces labor productivity, employment levels, and firm profitability. These policies also affect financial policies as firms need to save more cash as a precautionary motive to accommodate rising labor costs (Karpuz et al., 2020). Using a difference-in-differences approach, Simintzi et al. (2015) show that firms in countries that experience an increase in labor reforms reduce the amount of leverage in the capital structure relative to firms in countries that experience a relaxation in labor laws. The rationale here is that tightening EPL increases restricting costs and increase the cost of financial distress. As a response to these law reforms, firms reduce financial leverage.

From an investment perspective, Bai et al. (2020) argue that higher EPL discourages investments as it makes investment irreversible. The rationale here is that higher protection makes

it costlier to discharge workers. Investments are more reversible if once undertaken, they cannot be undone or made into a different project without higher costs. Higher EPL also leads to lower investment by constraining firms' access to external capital. During economic downturns, higher laws make it difficult for firms to discharge workers (even when they have to lay off workers to manage costs). The argument in favor of greater investment due to EPL is put forward by Belot et al. (2007). They argue that workers can invest in non-contractible firm-specific knowledge. Because workers bear the full cost of training and they in turn receive only a fraction of the gain, there is a hold-up problem, and consequently will not invest in training. But if there is greater level of protection, it can encourage workers to take up more skills, which in turn would increase productivity and investment rates. Alternatively, investment rates can also increase if firms substitute human capital with cheaper or relatively less expensive physical capital. In the long run, with higher wage cost firms may replace high labor intensive assets with high capital intensive assets, which push up investment rates.

A stricter regulatory environment affects not only domestic investments but also foreign direct investment decisions. Globalization has imposed significant challenges on the way countries regulate their labor markets. Since products can be manufactured in any part of the world and can be sold globally, employers are not bound to labor standards in any one country. As a way to attract global capital flows, countries are increasingly competing against each other by reducing entry barriers and having lower labor standards. Global producers circumvent rigid labor laws by racing to the bottom, where they set up in countries with lower labor regulations. However, empirical evidence in support of this theory is rather mixed; for instance, Rodrik (1996) and Kucera (2002) find a positive relationship between labor laws and FDIs, while Olney (2013) and Davies and Vadlamannati (2013) present a negative relationship, suggesting a race to the bottom hypothesis. Olney (2013) shows that U.S foreign affiliates in countries with higher EPLs experience fewer sales relative to countries with lower or no change in EPLs.

4.2.2 Trust, institutions, and economic outcomes

Culture in a very broad sense is defined as values and beliefs. One of the fundamental features of culture is trust. Arrow (1972) notes that "virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time." Without trust, it is

difficult to expect any form of cooperation between strangers. According to Gambetta (2000) trust is the expectation that another person or an institution will perform an action that is beneficial to us, or not detrimental to us, without having to monitor those actions. Putnam (1993) and Banfield (1958) were the first to study the relevance of cultural beliefs and trust in sociology and political science. Since then, numerous papers have explored the importance of trust on; economic development (Algan and Cahuc, 2010), financial markets (Guiso et al., 2004), foreign direct investments (Guiso et al., 2009), and regulation (Cline and Williamson, 2016; Aghion et al., 2010; Pinotti, 2012).

One of the key papers linking trust and regulations is the work of Aghion et al. (2010). They argue that higher mistrust leads to higher demand for regulation. In societies with higher trust level, there is lower demand for regulation, hence trust acts as a substitute. Their explanation for this argument is based on the substitution effect between civic capital and regulation. They present a model with two equilibria; on one hand, individuals who choose to become civic and expect to live in a civic community, expect low levels of regulations and corruption, become civic. On the other hand, those individuals who choose to become uncivic, expect high regulation and corruption and hence become uncivic. While civic community supports low regulations, uncivic community supports tighter regulations. Those uncivic individuals impose large negative externalities on society when they become entrepreneurs (e.g.: they may pollute more). Aghion et al. (2010) show that regulation and distrust are positively correlated and their model predicts that distrust influences regulation and distrust demands for regulation. In an uncivic community, even when people know that the government is corrupt and ineffective, people demand regulation as it can constrain negative externalities.

It is important to make a distinction between generalized trust and particularized trust because generalized trust matters more in the context where people interact as strangers or at less regular intervals while particularized trust evolves through direct face-to-face interactions with people in close-knit groups such as families. In addition to making this distinction, Banfield (1958) notes that societies with generalized trust promote moral behavior both beyond their personal ties, and by avoiding acting in an opportunistic manner leading to attitudes of reciprocal cooperation.

In labor market institutions, generalized trust has more relevance since the moral behavior of individuals is likely to influence regulations governing job security, unemployment insurance, and

minimum wage. The following section outlines the relevance of culture, trust, and social attitudes in labor market institutions.

4.2.3 Culture and labor institutions

The importance of culture, values, and beliefs in labor market institutions and outcomes is a less explored area. Blanchard and Philippon (2006) are the first to document a positive relationship between the quality of labor relations and the unemployment rate in OECD countries, i.e. they find a higher unemployment rate in countries with worse labor relations. The quality of labor relations is determined based on the dialogue between firms and trade unions. This is measured using two methods; strike intensity in the 1960s and a question on firm managers relating to labor relations *("Are labor relations in your firm are cooperative?"*) that appears in the World Economic Forum survey. The rationale underlying Blanchard and Philippon (2006) is that in countries where the minimum wage is set by collective bargaining, the extent to which it affects the unemployment rate depends on the speed of learning of unions. The speed of learning in turn is based on the quality of labor relations. One important element missing in their paper is what determines the quality of labor relations in a country. The relationship between the employer and employee is likely to be driven by the cultural values in the environment that the firm operates.

Previous work on the direct link between cultural features and labor institutions highlights compelling findings related to unemployment benefits, employee protection regulations, family values, and collective bargaining. Among these, Algan and Cahuc (2009) study how civic virtue influences labor market institutions. They propose that the structure of the insurance market is determined by the civic-mindedness or trust level of the people. They consider the insurance institutions for the labor market to consist of two elements; unemployment benefits and employment protection. Cross-country differences between these two can be explained by the civic virtue of people. Essentially the difference is determined by the answers given to the question *"Do you think it can always be justified, never be justified, or something in between to claim government/state benefits to which you have no rights"*. The authors conclude that the provision of unemployment insurance is costly in countries where citizens believe it is acceptable to cheat on unemployment benefits. In this case, the government still provides unemployment benefits but

it will not provide efficient labor protection for workers. Their results continue to hold after using other indicators of civic virtue such as trustworthiness and trust.

In a similar study, Alesina et al. (2015) propose complementarity between family ties and labor market regulation based on individual mobility. In particular, they develop a model to show that in cultures with strong family ties, moving away from the family is costly for the individuals. In that context, local firms would pay low wages for immobile workers. Thus, to counteract this employer's power, immobile workers with strong family ties choose regulated labor markets. Empirically, they find evidence to show an association between family ties and labor regulation at both the country level and individual levels. To address reverse causality, they show second-generation immigrants in the United States coming from family-oriented societies are less mobile and ask for more labor regulation. Overall, their paper supports cultural roots in labor market institutions and outcomes.

In a related yet opposite claim to the above studies, Aghion et al. (2011) develop a model to explain causality running from rigid labor regulation (minimum wage) to low level of trust (labor relation between the employer and employee) and unionization rates, suggesting regulation shaping the cultural believes and values. This is similar to Aghion et al. (2010) which propose that countries with high levels of distrust demand higher regulation. Aghion et al. (2011) argue that when the minimum wage is set at a lower level, it gives an incentive for employees to engage in a social setting by joining trade unions and thereby learning to adopt labor relations with the employer. This in turn converges to higher labor relations and high union density.

In an empirical review of labor market institutions across developed countries, Blanchard et al. (2014) identify two successful models that have been able to provide both job security and unemployment benefits. The first one being the “Anglo-Saxon” model, is based on low employment protection and low unemployment benefits, and the second model is known as the “Nordic” model which provides a medium to a high degree of employment protection and conditional unemployment benefits. The second model is also termed the “flexicurity model”. Blanchard et al. (2014) argue that the success of this model in Nordic countries is attributable to the high levels of trust among individuals in those countries.

4.2.4 Hypothesis development

We propose that generalized trust serves as a substitution for formal labor protection laws. The argument for substitution is built on Knack and Keefer's (1997) proposition that societies characterized by high levels of trust are less dependent on formal regulations. In such a society, there is a reciprocal obligation between individuals not to cheat even when they don't know the other person (Banfield, 1958). The source of trust in the workplace has a similar narrative. As explained by Fukuyama (1995), in the absence of the right to lay off workers, firms would have a greater incentive to move the employee to a position within the firm where his/her labor can be utilized. This also would give an incentive for the firm to invest in training and developing the skills set of the employees so that their skills become transferrable within the firm. Such a policy increases employees loyalty towards the firm and also reduces free riding on the firm's time.

Hence, in societies with a high level of trust, that promotes moral obligation, the government is less likely to implement job security policies that reduces a firm's flexibility to discharge employees. This supports our substitution hypothesis. Empirically, we expect a high level of trust and stringent labor laws to be negatively associated.

4.3 Data

4.3.1 Employment Protection Laws

To measure the stringency of labor protection laws, we use the Employment Protection Legislation indicator developed by OECD for its member countries. An annual index for each country is constructed by evaluating dismissal laws that govern the employment of individual workers under regular contracts (EPR) and temporary contracts (EPT). These two aspects of the labor reforms are evaluated using 17 points that measure the stringency for both indices; more precisely, the rigidity of laws relating to regular contracts is evaluated using procedural inconveniences, the direct cost involved in dismissal in terms of the severance pay, and timing for dismissal in terms of notice and trial period. For EPTs, this is measured by surveying the definition of fixed-term contracts, types of legal temporary work, and restrictions on the number of renewals. By combining these points, OECD computes two composite indices, each given a score ranging

from zero to six, and a higher score reflects stricter regulation. The data for these two indices are available from 1985.

In addition to the OECD labor regulation database, several studies have used a more comprehensive measure developed by Botero et al. (2004) which captures three labor relationship dimensions; employment laws, collective relations laws and social security laws. Although this measure covers nearly 85 countries, it does not inform us of the change in labor laws over time. Due to globalization, national labor standards are rapidly changing, and the global financial crisis in 2007 has also had a significant impact on traditional labor laws. Hence, time-varying labor regulations across countries are more informative in understanding the impact of such laws on economic outcomes. Furthermore, the OECD Employment Protection Legislation Indicator has been widely used in the financial economics literature to document the time-varying impact of labor laws on FDIs (Olney, 2013) and financial policies (Karpuz et al, 2020; Simintzi et al, 2014).

To be consistent with employment regulatory data, we restrict our sample to 32 OECD countries and consider the beginning of the sample to be 1985 and ending in 2019. We exclude the United States since we are analyzing the substitute effect of labor laws and trust on US MNCs in OECD countries. The benefit of using this measure is that it allows us to examine the time-varying effect of labor laws for OECD countries over a longer period of 34 years.

4.3.2 Trust

We use World Value Survey (WVS) and European Value Survey (EVS) to construct the measure of Trust. Both surveys were conducted in several waves; WVS was carried out in 7 waves (1981-1984, 1989 – 1994, 1995 – 1998, 1999 – 2004, 2005 – 2009, 2010 – 2014, 2017 - 2021), while EVS was carried out in 5 waves (1981 – 1984, 1990 – 1993, 1999 – 2001, 2008 – 2010, 2017 – 2020). The number of participating countries in both surveys increased significantly from 8 in the first wave of WVS to 49 in the most recent wave. In total, the surveys reflect responses from over 645,000 respondents over a period of 30 years.[24] We measure country-level trust based on the following question that appears in both surveys:

[24] The samples for the survey are collected from the entire population over the age of 18 years and older. The minimum sample size is 1000.

Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?

The answer to this question is given on a scale of 1-0, where the answer is coded 1 if the respondent believes that most people can be trusted and 0 otherwise. Using the integrated database of WVS and EVS surveys, by aggregating at country and year level, we calculate the percentage of people who responded that most people can be trusted. In order to construct a time-varying measure, any missing values in between survey-years are imputed by taking the linear interpolation between the trust values of the adjacent survey-years.[25]

This is a widely used measure of trust across many disciplines including sociology, economics and more recently finance literature. Guiso et al. (2009) state that "WVS-type trust questions measure the generalized trust, i.e. the trust people have towards a random member of an identifiable group." Hence it serves as an appropriate measure in our analysis. The main criticism of this question is whether it measures the trust or trustworthiness of others (Glaeser et al., 2000). Challenging the traditional trust game, Sapienza et al. (2013) argue that there are two components of trust; the preferences of the sender (depends on risk aversion, inequality aversion, and altruism) and the sender's beliefs in the trustworthiness of others. They conclude that the WVS trust question captures the latter part, which is the belief component, and hence the answer to this question can be regarded as a measure of trust.

4.3.3 Control Variables

To account for factors that determine the stringency of labor laws, following Botero et al. (2004) and Pagano and Volpin (2005), we control for factors relating to legal and political theories. These include *GDP per capita, Legal origin, Union density, Leftist government,* and *Proportionality*. *GDP per capita* data are collected from World Development Indicators over the sample period, the inclusion of this variable controls for general economic development, and a higher value represents higher income generation capacity in a country. *Legal origin* data are obtained from La Porta et al. (1999) which document the legal origin of over 200 countries. We

[25] Dudley and Zhang (2016) adopt a similar approach to estimate the impact of trust on cash holdings in a panel data analysis.

further refer to La Porta et al. (2008) as they revise the legal origin of some socialist countries. The legal theories are based on two distinct forms of legal traditions; common law and civil law. Based on these theories La Porta et al. (1999) classify the legal origin of each country as English (common law), French, German, and Scandinavian (civil law) origins. Botero et al. (2004) suggest that civil law countries have a higher level of labor regulations compared to common law countries.

To identify a country with a *Leftist government*, we create a dummy variable equal to 1 if the executive power of a country is recognized as a left or center for a given year and zero otherwise. The Database of Political Institutions (DPI) provides these data on annual basis. According to political power theories, leftist governments are more protective of labor laws. *Union density* is the number of net union members scaled by the number of employees for a given year in a country. Annual data for this variable is collected from OECD. Labor economics literature suggests that countries with larger trade unions are benefited from stronger labor laws. The final political theory variable, *Proportionality* is based on the index introduced by Pagano and Volpin (2005) to measure the degree of proportionality in the electoral voting system. They define *Proportionality* as PR – PLURALITY – HOUSESYS + 2. The data for these three components are collected from DPI, where PR is a dummy variable that equals one if at least some candidates are chosen based on the majority of the votes received by their party (proportional rule) and zero otherwise. PLURALITY is a dummy variable equal to one if at least some of the candidates are chosen based on winning the majority of the votes (majoritarian rule), and zero otherwise. HOUSESYS equals to one if most seats are decided based on the majoritarian rule, and zero if allocated via proportional rule. The value of *Proportionality* ranges from 0 to 3, where 0 represents pure majoritarianism and 3 reflects pure proportional rule. Pagano and Volpin (2005) document a higher degree of employment protection under the proportional rule.

In addition to the above five factors, we further control for the level of effectiveness of regulatory enforcement. Allard (2005) argues that there are considerable differences in labor law enforcement across countries. To measure *Regulatory Quality*, we use Law and Order risk rating published by International Country Risk Guide (ICRG). The index ranges from 0 to 1, and a higher value indicates a higher quality of legal institutions.

4.3.4 Summary statistics

Table 4.1: Descriptive statistics & correlation matrix

Panel A: Descriptive statistics

Variable	Observations	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
EPR	944	2.25	0.81	0.59	1.58	2.67	5.00
EPT	944	1.94	1.32	0.12	0.88	3.00	5.25
EPL	944	2.10	0.93	0.42	1.34	2.78	4.19
Trust	944	0.37	0.17	0.05	0.25	0.48	0.77
FDI Flows ($mn)	884	10,431	20,674	-19,530	641	8,989	162,897
FDI Flows/position	851	0.19	0.72	-20	0.11	0.29	1.78
GDP ($mn)	931	839,118	980,014	15,328	203,256	1,140,426	4,591,291
GDP per capita ($)	943	29,893	20,466	1,731	14,735	41,100	123,514
Union Density	944	32.46	20.49	4.50	17.48	41.32	91.60
Tax Rate	917	31.48	9.63	9.00	25.00	36.00	61.80
Non-Corruption	874	4.42	1.18	2	3.50	5.00	6.00
Regulatory Quality	880	5.16	1.03	0	5.00	6.00	6.00
Leftist Government	944	0	0.50	0	0	1.00	1.00
Proportionality	944	2.02	1.07	0	1.00	3.00	3.00
Trade Openness	944	80	46.78	0	52	95.20	380.10

Panel B: Correlation matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
EPR	(1)	1													
EPT	(2)	0.49	1												
EPL	(3)	0.78	0.92	1											
Trust	(4)	-0.34	-0.35	-0.4	1										
Log FDI flows	(5)	-0.43	-0.32	-0.41	0.15	1									
GDP	(6)	-0.16	-0.08	-0.13	-0.1	0.42	1								
GDP per capita	(7)	-0.3	-0.2	-0.28	0.54	0.49	0.1	1							
Union Density	(8)	-0.17	-0.12	-0.16	0.59	-0.25	-0.3	0.19	1						
Tax Rate	(9)	0.12	0.27	0.25	-0.03	-0.19	0.28	-0.31	0.18	1					
Non-Corruption	(10)	-0.25	-0.26	-0.29	0.63	0.02	-0.1	0.28	0.53	0.29	1				
Regulatory Quality	(11)	-0.24	-0.4	-0.39	0.56	0.12	-0.1	0.4	0.42	-0.01	0.69	1			
Leftist Government	(12)	0.11	0.05	0.08	0.01	-0.11	-0.16	-0.05	0.14	0.06	0.05	0.09	1		
Proportionality	(13)	0.33	0.16	0.26	0.22	-0.35	-0.55	0.14	0.44	-0.13	0.08	0.14	0.04	1	
Trade Openness	(14)	-0.1	-0.11	-0.12	0.08	0.27	-0.38	0.46	0.02	-0.42	-0.02	0.15	0.02	0.39	1

This table reports descriptive statistics (Panel A) and correlation coefficients (Panel B) for the main variables used in the analysis. The sample contains country-year observations of 32 OECD countries over the period from 1985-2018. Variable definitions are provided in Appendix 4.

Table 4.2: Country-wise statistics

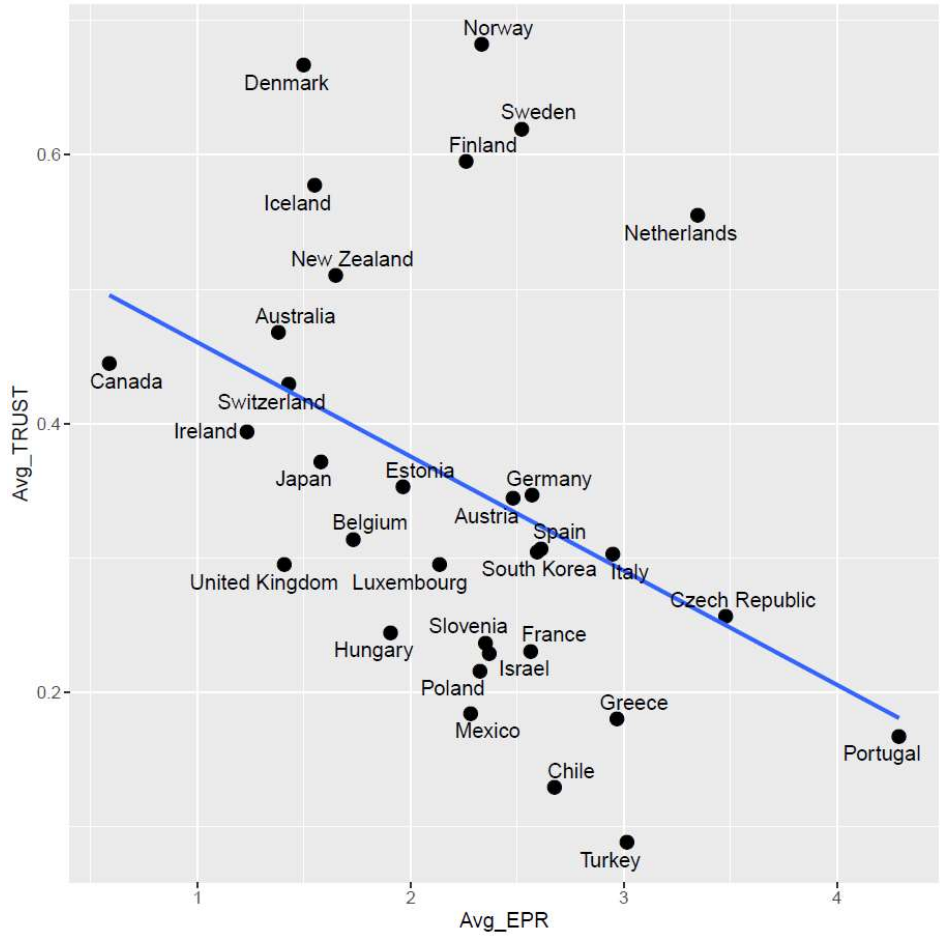
Country	Avg EPL	Avg EPR	Avg EPT	Avg Trust	Total FDI Flows ($ mn)
Australia	1.13	1.38	0.88	0.47	344,217
Austria	1.90	2.48	1.31	0.34	42,988
Belgium	2.39	1.73	3.05	0.31	169,644
Canada	0.42	0.59	0.25	0.44	1,042,106
Chile	2.84	2.67	3.00	0.13	58,151
Czech Republic	2.22	3.48	0.95	0.26	16,092
Denmark	1.61	1.50	1.72	0.67	38,649
Estonia	2.25	1.96	2.53	0.35	-
Finland	1.85	2.26	1.45	0.59	8,828
France	2.79	2.56	3.01	0.23	200,643
Germany	2.31	2.57	2.05	0.35	286,288
Greece	3.34	2.97	3.71	0.18	4,401
Hungary	1.42	1.91	0.93	0.24	12,192
Iceland	1.09	1.55	0.63	0.58	-
Ireland	0.83	1.23	0.42	0.39	1,035,823
Israel	1.62	2.37	0.88	0.23	15,840
Italy	3.10	2.95	3.24	0.30	120,777
Japan	1.40	1.58	1.23	0.37	330,321
Luxembourg	2.94	2.14	3.75	0.30	740,868
Mexico	2.92	2.28	3.55	0.18	373,565
Netherlands	2.24	3.35	1.14	0.55	1,806,413
New Zealand	1.21	1.65	0.77	0.51	18,596
Norway	2.65	2.33	2.97	0.68	104,124
Poland	1.73	2.33	1.14	0.22	24,647
Portugal	3.48	4.29	2.67	0.17	13,788
Slovenia	2.00	2.35	1.66	0.24	-
South Korea	2.51	2.59	2.43	0.30	106,344
Spain	2.89	2.61	3.18	0.31	152,321
Sweden	2.19	2.52	1.86	0.62	59,829
Switzerland	1.34	1.43	1.25	0.43	658,260
Turkey	3.91	3.02	4.81	0.09	22,070
United Kingdom	0.86	1.41	0.31	0.29	1,412,918

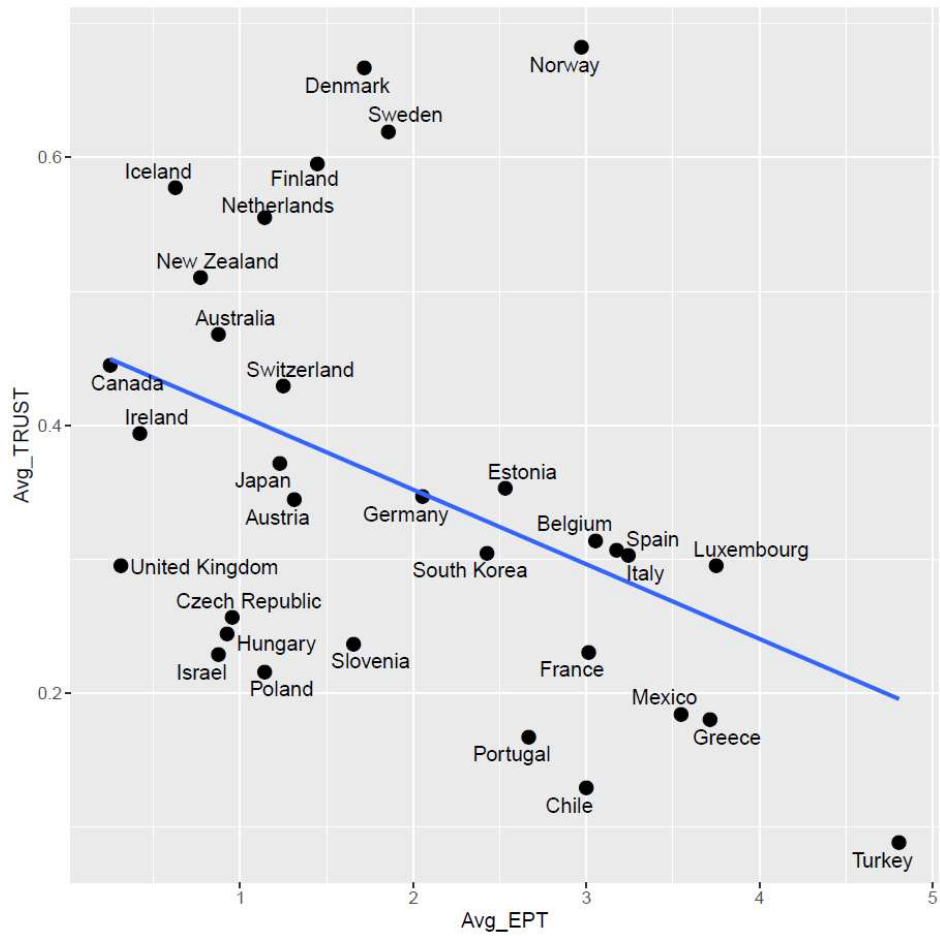
This table reports country-wise statistics for 32 OECD countries over the period from 1985-2018 for labor laws, trust and foreign direct investments. Avg EPR and Avg EPT are the average OECD Employment Protection Legislation Indicator for regular contract laws and temporary contract laws, respectively. Avg EPL is the equal weighted average of EPR and EPL. Avg Trust is the average percentage of respondents from integrated WVS and EVS who responded that most people can be trusted. Total FDI flows is the natural logarithm of the net investment made by a US parent on a foreign affiliate located in respective countries.

Descriptive statistics and correlation coefficients of the sample are presented in Table 4.1. According to Panel A, the average EPR is 2.25, Trust is 0.37, union density is 32.46, and tax rate is 31.5%. In our sample, Canada features as the country with the most relaxed labor laws for regular workers (0.59) while Portugal had the most stringent regulations (5.0) from 1985 – 1989. Panel B shows average EPR and EPT are negatively correlated with Trust at 5% significant level.

Cross-sectional variation in trust is evident in Table 4.2 where Turkey reports the lowest level of trust (0.09) and Norway with the highest level of trust (0.68) in the most recent wave. Figure 4.1 offers preliminary support for our hypothesis that generalized trust negatively predicts labor regulation.

Figure 4.1: Trust and Labor laws





This figure shows the relationship between trust and employee protection laws. Avg_TRUST is the average percentage of respondents from integrated WVS and EVS who responded that most people can be trusted. Avg_EPR and Avg_EPT are the average OECD Employment Protection Legislation Indicator for regular contract laws and temporary contract laws, respectively.

4.4 Results

4.4.1 Trust and labor laws

We estimate the substitutability between labor laws and trust using the following ordinary least squares regression model.

$$Employee\ Protection\ Laws_{j,t} = \beta_1 Trust_{j,t} + \beta_2 GDP\ per\ capita_{j,t} + \beta_3 Legal\ Origin_j + \beta_4 Political\ Controls_{j,t} + \alpha_t + \varepsilon_{j,t} \quad (4.1)$$

We estimate the above model on three dependent variables; *EPR, EPT* and *EPL* to capture the effect of trust on laws governing regular contracts, temporary contracts workers, and the aggregate, respectively. Previous studies estimating the effect of EPL often use the aggregate indicator of

EPR and *EPT*, however in this study we distinguish between the two indicators according to the nature in which these regular and temporary contracts are designed and enforced is likely to be influenced by the level of trust in society.[26] In subsequent analysis, we consider the aggregate *EPL* as the main proxy for labor laws. *Trust* is the percentage of people in a given country in a given year that responded that most people can be trusted. The time-varying measure of the survey results is imputed using linear interpolation. *GDP per capita* is the natural log of value for each country in a given year. Legal origin is a vector of three dummy variables; *French, German* and *Scandinavian*, and English is the omitted indicator. Political controls include *union density, leftist government, proportionality* and *regulatory quality*. We also control for time-fixed effects to account for macroeconomic factors that would affect labor laws which are independent of political and legal controls. Pagano and Volpin (2005) adopt a similar model using a panel dataset of EPL measures over a shorter period of 9 years to estimate the effect of political proportionality on employee laws by controlling for legal origin and time-fixed effects.

Table 4.3 shows that *Trust* has a significant negative association with all three measures of labor laws. Results remain consistent after controlling for other factors. According to column 2, a one standard deviation increase in trust leads to a decrease in the stringency of labor laws for regular contract workers (*EPR*) by about 0.631, equivalent to a 0.132 standard deviation decrease.[27]

The substitution is more pronounced for *EPT*, a one standard deviation increase in trust decreases the temporary contract law stringency by about 2.87, equivalent to 0.370 standard deviation decrease. Column 5 reports the findings using the aggregate measure, *EPL*, showing the negative coefficient on Trust is 1.75, significant at a 1% level.

As a robustness measure, we created a time-invariant alternative trust measure, where *High_Trust* is equal to one if the average *Trust* for each country is higher than the average *Trust* of the sample, and zero otherwise. Results in column 6 show that countries with a high level of

[26] According to OECD statistics on temporary employment, some of the high trust countries has a significant proportion of their workforce under contracts with pre-determined termination date. For e.g., out of the OECD countries, Netherlands has the 3rd largest temporary employment workers as a percentage of dependent employment equivalent to 27.4%.

[27] 0.132 = (0.631 x 0.17)/0.81, where 0.631 is the coefficient of Trust, 0.17 is the standard deviation of Trust and 0.81 is the standard deviation of EPR

trust adopt less stringent labor laws. Overall, these results support our prediction that trust acts as a substitute for labor laws.

Table 4.3: Substitutability between trust and labor laws

Dependent variable:	EPR		EPT		EPL	
	(1)	(2)	(3)	(4)	(5)	(6)
Trust	-1.642***	-0.631***	-2.781***	-2.870***	-1.750***	
	(0.088)	(0.120)	(0.118)	(0.157)	(0.106)	
High_Trust						-0.730***
						(0.028)
log GDP per capita		-0.177***		0.563***	0.193***	0.191***
		(0.023)		(0.041)	(0.023)	(0.022)
French		1.091***		1.712***	1.402***	1.179***
		(0.040)		(0.092)	(0.054)	(0.033)
German		0.639***		0.381***	0.509***	0.283***
		(0.054)		(0.066)	(0.046)	(0.036)
Scan		1.248***		2.819***	2.033***	1.944***
		(0.050)		(0.098)	(0.068)	(0.044)
Union Density		-0.018***		-0.028***	-0.023***	-0.027***
		(0.001)		(0.003)	(0.002)	(0.002)
Leftist government		0.171***		0.058	0.114**	0.064*
		(0.046)		(0.059)	(0.036)	(0.032)
Proportionality		0.221***		0.138***	0.179***	0.195***
		(0.011)		(0.019)	(0.013)	(0.011)
Regulatory Quality		0.088***		-0.359***	-0.135***	-0.114***
		(0.031)		(0.030)	(0.020)	(0.017)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	944	869	944	869	869	869
Adjusted R^2	0.087	0.533	0.126	0.620	0.718	0.754

This table presents ordinary least squares estimates from the baseline model. The dependent variables, EPR, EPT and EPL are annual indices governing dismissal laws related to individual workers under regular contracts, temporary contracts, and the equal average of regular and temporary contracts, respectively. Trust is the percentage of respondents who answered most people can be trusted. All the variables are defined in Appendix 4. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Consistent with Botero et al. (2004), coefficients on civil legal origins are positively associated with labor laws. Better enforcement of regulations has the opposite effect on two indices;

regulatory quality is positively associated with EPR and negatively associated with EPT and EPL. Although labor economics literature (e.g.; Aghion et al., 2011) document better labor laws in countries with stronger trade unions, this does not show up in our data. Instead, we see a significant negative association between union density and all three indices. As shown by Pagano and Volpin (2005) proportional rule of the voting system is positively associated with labor laws. Taken together, these findings suggest that countries with a high level of trust adopt less stringent labor laws.

4.4.2 Instrumental variable analysis

In the previous section, we demonstrate a negative association between trust and labor laws. However, there is also a possibility that stronger labor regulation can act as a disciplining mechanism by increasing the level of trust between the employer and employee. To address this issue and establish causality in our main argument, we rely on an instrumental variable from linguistics literature.

According to Whorf (1956) and Sapir (1970), the language that a person speaks determines his or her perspective of the world. Based on this hypothesis, Kashima and Kashima (1998) examine the relationship between culture and the rules of the language of those cultures, in particular, they argue that grammatical rules in terms of using pronouns have a causal effect on different cultural dimensions. The license to use pronouns in a language or to drop them is associated with the degree of psychological differentiation between the speaker and the context. In languages that include pronouns (e.g.: "I" in English), the individual is distinguished from the context. Whereas omission of pronouns in a language reduces the difference between an individual from the context, hence pronoun drop is more prevalent in societies that highlight the contextualization of individuals. The important cultural link is that people who are raised in cultures with pronoun drop develop their skills in distinguishing themselves from the context, which promotes limited morality as opposed to generalized morality (Licht et al., 2007). In contrast, people who grow up in cultures where the language allows the inclusion of pronouns are more respectful of the individual and their rights. Kashima and Kashima (1998) develop a dataset of 39 languages in 71 countries by coding whether those languages were licensed for pronoun drop or not. The dataset is widely used in the economics literature as a valid instrument for culture (e.g.: Licht et al., 2007; Davis and Williamson, 2016).

The use of language rule as an instrument for trust was first applied by Tabellini (2008). According to Tabellini (2008), current values and trust are partly inherited from the distant past, and the randomness in which these historical elements emerged could have an exogenous source of variation in current values. To that end, language works as a valid instrument, as it evolves slowly over time creating a link between language and current values and trust. Recent work by Cline and Williamson (2016) employs pronoun drop as an instrument for trust.

Following previous studies, we create an instrument, *Pronoun drop,* which is a dummy variable equal to one if the language spoken by the population in the country licenses a pronoun drop and zero if it does not. The data is extracted from Kashima and Kashima (1998). In our sample, main languages spoken in 11 countries have license for pronoun drop and 17 countries do not have license for pronoun drop. We expect the *Pronoun drop* variable to be negatively associated with the level of trust. This instrument is unlikely to be correlated with labor dismissal laws, and will satisfy the exclusion criteria since it will not influence labor dismissal laws other than through a level of trust.

In Table 4.4, column 1, we report the first stage results. Pronoun drop is negatively correlated with Trust, the coefficient is 0.056, significant at a 1% level. The F-statistic in the first stage is 41.61, higher than the benchmark value of 10, suggesting that it is an appropriate instrument. Column 2 reports two-stage least squares regression using *EPL* as the dependent variable for labor laws. *Trust* has a significant negative effect on labor laws, reporting a strong coefficient value (5.137), which is higher than the baseline results in Table 4.3, column 5.

The Wu-Hausman statistic is significant at a 5% level indicating that instrumental variable analysis is consistent. Overall, these findings confirm our theory, namely that countries with a high level of trust choose to adopt relaxed labor laws compared to countries with a low level of trust.

Table 4.4: Two-stage least squares (2SLS) analysis

	First stage Trust (1)	Second stage EPL (2)
Pronoun drop	-0.056***	
	(0.010)	
Trust		-5.137***
		(1.618)
log GDP per capita	0.079***	0.625***
	(0.006)	(0.130)
French	-0.082***	1.164***
	(0.010)	(0.143)
German	-0.062***	0.209
	(0.013)	(0.127)
Scan	0.210***	2.676***
	(0.020)	(0.236)
Union Density	-0.001***	-0.024***
	(0.000)	(0.002)
Leftist government	-0.013**	0.072*
	(0.005)	(0.040)
Proportionality	0.007***	0.239***
	(0.001)	(0.017)
Regulatory Quality	0.010***	-0.133***
	(0.002)	(0.020)
Year FE	Yes	Yes
Weak IV test (F-test)	41.61***	
Wu-Hausman test		9.85**
Observations	755	755
Adjusted R^2		0.669

This table presents the regression results from two-stage least squares (2SLS) analysis. Column 1 shows the results from first-stage regression by taking Trust as the dependent variable. Column 2 reports the second stage results in which EPL is the dependent variable. The coefficients in Trust are estimated using predicted values of Trust from the first stage. The instrument for Trust is pronoun drop which is a dummy variable equal to one if the language spoken by the population in the country licenses a pronoun drop and zero otherwise. All the controls from the baseline model are included in the regression. All the variables are defined in Appendix 4. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

4.4.3 Additional analysis

In the previous section, we established the causal effect of trust on employment protection laws. Next, we examine whether this effect exists under different institutional and political circumstances. More precisely, we expect the negative association between trust and labor laws to be stronger in countries free from expropriation risk, with higher levels of collective bargaining, and during the global financial crisis. The following section explains each of these circumstances and the findings.

Licht et al. (2007) document that cultural values have a causal influence on the norms governing institutions, one key norm is the level of corruption. Countries that promote higher cultural values are likely to be free from bribery and entrenchment. Linking these institutions to trust, Rothstein and Uslaner (2005) and Tabellini (2008) show a positive relationship between trust and the quality of institutions. As shown in previous studies, a high level of trust in a society leads to lower corruption. We propose that the substitution effect of trust on labor laws be stronger in countries free from corruption as opposed to those with a high level of corruption.

To measure the level of corruption, we use the Corruption risk rating published by ICRG. The index ranges from 0 to 6, and a higher value indicates a lower level of corruption. We name this index *Non-Corruption*. Table 4.5, column 1 shows that the interaction term *Trust*Non-Corruption* is negative 0.29, significant at a 1% level, supporting our prediction that better institutional quality in countries with a high level of trust influences lower labor regulations.

Next, we test the power of collective bargaining in high-trust countries in lobbying for better labor laws. Although larger trade unions are associated with better laws, our findings reported in Table 4.3 show that this is not the case in our sample of countries. Aghion et al. (2011) document a positive correlation between trustful labor relations and both high union density and minimum wages. We could argue that in trusting societies it is more likely to achieve labor market outcomes through means other than regulation such as collective bargaining and trade unions. This is also a possible reason why we see heavy union density and collective bargaining in Europe as opposed to the US. Given that trusting societies embrace unions and collective bargaining, regulations governing the labor force tend to be neoliberal, and less rigid. While in less trusting societies, unions and collective bargaining activities are not encouraged, there is a tendency for rigid labor

laws. Table 4.1 correlation matrix shows that union density and trust have a strong positive correlation.

Building on this argument we expect a negative association between stronger trade unions in trusting societies and labor laws. Column 2, Table 4.5 report the findings, where the interaction term *Trust*Union Density* is negatively associated with *EPL.*

In the final analysis, we explore the substitution effect during the global financial crisis. A drop in the level of trust during the global financial crisis had a significant impact on financial markets (Sapienza and Zingales, 2012). Several studies document that the crisis represented a shock to the level of trust which affected firm performance and default risk (Amiraslani et al., 2022; Lins et al., 2017). Similarly, labor markets around the globe were severely affected by the financial crisis, leading to high unemployment as employers went on firing workers so as to manage the bottom line (Verick et al., 2022; Cazes et al., 2013).

Previous studies have shown that in an economic downturn, the cost of firing is higher in countries with rigid labor protection laws (e.g.: Autor et al., 2006; Messina and Vallanti, 2007). Following these studies, we examine whether substitutability between trust and labor laws is higher during the crisis period compared to the pre-crisis period.

We create a dummy variable, *Crisis*, to identify the crisis period which equals one for the years 2008 and 2009, and zero for years in the pre-crisis period (i.e. from 2001-2007). Table 4.5, column 3 shows that the interaction term *Trust*Crisis* is negative 0.417, indicating that countries with a high level of trust are negatively associated with labor laws during the crisis compared to the pre-crisis period.

In all the above tests, we control for legal and political variables in the main model. As potential determinants of labor regulations, more control variables are added to account for the level of education and political risk. Education is the average years of schooling for people over the age of 25 (data sourced from Barro and Lee dataset).

Polcon is the political constraint index developed by Witold J. Henisz. Adding these two variables does not change the main findings, Polcon does not influence regulation while years of schooling are negatively associated in all three columns, implying better education level results in relaxed labor laws.

Table 4.5: Additional analysis

Dependent variable:	EPL		
	(1)	(2)	(3)
Trust	0.489	-0.098	-1.176***
	(0.441)	(0.265)	(0.283)
Trust * Non-corruption	-0.290***		
	(0.078)		
Trust * Union Density		-0.032***	
		(0.007)	
Trust * Crisis			-0.417***
			(0.039)
log GDP per capita	0.169***	0.180***	0.226***
	(0.025)	(0.025)	(0.051)
French	1.364***	1.368***	1.143***
	(0.084)	(0.084)	(0.070)
German	0.580***	0.595***	0.453***
	(0.061)	(0.060)	(0.068)
Scan	1.901***	2.220***	2.192***
	(0.051)	(0.080)	(0.096)
Union Density	-0.020***	-0.008*	-0.029***
	(0.003)	(0.004)	(0.003)
Leftist government	0.099**	0.108***	0.122***
	(0.037)	(0.037)	(0.022)
Proportionality	0.149***	0.139***	0.100***
	(0.016)	(0.014)	(0.023)
Regulatory Quality	-0.050**	-0.044*	-0.076*
	(0.023)	(0.024)	(0.038)
Non-corruption	-0.005	-0.098***	-0.015
	(0.038)	(0.029)	(0.031)
Polcon	-0.438	-0.511	0.017
	(0.298)	(0.310)	(0.347)
Education	-0.122***	-0.123***	-0.162***
	(0.011)	(0.010)	(0.014)
Year FE	Yes	Yes	Yes
Observations	801	801	801
Adjusted R^2	0.743	0.744	0.802

This table presents regression estimates for additional analysis. The dependent variable EPL is the equal average of regular and temporary contracts. Trust is the percentage of respondents who answered most people can be trusted. Non-Corruption measures the level of corruption where higher value represents lower level of corruption. Union density is the number of net union members scaled by the number of employees for a given year in a country. Crisis is a dummy variable equals to one for crisis period (2008 and 2009), zero for pre-crisis period (2001-2007). All the variables are defined in Appendix 4. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

4.4.4 Within country variation

In all of the previous analysis we established the fact that across countries trust acts as a substitute for labor laws. We next examine whether our findings are consistent in a within-country analysis. Although cultural elements such as trust are persistent over time, institutional qualities can vary over time. Hence, we re-estimate the baseline model by adding country-fixed effects and report the within-county variation results in Table 4.6. Legal origin variables are excluded from the model since adding country-fixed effects absorbs the explanatory power of those variables.

Column 1 Table 4.6 shows a positive association between trust and labor laws, suggesting a complementary relationship. In order to understand why trust can be complementary to labor laws in a within-country analysis, we split the total sample based on an institutional quality that could potentially vary over a longer period. This exercise is motivated by the theoretical model developed by Carlin et al. (2009). The authors present a model where trust and regulation can be substitutes in a context where social capital is valuable, and when social capital is less valuable, trust and regulation can be complementary. Building on this theory, we conduct a variation of our main hypothesis that, depending on the level of institutional quality, specifically the level of corruption in a country, trust can be both a substitute and a complement to labor laws.

To determine the country's level of corruption, we calculate the average corruption for each country over the sample period using Non-Corruption variable described in section 4.4.3, and categorize the country as a low corrupt if the country average is above the 75th percentile of the full sample Non-Corruption value. High corrupt is when the country's average is below the 25th percentile, and medium corrupt are the countries that are in the interquartile range. This breakdown results in 10 countries in the low corrupt range, 9 countries in the high corrupt range, and 13 countries in the medium corrupt range.[28] Table 4.6, column 2 shows that the coefficient on Trust is negative 0.564 and significant at a 5% level. This means that when controlled for country-fixed effects, in low corrupt countries trust substitutes for labor laws. Interestingly, we observe a reverse in the relationship between trust and labor laws in medium corrupt countries, with a positive

[28] *Low corrupt countries:* Canada, Denmark, Finland, Iceland, Luxembourg, Netherlands, New Zealand, Norway, Sweden, Switzerland. *High corrupt countries:* Czech Republic, Estonia, Israel, Italy, Mexico, Poland, Slovenia, South Korea, Turkey. *Medium corrupt countries:* Australia, Austria, Belgium, Chile, France, Germany, Greece, Hungary, Ireland, Japan, Portugal, Spain, United Kingdom.

coefficient on Trust (1.890), significant at 1% level. However, for the countries reported in the highly corrupt cohort, the relationship is insignificant.

Table 4.6: Within-country variation

Dependent variable:	EPL			
	Full sample	Low corrupt	Medium corrupt	High corrupt
	(1)	(2)	(3)	(4)
Trust	1.508***	-0.564**	1.890***	-1.239
	(0.251)	(0.245)	(0.230)	(0.860)
log GDP per capita	0.529***	0.361***	0.322***	0.940***
	(0.065)	(0.128)	(0.089)	(0.128)
Union Density	-0.012***	0.025***	-0.016***	-0.018***
	(0.002)	(0.006)	(0.003)	(0.003)
Leftist government	0.061***	0.097***	0.073**	-0.051
	(0.017)	(0.030)	(0.033)	(0.034)
Proportionality	0.071	0.804***		-0.135*
	(0.078)	(0.180)		(0.078)
Regulatory Quality	-0.030	-0.323***	-0.083***	0.096***
	(0.021)	(0.084)	(0.026)	(0.030)
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	879	279	400	200
Adjusted R^2	0.916	0.915	0.919	0.914

This table presents regression estimates for the baseline model with country-fixed effects. The dependent variable EPL is the equal average of regular and temporary contracts. Trust is the percentage of respondents who answered most people can be trusted. All the variables are defined in Appendix 4. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Overall, this analysis suggests that within countries, trust is a substitute for labor laws in countries with low expropriation risk, while trust is complementary for labor laws in countries with a medium level of expropriation. This finding resonates with Aghion et al. (2010) who argue that individuals in an uncivic society demand for regulation while those in a civic society expect low levels of regulation. In a society where public officials misuse their power and act in their own interest, individuals develop a low level of social trust, and they demand higher regulation knowing that the government is corrupt yet hoping higher regulation would reduce negative externalities.

Whereas in a society where public officials act in the best interest of the public, individuals develop a high level of social trust and expect lower regulations to enforce agreements.

4.4.5 Trust and Foreign Direct Investments

In the first part of this chapter, we examine how trust can influence regulations. Having established that trusting societies choose to implement relaxed labor laws, we next examine the substitution effect between trust and labor laws on foreign direct investments. If trust is a substitute for labor standards, foreign investors' decision to operate in a host country should not be influenced by the level of regulation governing workplace practices. The rationale here is that a high level of trust in the destination country helps to reduce the probability of opportunistic behavior, and mitigate inefficiencies associated with incomplete contractual relationships between FDI and domestic stakeholders (Guiso et al., 2009; Bhardwaj et al., 2007). We propose that if a higher level of trust can be substituted for a lower level of regulation, trust should positively influence foreign investors' perspective of labor practices in the host country. Thus, we expect the level of trust to be positively associated with foreign inflows. The scatterplot in Figure 4.2 provides preliminary evidence of our claim.

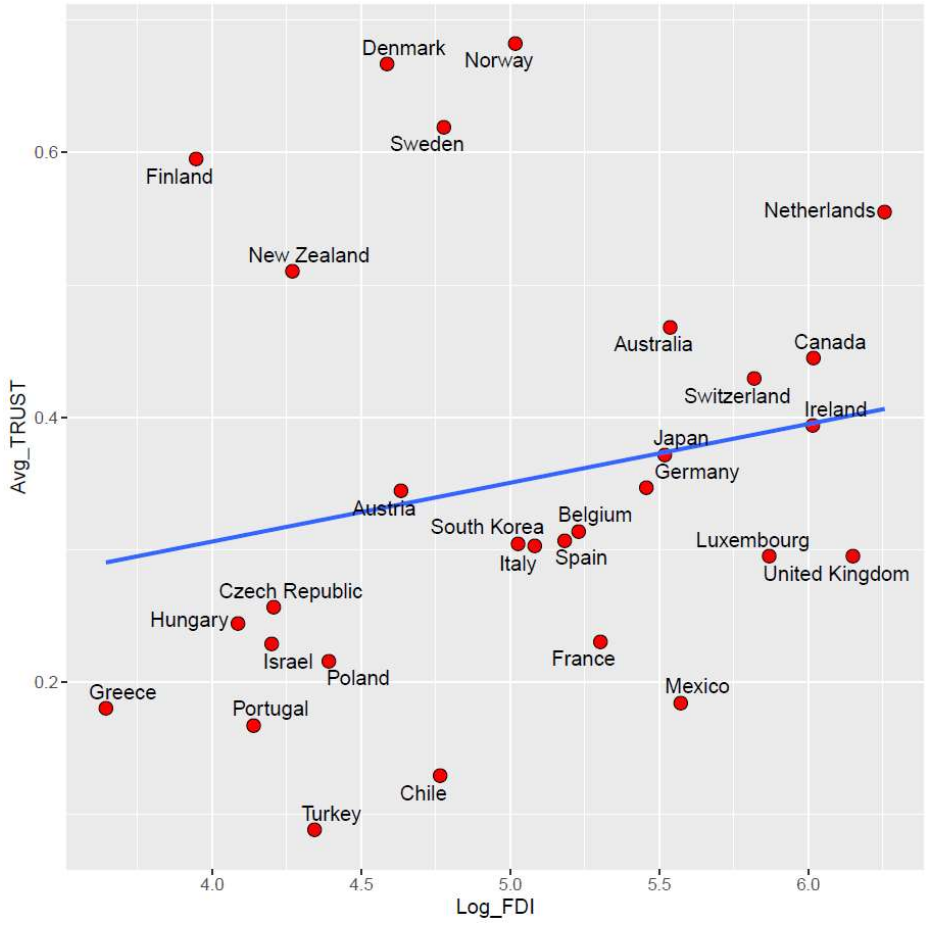
To test this hypothesis, we base the analysis on foreign direct investment of US MNCs in OECD countries. Data are collected from the Bureau of Economic Analysis (BEA). We use annual FDI flows (net of financial transactions and income) which capture the net investment made by a US parent on a foreign affiliate. According to BEA, a US parent is a person or an entity that owns 10% or more of a foreign business while a US affiliate is an enterprise that is at least owned by an individual or an enterprise.

Following Julio and Yook (2016), we create two dependent variables; *FDI flows* which is the natural logarithm of FDI flows of each country at time *t*, and *FDI flows/position* which is the annual natural logarithm of FDI flows scaled by FDI positions at time *t-1*. FDI positions are the value of the stocks of direct investments and it measures the total outstanding amount of US direct investments abroad at the end of each year.

The explanatory variable is *Trust* at time *t-1*. The alternative measure of trust at the country level is also included in the analysis, where *High_Trust* is a dummy variable that equals to one if

the average *Trust* for each country is higher than the average *Trust* of the sample and zero otherwise. Similar to Cline and Williamson (2016) who argued that trust is a substitute for formal regulation (in their case, anti-self-dealing laws) , we argue that if trust is a substitute for labor laws, the inclusion of the EPL index should not alter the findings between trust and foreign inflows. Hence, the lagged value of *EPL* is also added to the model. We control for factors that are associated with foreign direct investments in the host country, these include tax rate, GDP, regulatory quality, level of corruption, trade openness, union density, and political ideology. The year and country-fixed effects are added to control for country-level macroeconomic shocks.

Figure 4.2: Trust and FDI flows



This figure shows the relationship between trust and foreign direct investments. Avg_TRUST is the average percentage of respondents from integrated WVS and EVS who responded that most people can be trusted. Log_FDI is the average FDI flows which is the net investment made by a US parent on a foreign affiliate

Table 4.7: Trust and FDI

Dependent variable:	FDI flows		FDI flows/Position	
	(1)	(2)	(3)	(4)
Trust (t-1)	1.684**		1.311**	
	(0.717)		(0.632)	
High_Trust		0.901***		0.248***
		(0.094)		(0.075)
EPL (t-1)	0.103	-0.207***	0.096	0.082***
	(0.084)	(0.039)	(0.092)	(0.030)
Tax Rate (t-1)	-0.688***	-0.651***	-0.555***	-0.584***
	(0.193)	(0.135)	(0.193)	(0.143)
GDP (t-1)	0.911***	1.393***	-0.208	-0.041
	(0.296)	(0.050)	(0.324)	(0.037)
Regulatory Quality	0.016	-0.293***	-0.106	-0.104***
	(0.064)	(0.037)	(0.068)	(0.031)
Non-Corruption	0.073	0.255***	0.049	0.026
	(0.062)	(0.052)	(0.062)	(0.036)
Trade Openness	0.013***	0.026***	0.004*	0.002***
	(0.002)	(0.001)	(0.002)	(0.001)
Union Density	-0.009	-0.017***	-0.001	-0.001
	(0.007)	(0.002)	(0.008)	(0.002)
Leftist government	0.090	0.207**	0.073	0.109*
	(0.069)	(0.099)	(0.068)	(0.060)
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	No	Yes	No
Observations	716	716	707	707
Adjusted R^2	0.863	0.720	0.279	0.240

This table presents regression estimates on the substitutability effect between trust and labor laws on FDI. The dependent variables FDI flows is the natural logarithm of the net investment made by a US parent on a foreign affiliate, FDI flows/position is FDI flows scaled by FDI positions at time t-1. Trust is the percentage of respondents who answered most people can be trusted in time t-1. EPL is the equal average of regular and temporary contracts at time t-1. All the control variables are defined in Appendix 4. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

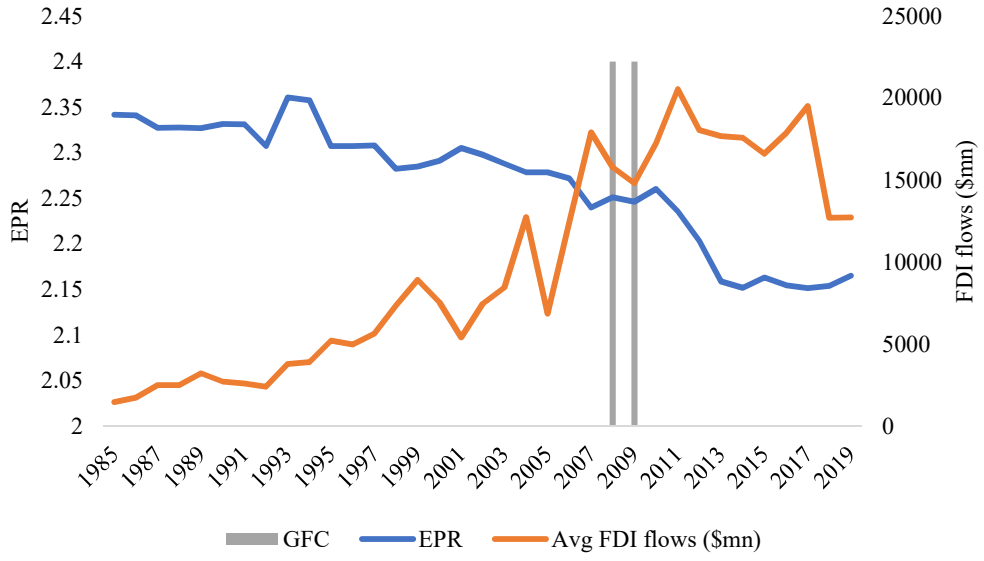
Findings reported in Table 4.7 suggest that the level of trust in the host country leads to an increase in investments by US MNCs. An increase in trust by one standard deviation leads to an increase in FDI flows by about 1.68, equivalent to a 0.162 standard deviation increase.[29] According

[29] 0.162 = (1.684 x 0.17)/1.77, where 1.684 is the coefficient of Trust, 0.17 is the standard deviation of Trust and 1.77 is the standard deviation of log FDI flows.

to column 2 and 4, log FDI flows from high trust countries are higher by 0.90 relative to low trust countries, while log FDI flows as a percentage of position is higher by 0.25, both values significant at 1% level. The inclusion of country fixed effects in columns 1 and 3 wipes out the significance of EPL on FDI flows and FDI flows/position. However, in columns 2 and 4, we add only the year fixed effects since adding the country fixed effect would absorb *High_Trust*, which is a time-invariant measure of trust.

The signs of the control variables are consistent with the literature, for instance, a higher tax rate in the host country discourage foreign investors and reduce FDI flows, higher GDP in the host country indicates economic developments which attracts investments, while an increase in trade openness (measured as the sum of imports and exports scaled by GDP) positively influence FDI flows.

Figure 4.3: EPR and FDI flows trend



This figure shows trend in labor laws and FDI flows over the sample period. EPR is the average OECD Employment Protection Legislation Indicator for regular contracts. GFC indicates 2008 and 2009 as the years of global financial crisis.

Next, to complement the findings presented in section 4.4.3 relating to the financial crisis, we carry out an additional test to understand the substitutability of trust during the global financial crisis in its influence on foreign transactions. As mentioned in section 4.4.3, the financial crisis had a significant effect on financial markets and shows that substitutability between trust and labor laws is higher during the crisis compared to the pre-crisis period for high-trust countries relative to low-trust countries. As shown in Figure 4.3, average FDI flows in our sample declined by nearly 21% to $14.82 billion from 2007 to 2009.

Table 4.8: Trust and FDI during Global Financial Crisis

Dependent variable:	FDI flows		FDI flows/Position	
	(1)	(2)	(3)	(4)
Trust (t-1)	-4.286*		-4.266*	
	(2.272)		(2.246)	
High_Trust		0.890***		0.053
		(0.194)		(0.152)
Trust (t-1) * Crisis	1.719***		1.805**	
	(0.429)		(0.606)	
High_Trust * Crisis		0.389*		0.569***
		(0.179)		(0.145)
EPL (t-1)	0.261	0.044	0.263	0.204***
	(0.445)	(0.059)	(0.449)	(0.060)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	No	Yes	No
Observations	227	227	226	226
Adjusted R^2	0.863	0.712	0.161	0.128

This table presents regression estimates on the substitutability effect between trust and labor laws on FDI during global financial crisis. The dependent variables FDI flows is the natural logarithm of the net investment made by a US parent on a foreign affiliate, FDI flows/position is FDI flows scaled by FDI positions at time t-1. Trust is the percentage of respondents who answered most people can be trusted in time t-1. EPL is the equal average of regular and temporary contracts at time t-1. Crisis is a dummy variable equals to one for crisis period (2008 and 2009), zero for pre-crisis period (2001-2007). All the control variables are defined in Appendix 4. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Although the aggregate impact is detrimental, the extent to which this affected countries varied based on the stability of social and political institutions. Thus, we propose that during the financial crisis, FDI flows to high-trust countries are significantly higher relative to low-trust countries, as compared to before the financial crisis. As in section 4.4.3, to capture the crisis period, we use the *Crisis* dummy variable which equals to one for the years 2008 and 2009 and zero for the period from 2001-2007. The main variables of interest are *Trust*Crisis* and *High_Trust*Crisis.*

Table 4.8 presents the findings. Column 1-4 show that the interaction terms are positive, suggesting that during the crisis period, despite labor laws, relative to low-trust countries, high-trust countries experienced a greater FDI flows during the crisis period compared to pre-crisis period.

Taken together, these findings support our hypothesis that trust provides an alternative mechanism to protect employees which reduces the need for rigid labor practices, making a nation more attractive to foreign investors.

4.5 Conclusion

Whilst there exists an extensive amount of literature that investigates the consequences of labor laws on micro and macro-economic outcomes, the literature examining our understanding of the determinants of labor laws is extremely limited since Pagano and Volpin (2005) highlighted the importance of political institutions. We advance this line of literature by showing that cultural values such as generalized trust are an important determinant in explaining the cross-country variation in employee dismissal laws. In particular, we document a negative association between trust and labor laws suggesting substitutability between formal and informal institutions. Our findings remain consistent after controlling for political and legal factors that influence labor laws. To address potential endogeneity issues, we conduct a two-stage least squares regression using an instrument variable that is widely used in the linguistic literature. Furthermore, we document that trust can be both a substitute and a complementary depending on the country's level of political institutions. Since trust is positively associated with foreign direct investments, we are able to validate the substitution effect of trust after controlling for labor laws.

Although our findings highlight an important cultural element in labor regulation, we understand that additional analysis is required to explain the substitutability and complementarity in a within study analysis. Furthermore, in the future, we expect to use a cleaner instrument to establish causality similar to Algan and Cahuc (2009) by employing the inherited trust of second-generation immigrants in the US as in Alesina et al. (2015).

Chapter 5:
Conclusion

In this thesis, we study three aspects of political economy and its impact on financial and investment policies. These three aspects include (1) political corruption, (2) political connections, and (3) regulation. In the first essay, we exploit the heterogeneity in the quality of political institutions that exists across 50 US states and explore how political corruption and political uncertainty interact and impact firms' cash ratios. We propose that when faced with political uncertainty, firms located in a more corrupt environment increase liquidity at a higher rate relative to firms located in a low corrupt environment to influence policymakers in order to mitigate political risk. Our findings show that when faced with political uncertainty, firms located in more corrupt states increase the cash-to-asset ratio by 3.07 percentage points more than the firms located in low-corrupt states. Furthermore, we show that our findings are more likely to be driven by financially constrained firms, supporting our interpretation of the results.

We make several contributions to the political economy literature on corruption and political influence. First, to the best of our knowledge, we are the first to explore the interaction between corruption and uncertainty at a national level. Much of the existing studies on this area is based on developing countries and cross-country level which makes it difficult to control for socio-cultural factors that determine the level of expropriation. In addition, the perceptibility of corruption varies across different countries and the consequences of various forms of corruption could possibly have varying effects on economic outcomes. Our research highlights that the coincidence of corruption and uncertainty exacerbates firm risks even among developed countries with strong political institutions. Second, we employ objective-based measures of corruption and uncertainty. In particular, our measure of corruption using conviction data captures the incidence of corruption rather than the perception of corruption. Similarly, our measure of political uncertainty captures possible changes in policies that could emerge due to changes in alignment with the ruling party at all tiers of local government rather than binary election variables.

In the second essay, we study the financial policies of politically connected firms. Specifically, we investigate how politically connected firms in the US respond to political uncertainty by adjusting liquidity. We show that exposure to national-level uncertainty prompt connected firms

to increase the cash-to-assets ratio by 43.33 basis points more than non-connected firms. Since connected firms have a greater need to increase political spending during high uncertainty periods, in order to meet that demand these firms increase cash holdings and cash savings. We argue that this political spending in the form of campaign contributions and lobbying expenses is directed toward policymakers who play a key role in setting up policies. Thus greater liquidity enables connected firms to influence policymakers and navigate uncertainty. Although these firms respond to aggregate uncertainty, we do not find evidence supporting their response to local uncertainty. Furthermore, we find compelling evidence in support of political influence for connected firms located in battleground states. We show that connected firms respond in this manner to influence policymakers by increasing campaign contributions and lobbying expenses. In particular, we find that the amount of cash savings by connected firms located in more corrupt states when faced with uncertainty is positively associated with political expenses.

The findings from the second essay contribute to political connections literature in the context of a developed country. The US provides a unique setting to explore the firm-level connection to politicians through firms' engagement in election campaigns and interest groups. This is mainly because the magnitude in which US firms influence politicians through such political spending far exceeds those of other developed countries. Although existing US-based studies determine the level of connection through either firm-linked PACs or lobbying activities, the combined effect of the two forms of political activities is less applied in empirical finance literature. By constructing a measure that captures the aggregate political influence, we are better able to measure a firm's connection to policymakers.

Taken together, findings from the first and the second essay contribute to the broader literature studying firm financial policies, in particular cash holdings. We focus on cash holdings because cash can most easily be converted into private benefits. Anecdotal evidence shows that average US firms use cash to bribe politicians in order to navigate political risk. Our study provides empirical evidence for this claim. The second essay extends our political influence argument by focusing on the cash holdings of politically connected firms.

Our evidence suggests that policymakers' influence through expropriation and regulatory changes affect firms' financial policies. In order to navigate the expropriation risk and political risk, firms adjust their liquidity by increasing cash level. It is also evident that establishing

connections with policymakers through campaign contributions and lobbying activities, is an effective mechanism to build up firms' political capital thereby increasing their potential to influence politicians.

The findings in the first and the second essays are subject to at least three limitations. First, the concept of corruption is a context-specific phenomenon. In some countries, corruption is pervasive whilst in other countries corruption hardly affects daily lifestyle. The difference is a result of shared expectations between individuals in such countries, i.e. if a person is expected to pay a bribe to get certain work done, he would go along with the rest of the society and engage in corrupt practices. If bribery is condemned by society, a person is less likely to engage in such activities. Hence, the level of corruption differs across countries with the same level of political institutions and economic development depending on the shared expectations among individuals. To get a better understanding, future research could explore similar analyses in countries with the same level of political institutions as that of the US.

Second, the time period of the first essay is limited to 2016, and future research could extend the analysis to capture the changes in the US political environment during the Trump administration. Third, the construction of firm-level political connectedness in the second essay considers firms that are spending on election campaigns through PACs. However, a large number of small firms spend on campaigns through trade associations. Since there are no mandatory disclosure requirements for such expenses, it is not possible to determine the true level of connections.

Future research within the US context could explore firms' influence on policymaking through the direct link between campaign contributions and lobbying. For instance, campaign contributions by firms are a strategic long-term investment to gain access to legislators who they later lobby. Hence any exogenous shock that affects the connected member's ability to supply that policy is likely to have a significant effect on the political investment made by the firm. A positive shock may come in the form of a promotion of a congressional member to an economically significant committee. A negative shock may occur in the event of a death, resignation, or conviction of a congressional member in an economically significant committee. It is possible to investigate whether firms that are linked to an economically significant congressional member would

experience an increase in investment and firm value in the event of a positive shock relative to firms without such a connection.

In the last essay, we investigate the influence of generalized trust on labor regulation. We show that OECD countries with a high level of trust chose to implement less stringent labor dismissal laws, suggesting that trust acts as a substitute for labor laws. We find that in a within-country analysis, trust acts as a substitute for labor laws in countries that are exposed to a low level of expropriation whilst trust acts as a complementary for labor laws in countries that are exposed to a greater level of expropriation. Furthermore, we validate the substitution effect by showing that trust positively relates to higher foreign direct investment flows. Collectively, these findings highlight the role of informal institutions in determining regulation.

The findings from the final essay make two key contributions to the literature. First, we contribute to the limited literature that explores the link between trust and regulation. While previous studies show the cross-sectional relationship between trust and regulation, our measure of labor laws provides us the benefit of constructing a panel dataset that captures the change in employee dismissal laws across countries over a longer time frame. This allows us to investigate both substitutability and complementarity of trust in labor laws. Finally, we contribute to the literature linking political influence on labor laws.

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Appendixes

Appendix 1: Data codes and variable description – Chapter 2 & 3

Code	Variable	Description
Firm-level variables		
CASH	Cash-to-assets ratio	Cash & cash equivalents divided by total assets
ΔCASH	Propensity to save cash	Difference in cash in time *t* and *t+1,* scaled by total assets in time *t*
SIZE	Firm size	Natural logarithm of total assets
LEV	Leverage ratio	Total of short term debt and long term debt scaled by total assets
NWC	Net working capital ratio	Working capital net of cash and cash equivalents scaled by total assets.
CAPEX	Capital expenditures	Capital expenditures scaled by total assets
DIV	Dividend	Dummy variable which equals to one if firm paid dividend in a given year and zero otherwise.
BM	Book-to-market	Total assets minus total equity plus market capitalization, scaled by total assets.
CFLOW	Cash flow	EBITDA minus interest, taxes and dividends, scaled by total assets
R&D	Research & development ratio	Research and development expenses scaled by assets
ACQ	Acquisitions	Cash paid for acquisitions scaled by total assets
MKT_SHARE	Market share	Firm's sales scaled by total industry sales for a given year
N_IND_ACTIVE	Politically active firms in industry	Number of politically active firms in a firm's industry with either PAC contributions or lobbying expenses for a given year.
POL_CONN_FIRM	Politically connected firms	Dummy variable which equals to one if a firm's total number of observations for either of lobbying or PAC donations are greater than 25% of the sample period, and zero otherwise. This is a time-invariant measure.
POL_CONN	Politically connected firms	Dummy variable which equals to one if a firm reports either a lobbying expenses or a campaign donation in a given year and zero otherwise.
State-level variables		
CORR	Corruption	State-level conviction data from the Department of Justice Public Integrity Section, scaled by state-level population data from US Census Bureau
CORR_HIGH	High corruption	Dummy variable which equals to one if the firm is located in a state with per capita conviction rate above the median value for the year, and zero otherwise.
CORR_RANK	Corruption Rank	Yearly rank of corruption based on 5-year trailing conviction and population data
CORR_SURVEY	Corruption Survey	Corruption score calculated based on question number 6 from Boylan and Lang (2003) survey.
PAI	Political Uncertainty	Political alignment index calculated according to Kim et al. (2012). Refer equation (1)
Modified_PAI	Alternative Political Uncertainty	Modified political alignment index calculated according to Antia et al. (2013). Refer equation (3)
UNEMP	Unemployment	Annual unemployment rate from Federal Reserve Economic Data

GDP	Gross domestic product	Annual GDP growth rate calculated based on the data from the Bureau of Economic Analysis
PI	Personal Income	Natural logarithm of annual personal income from the Bureau of Economic Analysis
MIN_WAGE	Minimum Wage	Annual minimum wage from Bureau of Labor Statistics
RESIDENT_VOTE	Residency before voting	Number of days a citizen has to wait to be eligible to vote as measured in 1970 from the Book of the States
CONSTITUTION_AGE	Age of the constitution age	Number of years in a state with the same constitution as measured in 1970 from the Book of the States
National-level variable		
EPU	Economic Policy Uncertainty	Natural logarithm of the average EPU index (developed by Baker et al., 2016) over the 12 months period. The EPU data is available at https://www.policyuncertainty.com/
GEN_ELEC	General elections	A dummy variable equals to 1 for elections years and zero otherwise.
GDP_GROWTH	GDP growth rate	Annual GDP growth rate from the World Bank's World Development Indicator
JLN_INDEX	Jurado et al. (2015)'s index	Aggregate 12-months ahead macro uncertainty index (averaged over 12 months period). The data is available at https://www.sydneyludvigson.com/macro-and-financial-uncertainty-indexes

Appendix 2: State-wise distribution

State code	State	Corruption		Avg PAI	Total Firm-year obs	Avg Cash ratio
		Avg Corruption (CORR)	Avg Corruption Rank (CORR_RANK)			
AK	Alaska	0.69	85.58	0.477	21	0.05
AL	Alabama	0.49	79.58	0.381	119	0.11
AR	Arkansas	0.30	47.58	0.412	217	0.05
AZ	Arizona	0.29	44.21	0.359	503	0.18
CA	California	0.20	35.79	0.581	5761	0.23
CO	Colorado	0.14	19.37	0.615	928	0.16
CT	Connecticut	0.24	42.53	0.655	823	0.13
DE	Delaware	0.40	65.16	0.632	93	0.20
FL	Florida	0.41	68.53	0.445	1730	0.15
GA	Georgia	0.29	51.89	0.436	847	0.12
HI	Hawaii	0.28	51.26	0.623	105	0.09
IA	Iowa	0.15	17.89	0.429	164	0.10
ID	Idaho	0.23	40.84	0.434	118	0.14
IL	Illinois	0.38	71.47	0.492	1434	0.12
IN	Indiana	0.23	37.89	0.403	417	0.09
KS	Kansas	0.15	21.16	0.349	154	0.10
KY	Kentucky	0.60	89.16	0.539	198	0.06
LA	Louisiana	0.83	97.16	0.320	247	0.07
MA	Massachusetts	0.30	54.74	0.579	1683	0.24
MD	Maryland	0.42	57.58	0.601	552	0.20
ME	Maine	0.24	39.47	0.355	54	0.14
MI	Michigan	0.22	35.79	0.417	579	0.13
MN	Minnesota	0.12	13.58	0.566	1054	0.16
MO	Missouri	0.30	56.53	0.574	415	0.11
MS	Mississippi	0.63	88.32	0.366	61	0.07
MT	Montana	0.85	84.95	0.467	23	0.04
NC	North Carolina	0.18	27.89	0.401	509	0.11
ND	North Dakota	0.56	79.26	0.382	30	0.05
NE	Nebraska	0.14	16.63	0.331	221	0.13
NH	New Hampshire	0.09	7.89	0.618	99	0.14
NJ	New Jersey	0.44	76.95	0.442	1474	0.21
NM	New Mexico	0.24	35.26	0.520	40	0.20
NV	Nevada	0.18	31.58	0.537	316	0.15
NY	New York	0.31	58.74	0.610	3140	0.16

(continued on next page)

Appendix 2: *(continued)*

State code	State	Corruption		Avg PAI	Total Firm-year obs	Avg Cash ratio
		Avg Corruption (CORR)	Avg Corruption Rank (CORR_RANK)			
OH	Ohio	0.39	70.00	0.493	1276	0.10
OK	Oklahoma	0.42	66.53	0.320	375	0.06
OR	Oregon	0.09	8.74	0.605	291	0.14
PA	Pennsylvania	0.39	69.58	0.464	1379	0.12
RI	Rhode Island	0.29	51.16	0.612	136	0.15
SC	South Carolina	0.15	23.37	0.434	131	0.09
SD	South Dakota	0.64	88.95	0.382	43	0.13
TN	Tennessee	0.40	70.21	0.323	464	0.10
TX	Texas	0.32	58.32	0.436	3323	0.12
UT	Utah	0.12	14.00	0.404	391	0.16
VA	Virginia	0.53	76.53	0.559	868	0.14
VT	Vermont	0.26	45.68	0.546	1	0.29
WA	Washington	0.14	18.74	0.507	734	0.19
WI	Wisconsin	0.19	30.42	0.399	512	0.09
WV	West Virginia	0.42	67.58	0.465	47	0.18
WY	Wyoming	0.29	58.00	0.368	26	0.08

Appendix 3: Baseline regression results with firm fixed effect – Chapter 2

	Dependent variable: CASH (t+1)		
	(1)	(2)	(3)
PAI	-0.013***	-0.012**	-0.010**
	(0.005)	(0.004)	(0.004)
CORR	-0.021**	-0.015*	-0.012*
	(0.008)	(0.007)	(0.006)
PAI*CORR	0.052***	0.043***	0.039***
	(0.012)	(0.010)	(0.010)
SIZE		-0.024***	-0.024***
		(0.002)	(0.002)
LEV		-0.025***	-0.025***
		(0.007)	(0.007)
CAPEX		-0.185***	-0.183***
		(0.015)	(0.016)
DIV		-0.005**	-0.005**
		(0.002)	(0.002)
NWC		-0.007**	-0.007**
		(0.003)	(0.003)
BM		0.001**	0.001**
		(0.000)	(0.000)
CFLOW		-0.001	-0.0011
		(0.003)	(0.003)
ACQ		-0.131***	-0.131***
		(0.008)	(0.009)
R&D		0.067***	0.066***
		(0.014)	(0.014)
Year effect	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes
Firm effect	Yes	Yes	Yes
State effect	No	No	Yes
Observations	30,794	30,794	30,794
Adjusted R^2	0.579	0.596	0.597

This table presents firm fixed effect results from the baseline model. The dependent variable, CASH (t+1) is cash-to-assets ratio in the following year. PAI is the political alignment index of state *s* at time *t.* CORR is the per capita conviction rate of state *s* at time *t*. All the firm variables are winsorized at 1% and these are defined in Appendix 1. Industry fixed effect represents 2-digit SIC code. Standard errors are clustered by time. *,**,*** indicates statistical significance at the 10%, 5% and 1% level, respectively.

Appendix 4: Data codes and variable description – Chapter 4

Variable	Description	Source
Trust	The percentage of people who responded that most people can be trusted.	WVS and EVS
High_Trust	Dummy variable which is equal to one if the average *Trust* for each country is higher than the average *Trust* of the sample, and zero otherwise	WVS and EVS
EPR	Annual index of dismissal laws that govern the employment of individual workers under regular contracts	OECD
EPT	Annual index of dismissal laws that govern the employment of individual workers under temporary contracts	OECD
EPL	Equally weighted average index of EPR and EPT	OECD
GDP per capita	Natural log of GDP per capita	World Bank WDI
French	Dummy variable equals to one if a country has a French legal tradition and zero otherwise	La Porta et al. (1999)
German	Dummy variable equals to one if a country has a German legal tradition and zero otherwise	La Porta et al. (1999)
Scan	Dummy variable equals to one if a country has a Scandinavian legal tradition and zero otherwise	La Porta et al. (1999)
Union density	The number of net union members scaled by the number of employees for a given year	OECD
Leftist government	Dummy variable equal to one if the executive power of a country is recognized as a left or center for a given year and zero otherwise	DPI
Proportionality	Annual index calculated using Pagano and Volpin's (2005) proportionality index where a value of 0 represents pure majoritarianism and 3 reflects pure proportional rule.	DPI
Regulatory quality	Annual index measured using Law and Order risk rating that ranges from 0 to 1; a higher value indicates a higher level of regulatory quality	ICRG
Non-corruption	Annual index measured using Corruption risk rating that ranges from 0 to 6; a higher value indicates a lower level of corruption	ICRG
Polcon	Political constraint index developed by Witold J. Henisz	https://mgmt.wharton.upenn.edu/faculty/heniszpolcon/polcondataset/
Education	Average years of schooling for people over the age of 25	Barro and Lee dataset
FDI flows	Natural logarithm of FDI flows of each country at time *t*	Bureau of Economic Analysis
FDI flows/ Position	Natural logarithm of FDI flows scaled by FDI positions at time *t-1*. FDI positions measure the total outstanding amount of US direct investments abroad at the end of each year	Bureau of Economic Analysis
Tax rate	Host country corporate income tax rate	OECD
Trade openness	Sum of exports and imports of goods and services measured as a share of gross domestic product	World Bank WDI
Pronoun drop	Dummy variable equals to one if the country's population speaks a language in which pronoun drop is permitted and zero otherwise	Kashima and Kashima (1998)
Crisis	Dummy variable equals to one for the years 2008 and 2009 and zero for the years in the pre-crisis period, i.e. from 2001 to 2007.	