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Two Essays on Politics in Corporate Finance

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by

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ABSTRACT

I examine how political geography affects firms' cost of debt. Policy risk, measured by proximity to political power reflected in firms' position in the country's political map, is negatively related to corporate bond ratings and positively related to firms' cost of debt. I find firms' policy risk can be mitigated by engaging in corporate political strategies like making campaign contributions or lobbying. Consistent with the view that such political strategies effectively protect firms against uncertainty about future policies, I find policy risk has less of an impact on the cost of debt of firms that support more powerful and well-connected politicians in the legislative co-sponsorship network or that spend more money on lobbying.

Using a sample of state pension funds' equity holdings, I find that state pension funds exhibit not only local bias but also bias towards politically connected stocks. These politically connected local firms held by state pension funds do not exhibit better performance compared with their local benchmarks not held by these funds before the holding period, and the overweighting of politically connected local firms is negatively related to pension fund returns. My results do not support the information advantage hypothesis that state pension funds exhibit overweighting of local firms because they have an information advantage about home-state firms. I further examine the factors that explain local bias from political perspectives. My results show that local bias is related to public policy integrity and local politicians' congressional connections.

Policy Risk, Corporate Political Strategies, and the Cost of Debt

"*Too many corporations and organizations ignore political risks until it is too late. These risks are either assumed to occur rarely (or to someone else) or to be entirely unpredictable. In both cases nothing could be farther from the truth*." Ian Bremmer and Preston Keat (2009).

Chapter One: Introduction

In this paper, I investigate whether uncertainty induced by the dynamic nature of the political process, namely, domestic policy risk at the state-level, has an impact on firms' cost of debt. The recent European debt crisis and downgrading of U.S. government debt are examples of the importance of political risk in global financial markets.[1] This risk is driven by uncertainty regarding a government's role in the economy and can range from unexpected changes in government regulations to outright expropriation of corporate assets. It can have a profound impact on a firm's cost of capital. For instance, Erb, Harvey, and Viskanta (1996) find that political risk can predict equity returns whereas Qi, Roth, and Wald (2010) show that firms in countries with higher political stability have a lower cost of debt.

Besides being exposed to international political risk, local firms are also exposed to risk arising from changes in domestic governmental regulations and policies. For instance, take the highly publicized and controversial automotive industry bailout in 2009 where many bondholders were affected by government interference in favor of the United Auto Workers

[1] As perceptions about European politicians' inability to swiftly deal with the crisis have deteriorated, costs of bailouts arranged for Greece, Ireland, and Portugal have kept increasing dramatically accompanied by downgrades by major ratings agencies like Moody's and S&P (see Collignon, Esposito, and Lierse, 2011). On August 5, 2011, citing political uncertainties in the United States, S&P downgraded U.S. government debt stating, "More broadly, the downgrade reflects our view that the effectiveness, stability, and predictability of American policymaking and political institutions have weakened at a time of ongoing fiscal and economic challenges to a degree more than we envisioned when we assigned a negative outlook to the rating on April 18, 2011."(www.standardandpoors.com accessed on August 5, 2011).

(Blaylock, Edwards, Stanfield, 2012).[2] Even though political uncertainties get partially resolved around presidential elections, they remain important after elections because taxes, deficits, government spending, financial regulations, and the economy in general are all affected by new legislation and political agenda changes. As a result, the uncertainty about the consequences of such policies is also likely to increase interest rate risk or credit risk, and consequently raise the borrowing costs of firms that are more susceptible to it.

In the U.S., the political map is very dynamic. After presidential, congressional and midterm elections, some states will become more while others will become less aligned with the presidential party. The elected politicians in Congress who are aligned with the administration along party and ideological lines are more likely to have an influence on shaping the political agenda and on spearheading new legislative efforts that will advance the administration's political plans. Thus firms located in states that have politically shifted closer to the president can be subject to the benefits and risks associated with proximity to political power. Predictably, when powerful politicians advance new pieces of legislation in Congress they will want to do so in a way that will benefit, or at least not do much harm to, the firms and industries in their own states, especially those that are connected with them. This implies that proximity to political power may result in more benefits (or at least less risk) for connected firms but also to greater exposure to risk for the remaining vast majority of firms that are not politically connected (see Kim, Pantzalis, and Park, 2012). This type of uncertainty injected into markets by politicians tends to linger on for long periods due to the very nature of the legislative process. It takes long time for many legislative efforts to evolve into final bills acceptable by a majority in both chambers of Congress and the president. The path to the final passage of a bill can cross the two chambers of Congress several times and may involve numerous amendments and alterations.

[2] Many sources attribute President Obama's Ohio win to the auto bailout in the 2012 Presidential election.

Actually, very few bills introduced will ultimately become law, although uncertainty is injected into markets throughout the legislative process. This local legislative uncertainty or local policy risk can affect local firms' cash flows, financing and investment decisions, and also cost of capital. In this study, I examine whether local policy risk can affect firms' borrowing costs. I expect to find that policy risk plays an important role in the corporate bond market where investors are looking for steady cash flows and have much lower risk tolerance levels compared to equity investors,

Using the political alignment index (*PAI*) measure constructed by Kim et al. (2012) and also legislative intensity as proxies for policy risk, I test whether political uncertainty influences firms' cost of debt in a sample of new corporate bond issues from 1984 to 2008.[3] This measure exploits state-level exogenous variation in policy uncertainty during election cycles. I find a negative relation between local political uncertainty and Moody's corporate bond ratings, suggesting that ratings agency might consider local political uncertainty as another source of credit risk. Likewise, my results also show that local political uncertainty is positively related to yield spreads and thus firms' costs of debt after I control for default spread, which is a proxy for default risk or credit risk.

Though shifts in political power around presidential elections may be associated with a resolution of some uncertainty, my results suggest that they still result in a significant impact on the cost of debt, especially for bond issuers in states that are more aligned with the presidential party or in states that are exposed to more legislative uncertainties. As a further test to establish causality I examine the impact of the change in policy risk on the cost of debt in close Presidential elections. For firms headquartered in states with low policy risk before the election,

[3] Kim, Pantzalis, and Park (2012) imply that proximity to political power might reflect exposure policy risk through examining stock returns.

but experience a positive policy risk shock post-election, I find a strong positive relation between the change in policy risk and the cost of debt. For firms operating in high policy risk states before the election, but experience a negative policy risk shock, I find that policy risk is related to yield spreads before, but not post-election.

As to provide further evidence linking policy risk to firms' cost of debt, I examine bond maturity. If policy uncertainty increases in the long run, it should have a bigger impact on long maturities compared to short maturities due to increased interest rate risk. Consistent with this view, I find a negligible impact of policy risk on shorter maturity bonds, but economically large impact on long maturity bonds. I also examine time series bond returns and find similar evidence—policy risk is related to bond prices.

I next examine if firms can hedge against policy risk by adopting active corporate political strategies (i.e., making contributions to political action campaigns (PACs) and/or lobbying). Several recent papers suggest that firms' political strategies aim at establishing political connections so that they can reap private benefits and lower exposure to policy risk.[4] Bondholders stand to ultimately gain from such strategies because bond values increase when firm risk decreases.

Consistent with the view that active corporate political strategies provide an effective means of hedging policy risk, I find that political uncertainty is positively and significantly related to yield spreads of firms that do not lobby and (or) contribute to PACs, but is

[4] For instance, Faccio, Masulis, and McConnell (2006) document that in the event of bankruptcy politically connected firms are more likely to be bailed out than their non-connected peers. Claessens, Feijen, and Laeven (2008) show that politically connected Brazilian firms can get long-term debt financing at lower costs because politicians have a strong influence on government-owned banks. In a study of newly privatized firms, Boubakri, Guedhami, Mishra, and Saffar (2010) find that the cost of equity is much lower for firms with strong ties to political power. Chen, Parsley, and Yang (2010) show that corporate lobbying activities can improve firms' financial performance. Yu and Yu (2010) suggest that fraudulent firms are more likely to engage in lobbying and are less likely to be detected. Igan, Mishra, and Tressel (2011) show that during the recent financial crisis, the more a bank spent on lobbying the more bailout money it received from the U.S. government despite poor mortgage loan performance.

insignificant for PAC-contributing and lobbying firms. Furthermore, firms that support politicians with stronger and more powerful positions in Congress' legislative co-sponsoring network (for example, socially-connected House and Senate members that are more likely to draft, gather support for, and pass new bills) have lower yield spreads.

Kim et al. (2012) show that political geography is related to equity returns and their findings suggest that local policy risk matters in the stock market. My study provides an essential extension by revisiting this issue in the setting of the credit markets. To the extent that government policies affect many aspects of the economy like interest rate and taxes which can immediately impact the credit market, the corporate bond market provides a better setting to examine the impact of local policy risk. The major participants in the bond market are local institutions like insurance companies and pension funds who are usually buy-and-hold investors and more concerned about long-term uncertainties than some equity investors or arbitrageurs. [5] In addition, the illiquid nature of the corporate bond market (see Bao, Pan, and Wang, 2011), makes a rather accurate forecast about the impact of expected policy changes imperative to bondholders. Campello, Chen and Zhang (2008) suggest that different from stocks where expectations are indirectly and often imperfectly reflected in realized returns, bond yield spreads directly reflect investors' risk-return expectations. If bond investors perceive that expected changes in policy risk will affect their positions of reinvestment, liquidation, or interest (or principal) collection, such perceptions should be reflected in yield spreads.

Furthermore, while it is well known that the stock market has remained volatile over time, the recent 2008 financial turmoil has clearly illustrated that disruption in the bond market that includes many important large participants could introduce bigger threats to the economy.

[5] Jiang (2008) suggests that institutional investors account for 95 percent of bond investors. Massa, Yasuda, and Zhang (2013) imply that there is strong local bias in corporate bond holdings.

The crisis has raised significant concerns with regulators, issuers, and investors on the widening credit spreads and the volatility in the credit market. Hence, my study is economically meaningful and timely in many respects.

The first important contribution of my study is that it is the first to provide empirical evidence that local policy risk at the state level, is related to credit risk and should not be negligible in the local corporate bond market. Further, it is positively related to yield spread after I control for default risk and has bond pricing and diversification implications for both firms and investors. My finding that political uncertainty significantly impacts the cost of debt complements and extends those of the extant literature on corporate cost of debt.[6] The study might be of particular interests to local institutional investors like pension funds, mutual funds, and insurance groups who invest heavily in the local corporate bond markets.

As many studies like Christensen (2008), Collin- Dufresne, Goldstein, and Martin (2001), Duffie, Saita, and Wang (2007), Elton, Gruber, Agrawal, and Mann (2001), and Houweling, Mentink, and Vorst (2005) try to explain the credit spread puzzle, which is the wide gap between yield spread and default rate, through tax rate, liquidity risk, and other factors, the credit spread puzzle remains unsolved. One indirect implication of my findings related to the impact of policy uncertainties on yield spread and bond returns is that local policy risk might account for part of the missing piece in explaining the credit spread puzzle.[7]

The rest of this paper proceeds as follows. I discuss literature background about policy risk at the state level and firms' costs of debt in the next chapter. Chapter Three describes the

[6] The existing empirical literature has linked the corporate cost of debt to many other factors, such as default risk (Black and Scholes, 1973; Merton, 1974), information asymmetry (Stiglitz and Weiss, 1981; Diamond and Verrecchia, 1991; Duarte, Han, Harford, and Young, 2008), corporate governance (Klock, Mansi, and Maxwell, 2005; Cremers, Nair, and Wei, 2007), founding family ownership (Anderson, Mansi, and Reeb, 2003), among other factors.

[7] Pastor and Veronesi (2013) find that political uncertainty can explain equity risk premium.

data. Chapter Four provides empirical evidence linking the cost of debt to policy risk. Chapter Five presents results on the impact of corporate political strategies on firms' cost of debt followed by a conclusion in Chapter Six.

Chapter Two: Literature Background

Significant nation-wide policy changes can impact inflation, unemployment, trade, and other macroeconomic factors. Consequently, policy risk should be a paramount concern for many firms and industries (Cohen, Diether and Malloy, 2012). Different from many other countries, the US political map is redrawn every two years following Congressional elections in the United States. Shifts in political geography can expose firms to policy risk, i.e. uncertainty about the likelihood and nature of future policies or new legislation that may be initiated by the winning party and targeted toward the industry or geographic area a firm operates in. Kim, Pantzalis, and Park (2012) show that expected stock returns are higher for firms in states with greater proximity to political power, implying that shareholders' financial claims are contingent on changes in firms' geo-political environment. Their findings are also consistent with the literature on information risk which argues that investors' expected returns are positively associated with the magnitude of information uncertainty (see Easley and O'Hara, 2004; Jiang, Lee, and Zhang, 2005; Zhang, 2006). I conjecture that corporate debt markets also pay close attention to the political environment firms operate in and assign credit ratings and interest rates accordingly.

Several recent studies provide evidence of a strong relationship between political uncertainty and firms' operating and financial performance. For example, Cohen, Coval, and Malloy (2011) show that fiscal spending shocks that lead to increases in federal spending seem to significantly dampen corporate investment and employment. Goldman, Rocholl, and So (2009) examine corporate boards' political connectedness and find that the stock price response

to the Republican win of the 2000 presidential election was positive for companies connected to the Republican Party and negative for companies connected to the Democratic Party. Others (e.g., Roberts, 1990; Fisman, 2001) have argued that externalities, like a politician's deteriorating health, sudden death or scandals can expose firms to political uncertainty too. For example, Faccio and Parsley (2009) find that after the death of a politician the value of firms headquartered in the politician's home area decreases by 1.7%. These studies suggest that investors are not irresponsive to firms' political environments, and thus firm value is infused with political uncertainty.

Uncertainty about future policies arising from shifts in political geography can affect a firm's cost of debt through several channels. I argue that policy risk can influence firms' investment decisions as well as investors' perceptions about expected payoffs from investing in these firms. For example, bills related to monetary policy, tax rates, appropriation, immigration, et cetera can have direct impact on local firms and businesses. If future expected payoffs cannot be regarded as secure due to rising policy uncertainty associated with a geographical area, investors will demand higher compensation to bear the additional risk. Julio and Yook (2012) show that firms facing uncertainty surrounding political elections reduce their investment expenditures until the uncertainty is resolved. Kim et al. (2012) show that this effect extends beyond election cycles—firms located in areas where policy uncertainty is high choose to "downsize" until uncertainty about future policies impact on firms' growth opportunities has abated. The aforementioned types of changes in firms' investment policy do not occur as a consequence of normal business conditions and, as such, are less predictable and can affect investor perceptions about the firm's cash flow volatilities. Consequently, if firms' future cash flows are perceived to have become more volatile as a result of increasing levels of political

uncertainty, investors would require higher yields on corporate debt.[8] My argument is also supported by Krueger and Walker (2008) and Anderson, Ghysels, and Juergens (2009).

Policy risk can also shape a firm's information environment, which is an important ingredient in the quality of corporate governance and the effectiveness of external monitoring of managers. Within a large country like the U.S. with geo-politically segmented areas (i.e. U.S. states or regions), it is conceivable that the information sets of investors can vary across different regions or states when political events and developments do not have a uniform impact on markets across different geographic locations. Thus, it is possible that in locations where the influence of politics is profound, local investors' information sets can become distinct from the national norm (Aabo, Pantzalis and Park, 2012).[9] From the perspective of non-local investors, monitoring managers of firms whose information environments are disproportionally infused by a local political information component is more difficult. It is therefore conceivable that relatively weaker non-local external monitoring may result in more pronounced agency costs between managers and debtholders in firms exposed to greater policy risk and, consequently, to higher borrowing costs.

[8] From the perspective of agency costs of managerial behavior, Stulz (1990) argues that firm value is negatively related to cash flow volatility. Billet and Mauer (2003) suggest that cash flow volatility is positively associated with firms' cost of debt. Dimitrov and Tice (2006) imply that cash flow volatility predicts the probability of default.

[9] Aabo, Pantzalis and Park (2012) utilize two different empirical methodologies to show that the greater the importance of politics at the local level, the greater the local bias. Specifically, they find that the inverse relationship between stock prices and the ratio of aggregate book value of firms to the aggregate risk tolerance of investors in a state (*RATIO*) is only prevalent among firms located in areas where politics has substantial influence on local markets. Moreover, it is the same types of firms that display greater local comovement. Their results imply that politics can cause domestic capital market segmentation leading to local bias.

Chapter Three: Data and Variables

I obtain the sample of seasoned corporate bond issues by non-financial U.S. firms over the period November 1984 to October 2008 from the SDC Global New Issues database. I start with November and end in October in order to match election cycles. I follow Huang, Ritter, and Zhang (2012) and filter my sample to exclude exchangeable issues, floating rate issues, putable issues, perpetual issues, subordinated bond issues, and unit issues. I require that information like issue and maturity dates, yield to maturity, gross proceeds, and rating scores from Moody's and S&P are available.[10] I also exclude issues with gross proceeds lower than $5 million. I use comparable treasury yields from the Federal Reserve Economic Data (FRED) to compute yield spreads and Moody's BAA and AAA corporate bond yields from FRED to compute the default spread. Stock returns are from CRSP and financial data are from COMPUSTAT.

Data on corporate PAC contributions and lobbying activities are collected from the Center for Responsive Politics (CRP). The lobbying data are available on CRP from 1998. They are more comprehensive after the passage of the Lobbying Disclosure Act (LDA) of 1995 that mandates lobbying registrants to file semi-annual reports with the Secretary of the Senate and the Clerk of the House of Representatives. My lobbying sample covers a nine-year period from November 2000 to October 2008. Both contribution activities and lobbying activities are

[10] My final sample size, despite the slightly different sample period, is similar to Huang, Ritter, and Zhang (2012). The exclusion of issues lacking ratings information might raise the concern of sample selection bias because my sample is dominated by large firms. However, most issuers tend to be large firms anyway. In addition, missing rating observations amount to less than 5% of my total sample. Specifically, there are only 238 bond issues (115 issuers) that were not assigned with a Moody's rating score at the time of the issue during my sample period. Of this, only 26 bond issues were issued for the period from 2000 to 2008, 10 of which were issued by a lobbying issuer.

aggregated at the parent-firm level. Data on politicians' legislative co-sponsorship networks are gathered from James H. Fowler's website.[11]

I use the Political Alignment Index (*PAI*) constructed by Kim et al. (2012) as one proxy for policy risk. *PAI* is a measure of firm proximity to political power as reflected in the degree of alignment of local (state or region) politicians with the President and his administration. The *PAI* index is constructed at the state level as follow:

PAI = ¼ (SENATORS) + ¼ (REPRESENTATIVES) + ¼ (GOVERNOR) +

¼ (½ (STATE SENATORS) + ½ (STATE REPRESENTATIVES)) (1)

where *SENATORS* is the percentage of the two senators that belong to the President's party. *REPRESENTATIVES* is the percentage of house representatives that belong to the President's party. *GOVERNOR* is a dummy that equals one if the Governor is in the same party as the President, and zero otherwise. *STATE SENATORS* is a dummy that equals one if the percent of state senators in the President's party is greater than 50%, and zero otherwise. *STATE REPRESENTATIVES* is a dummy that equals one if the percent of state house representatives in the President's party is greater than 50%, and zero otherwise.

Kim et al. (2012) show that proximity to political power exposes firms to policy risk. The rationale behind this effect is that states with stronger alignment with the President and his administration are more likely to be targeted during the legislation process, and thus exposed to more policy uncertainties. This is because, politicians from states with higher values of PAI will dominate senate and house committees in Congress and have much greater influence on setting the policy agenda as well as on passing new legislation. They will naturally be doing so with an

[11] I construct firm-level measures of the strength of corporations' political networks based on whether they include politicians that are influential in passing legislation and part of the legislators' cosponsorship network. The measures of cosponsorship network can be found at http://jhfowler.ucsd.edu/cosponsorship.htm.

eye on their district and state constituents. Notably, it appears that political uncertainty may be partly traced back to political activities of corporations that become more connected or simply have better access to legislators in high PAI areas. In Table 1, I sort states into terciles based on the time-series change of the *PAI* index and compare federal legislative activities of politicians from these states that serve in the Senate and House chambers of the U.S. Congress. I find that politicians from states that become more aligned with the President's party introduce and pass more bills in Congress.[12]

Table 1: Change in the PAI Index and Legislative Activities

This table reports legislative activities based on a tercile sort in the change in the political alignment index (ΔPAI) from time t-1 to time t. Legislative activities are measured as the number of bills introduced and passed by politicians from a particular state. BILLNUM is the number of bills that are introduced in Congress by politicians from a state in a given year, and PLAWNUM is the number of bills that eventually become law. *P*-values from tests on differences in means (or medians) are provided. The Wilcoxon test is conducted to test differences in medians. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

ΔPAI		BILLNUM		PLAWNUM	
Terciles	N	Mean	Median	Mean	Median
1	368	75.89	54.00	4.15	3.00
2	432	82.85	58.00	5.06	3.00
3	400	103.55	70.00	6.10	4.00
(3)-(1)		27.66***	16.00***	1.95***	1.00***
p-value		(0.000)	(0.000)	(0.000)	(0.000)

Table 2 presents industry and a state-level distribution of the *PAI* index, Moody's and S&P corporate bond ratings, and yield spreads. In Panel A, I sort firms based on SICD, which is the first two digits of the Standard Industrial Classification (SIC) code. Construction, mining, and services industries are exposed to more policy risk. Average yield spreads in these industries are also higher. Panel B presents means and medians of *PAI*, ratings, and yield spreads by state. Firms headquartered in four states (California, Illinois, New York, and Texas) represent about

[12] Note that the percentage of bills introduced that ultimately become law is roughly the same between low and high PAI states. For instance, in low PAI states approximately 5.5% (4.2 / 75.9) of bills that are introduced become law compared to 5.9% (6.1 / 103.6) in high PAI states.

1/3 of my bond sample. In general, my results suggest higher yield spreads for states with a higher *PAI* index, though a few exceptions exist.

Table 2: Industry and State-Level Distribution

This table reports summary statistics of the PAI index, Moody's credit ratings, S&P credit ratings, and yield spreads (%). Panel A reports an industry distribution and panel B reports state-level distribution characteristics. SICD is the first two digits of the Standard Industrial Classification (SIC) code.

Panel A: Industry distribution

Industry Group	SICD	N	PAI Index		Moody's Ratings		S&P Ratings		Yield Spread (%)	
			Mean	Median	Mean	Median	Mean	Median	Mean	Median
Agriculture, Forestry and Fishing	01- 09	9	0.51	0.51	3.22	2.00	3.33	3.00	2.78	3.16
Mining	10 -14	309	0.53	0.50	3.52	4.00	3.58	4.00	2.34	2.07
Construction	15 - 17	132	0.55	0.61	3.33	3.00	3.30	3.00	2.52	2.30
Manufacturing	20 - 39	2,664	0.45	0.43	4.59	5.00	4.64	5.00	1.38	1.00
Transportation, Communications	40 - 49	1,324	0.45	0.43	4.26	4.00	4.32	4.00	1.76	1.36
Wholesale Trade	50 - 51	147	0.48	0.41	4.03	4.00	4.22	4.00	1.69	1.40
Retail Trade	52 - 59	573	0.47	0.49	4.76	5.00	4.72	5.00	1.33	0.96
Services	70 - 89	480	0.52	0.50	3.88	4.00	3.95	4.00	1.87	1.26
Non-classifiable	99	14	0.45	0.45	5.93	6.00	5.93	6.00	0.91	0.83

Panel B: State distribution

		PAI Index		Moody's Ratings		S&P Ratings		Yield Spread (%)	
ST	N	Mean	Median	Mean	Median	Mean	Median	Mean	Median
AK	2	1.00	1.00	2.00	2.00	2.00	2.00	3.24	3.24
AL	40	0.48	0.43	4.03	4.00	4.23	4.00	2.10	2.00
AR	109	0.56	0.50	5.29	6.00	5.28	6.00	0.99	0.72
AZ	43	0.46	0.64	3.14	3.00	3.19	3.00	3.94	3.03
CA	405	0.50	0.50	4.18	4.00	4.22	4.00	1.65	1.22
CO	53	0.56	0.52	3.45	3.00	3.55	3.00	2.50	2.44
CT	225	0.43	0.40	4.59	5.00	4.62	5.00	1.25	0.93
DE	80	0.49	0.50	5.18	5.00	5.03	5.00	0.80	0.61
FL	153	0.51	0.54	3.88	4.00	3.90	4.00	1.97	1.50
GA	221	0.41	0.18	4.92	5.00	4.88	5.00	1.74	1.29
HI	19	0.51	0.25	4.05	4.00	3.95	4.00	1.40	1.22
IA	32	0.44	0.52	4.31	5.00	4.28	5.00	1.84	1.19
ID	20	0.35	0.00	5.20	5.00	4.85	5.00	1.20	0.90
IL	454	0.40	0.38	4.78	5.00	4.88	5.00	1.33	0.97
IN	56	0.51	0.55	4.32	4.00	4.39	4.00	1.87	1.18
KS	8	0.61	0.69	4.00	4.00	4.38	4.00	1.27	1.29
KY	19	0.60	0.58	3.79	4.00	3.74	4.00	2.25	2.14
LA	33	0.46	0.39	2.97	3.00	3.03	3.00	2.98	2.62
MA	141	0.53	0.70	4.25	4.00	4.26	4.00	1.42	1.01
MD	66	0.55	0.56	3.97	4.00	4.08	4.00	1.78	1.63
MI	263	0.39	0.41	4.36	5.00	4.31	4.00	1.53	1.38
MN	131	0.43	0.44	4.69	5.00	4.73	5.00	1.35	0.98
MO	191	0.60	0.64	4.72	5.00	4.84	5.00	1.39	1.03
MS	1	0.35	0.35	3.00	3.00	4.00	4.00	1.18	1.18
MT	7	0.55	0.50	3.57	4.00	4.14	4.00	1.26	0.84
NC	95	0.47	0.50	4.29	5.00	4.35	5.00	1.84	1.46

ND	13	0.28	0.25	4.31	4.00	5.00	5.00	0.70	0.67
NE	43	0.45	0.63	3.95	4.00	3.93	4.00	1.77	1.29
NH	4	0.47	0.44	3.00	3.00	3.25	3.50	3.83	3.13
NJ	163	0.34	0.37	4.61	5.00	4.70	5.00	1.56	1.08
NM	2	0.50	0.50	3.00	3.00	3.00	3.00	4.00	4.00
NV	59	0.53	0.63	3.12	3.00	3.36	3.00	2.59	2.45
NY	591	0.45	0.43	4.77	5.00	4.81	5.00	1.09	0.80
OH	292	0.48	0.24	4.58	5.00	4.57	5.00	1.38	0.97
OK	77	0.45	0.45	3.40	4.00	3.39	4.00	2.35	2.17
OR	95	0.45	0.43	4.73	5.00	4.79	5.00	1.24	0.99
PA	362	0.44	0.49	4.31	5.00	4.30	4.00	1.58	1.18
RI	41	0.49	0.50	4.76	5.00	4.51	5.00	1.20	1.17
SC	9	0.55	0.54	4.89	5.00	4.89	5.00	1.35	1.09
SD	9	0.47	0.38	4.00	4.00	4.00	4.00	2.16	1.42
TN	38	0.46	0.36	3.55	4.00	3.63	4.00	2.27	1.96
TX	661	0.53	0.47	3.84	4.00	3.95	4.00	2.00	1.50
UT	13	0.29	0.08	4.08	4.00	4.15	4.00	1.78	1.13
VA	181	0.53	0.46	3.99	4.00	4.12	4.00	1.82	1.37
VT	1	0.25	0.25	2.00	2.00	3.00	3.00	5.73	5.73
WA	80	0.29	0.22	4.48	4.00	4.61	5.00	1.68	1.26
WI	48	0.38	0.38	4.42	4.00	4.50	5.00	1.27	1.09
WV	3	0.47	0.33	2.00	2.00	2.00	2.00	7.08	6.65

Table 3 provides summary statistics of my sample. Panel A reports bond issue characteristics for the full sample of issuers. There are 5,652 issues from 1,014 issuers. I convert Moody's and S&P rating scales into numerical rating notches from 1 to 21 (low to high) and then collapse these scores into 7 categories ranging from 1 to 7, with ratings above 3 categorized as investment grade and at or below 3 speculative grade.[13] For the full sample, 81 percent (83 percent) of issues are classified as investment grade with an average rating of 4.37 (4.41) from Moody's (S&P). The mean yield spread is 1.59 percent and the mean default spread is 0.90 percent. The average bond issue is about $296.3 million with a maturity of 12.7 years. The mean market capitalization of all issuers is $5.5 billion suggesting that the sample is tilted towards large issuers. The average issuer is about 40 years old with a debt ratio of 0.32 and return on assets (*ROA*) of 5 percent. The mean *PAI* is 0.47, and the average number of bills introduced by politicians from the same state is about 159.

Panel B presents subsamples of (PAC) contributing, non-contributing, lobbying and non-lobbying issuers. I examine the impact of corporate political strategies on firms' cost of debt in

[13] See Appendix A2 for details.

Chapter Five. There are univariate differences between firms that actively fund political strategies compared to those that do not. For instance, 90 percent (91 percent) of firms that make political campaign contributions have their bonds rated investment grade based on Moody's (S&P) compared to 69 percent (72 percent) for firms that do not make political contributions. A similar pattern is shown for firms that lobby compared to non-lobbying firms. Yield spreads are also lower for contributing relative to non-contributing firms (1.34 percent versus 1.94 percent) and firms that lobby compared to non-lobbying firms (1.77 percent versus 2.50 percent). Contributing and lobbying firms issue more debt than non-contributing and non-lobbying issuers, but the average maturity at issuance is about the same. Contributing firms are close to twice the size of non-contributing firms, older and more profitable. The same holds in the comparison of lobbying and non-lobbying firms. The mean *PAI* is roughly similar for both types of contributing and lobbying firms. Conditional on making political contributions, the average cumulative PAC contribution amount for a rolling three-year period is $0.26 million. For those firms that hire lobbyists, the average annual lobbying expense is $1.8million.

The summary statistics suggest that issuers that engage in corporate political strategies are rated higher by the agencies and have lower yields at issuance. An examination of firm characteristics suggests that these firms are also different along many other dimensions. They are larger, older, and more profitable, and they also issue more debt. However, my measure of policy risk, the political alignment index (*PAI*) is similar across firms that provide campaign contributions or lobby to those that do not. In my multivariate tests, I carefully control for these firm-level and issuance characteristics.

Table 3: Summary Statistics

This table reports summary statistics of issue, firm, and state characteristics. Panel A presents summary statistics of all issuers. Panel B presents a subsample analysis of political contribution and non-contribution issuers and lobbying and non-lobbying issuers. The sample of lobbying and non-lobbying firms starts from 11/01/2000. All the variables are defined in Appendix A1.

Panel A Summary statistics of all issuers			
Variable Names	Mean	Median	Standard Deviation
Bond Issue Characteristics			
MSCORE	4.37	4.00	1.15
SPSCORE	4.41	4.00	1.14
MINVDUM	0.81	1.00	0.39
SPINVDUM	0.83	1.00	0.37
YIELD SPREAD (%)	1.59	1.17	1.59
PROCEEDS ($Million)	296.32	199.70	343.59
RELPROCEEDS	0.08	0.03	0.21
MATURITY	12.68	10.14	10.93
SHELF	0.71	1.00	0.46
DEFAULT SPREAD (%)	0.90	0.84	0.27
Firm Characteristics			
MKTCAP ($Billion)	17.81	5.50	34.35
AGE	39.95	35.00	23.84
ROA	0.05	0.05	0.06
MBRATIO	4.14	2.34	31.28
ICR1	4.10	5.00	1.30
ICR2	1.72	0.37	2.07
ICR3	1.10	0.00	2.73
ICR4	1.18	0.00	7.41
DEBT RATIO	0.32	0.31	0.16
BHRET	0.05	0.00	0.44
BETA	0.89	0.86	0.44
IDIO_RISK (x100)	1.87	1.63	0.95
TANGIBILITY	0.43	0.41	0.24
ALTMAN'S Z-SCORE (/100)	0.03	0.02	0.02
State Characteristics			
CONVICTION RATE	3.30	3.03	1.97
RBENEFIT_SALES	0.29	0.25	0.19
UNEMPLOYMENT RATE	0.05	0.05	0.01
STATE GDP GROWTH RATE	0.06	0.06	0.02
PERSONAL INCOME	0.05	0.04	0.03
PAI	0.47	0.46	0.22
ΔPAI	-0.00	0.00	0.26
BILLNUM	159.38	122.00	124.97
LNBILLNUM	4.84	4.84	0.77
ΔLNBILLNUM	0.01	0.10	0.69
$LN\left(\frac{BILLNUM}{\quad}\right)$	2.87	2.81	0.55
# of Issues	5652		
# of Issuers	1014		

Panel B Summary statistics of contribution issuers and lobbying issuers

	Contribution Issuers		Non-Contribution Issuers		Lobbying Issuers		Non-Lobbying Issuers	
Variable Names	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Bond Issue Characteristics								
MSCORE	4.65	5.00	4.00	4.00	4.42	4.00	3.71	4.00
SPSCORE	4.68	5.00	4.06	4.00	4.46	4.00	3.78	4.00
MINVDUM	0.90	1.00	0.69	1.00	0.85	1.00	0.61	1.00
SPINVDUM	0.91	1.00	0.72	1.00	0.86	1.00	0.63	1.00
YIELD SPREAD (%)	1.34	1.07	1.94	1.35	1.77	1.44	2.50	2.11
PROCEEDS ($Million)	323.38	200.00	260.45	198.15	510.08	398.60	363.62	253.60
RELPROCEEDS	0.04	0.02	0.12	0.05	0.05	0.03	0.11	0.06
MATURITY	13.41	10.14	11.71	10.14	11.81	10.14	10.54	10.13
SHELF	0.77	1.00	0.62	1.00	0.76	1.00	0.56	1.00
DEFAULT SPREAD (%)	0.92	0.86	0.87	0.81	1.03	0.92	1.00	0.91
Firm Characteristics								
MKTCAP ($Billion)	21.44	8.36	13.00	2.83	33.01	14.46	14.86	3.18
AGE	43.53	40.00	35.21	32.00	45.50	41.00	34.58	30.00
ROA	0.05	0.05	0.04	0.05	0.06	0.05	0.05	0.05
MB	3.92	2.40	4.43	2.28	4.48	2.74	3.58	2.08
ICR1	4.20	5.00	3.97	5.00	4.15	5.00	4.04	5.00
ICR2	1.75	0.45	1.69	0.21	2.18	1.55	1.78	0.19
ICR3	1.17	0.00	1.02	0.00	1.85	0.00	1.35	0.00
ICR4	1.14	0.00	1.23	0.00	1.82	0.00	1.74	0.00
DEBT RATIO	0.31	0.31	0.33	0.32	0.31	0.31	0.34	0.33
BHRET	0.03	0.00	0.08	-0.01	0.11	0.06	0.18	0.11
BETA	0.86	0.84	0.92	0.88	0.83	0.80	0.94	0.92
IDIO_RISK (x100)	1.69	1.52	2.12	1.82	1.79	1.59	2.18	1.88
TANGIBILITY	0.46	0.45	0.39	0.34	0.41	0.42	0.37	0.31
ALTMAN'S Z-SCORE (/100)	0.03	0.03	0.03	0.03	0.02	0.02	0.03	0.02
State Characteristics								
CONVICTION RATE	3.26	2.99	3.36	3.12	3.14	2.93	3.02	2.69
RBENEFIT_SALES	0.27	0.23	0.31	0.25	0.26	0.20	0.33	0.24
UNEMPLOYMENT RATE	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
STATE GDP GROWTH RATE	0.06	0.05	0.06	0.06	0.05	0.05	0.05	0.05
PERSOL INCOME	0.04	0.04	0.05	0.04	0.04	0.03	0.05	0.04
PAI	0.46	0.45	0.47	0.46	0.51	0.53	0.52	0.53
ΔPAI	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.02	0.00
BILLNUM	154.04	116.00	166.46	128.00	166.88	129.00	182.08	140.00
ΔLNBILLNUM	0.02	0.09	0.06	0.20	0.00	0.04	0.09	0.28
LN $(\frac{\text{BILLNUM}+1}{\text{PLAWNUM}+1})$	2.86	2.80	2.89	2.83	3.14	2.93	3.02	2.69
Corporate Political Strategies								
CONTRDUM					0.79	1.00	0.28	0.00
CONTRAMT ($M)	0.26	0.13						
LOBDUM	0.80	1.00	0.30	0.00				
LOBEXP ($M)					1.82	0.71		
# of Issues	3222		2430		1360		959	
# of Issuers	436		672		320		359	

Chapter Four: Policy Risk and the Cost of Debt

Relation between Policy Risk, Credit Ratings, and Yield Spreads

In Table 4, I examine the relation between policy risk, credit ratings and yield spreads. I first focus on the full sample and subsequently on subsamples formed after double-sorting on *PAI* and variables that can help to better illuminate the nature of the relationship between *PAI* and the cost of debt. In panel A, I report means and medians of Moody's credit ratings and yield spreads for subsamples of firms formed based on a tercile sort on my policy risk measure (*PAI*). Firms associated with the lowest levels of *PAI* have better credit scores than firms associated with higher *PAI* rankings. Even though this result is not linear, the difference-in-means (and difference-in-medians) tests between the highest and lowest groups are statistically significant. Firms with the lowest *PAI* scores have yields that are 19 basis points lower and credit ratings that are higher by a magnitude of 0.25 than firms with the highest *PAI* scores.

The univariate results imply that the political landscape of a firm's geographical location may induce uncertainty about the firm's future cash flows that manifests itself as an additional component to the firm's cost of debt. This uncertainty can originate from several sources. First, it could be linked to the size of the firm. Smaller firms are less likely to maintain active corporate political strategies and thus they will be less equipped to cope with policy risk (Cooper, Gulen, and Ovtchinnikov, 2010). Second, uncertainty about the impact of local politics on firms' future cash flows could be correlated with the firm's degree of dependence on government spending. Julio and Yook (2012) show that in the face of political uncertainty firms often choose to reduce

investment expenditures until the uncertainty is resolved. Thus, if a firm's political geography induces uncertainty

Table 4: Bond Ratings and Yield Spreads by PAI Index

This table presents comparisons of Moody's bond ratings and yield spreads for PAI index tercile groups. Double sorts based on tercile groups of the PAI index and firm size, dependence on government spending (RBENEFIT_SALES), local conviction rates (CONVICTION RATE), and legislative intensity (BILLNUM) are presented in panels A, B, and C, respectively. Column (1) presents results for Moody's bond ratings, and Column (2) presents results for yield spreads. Tests for differences in means (or medians) are conducted to examine whether means (or medians) of corporate bond ratings or yield spreads are significantly different between group (3) and group (1). All other variables are defined in Appendix A1. Wilcoxon tests are performed to test differences of medians. Corresponding *p*-values from means tests (or medians tests in parentheses) are reported in parentheses.*, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Moody's Ratings (1)			Yield Spread (%) (2)		
Panel A Summary statistics for PAI index tercile groups						
PAI	Mean		Median	Mean		Median
1	4.43		5.00	1.59		1.16
2	4.47		5.00	1.41		1.05
3	4.18		4.00	1.78		1.33
(3) - (1)	-0.25*** (0.000)		-1.00*** (0.000)	0.19*** (0.000)		0.17*** (0.000)
Panel B: Firm size						
PAI	Small	Large	Large – Small (P-value)	Small	Large	Large – Small (p-value)
1	3.71	5.11	1.40*** (0.000)	2.35	1.04	-1.31*** (0.000)
2	3.65	5.22	1.57*** (0.000)	2.33	0.64	-1.69*** (0.000)
3	3.44	5.00	1.56*** (0.000)	2.73	0.98	-1.75*** (0.000)
(3) - (1)	-0.27*** (0.000)	-0.11* (0.053)		0.38*** (0.000)	-0.06 (0.461)	
Panel C: Dependence on government spending						
PAI	Less	More	More – Less (P-value)	Less	More	More – Less (P-value)
1	4.64	4.17	-0.47*** (0.000)	1.39	1.84	0.45*** (0.000)
2	4.79	4.16	-0.63*** (0.000)	1.23	1.50	0.27*** (0.002)
3	4.53	4.02	-0.51*** (0.000)	1.64	1.89	0.25*** (0.006)
(3) - (1)	-0.11 (0.118)	-0.15** (0.014)		0.25*** (0.005)	0.05 (0.557)	
Panel D: State conviction rate						
PAI	Low	High	High- Low (P-value)	Low	High	High- Low (P-value)
1	4.10	4.47	0.37*** (0.000)	1.79	1.56	-0.23* (0.052)
2	4.54	4.46	-0.08 (0.291)	1.41	1.39	-0.02 (0.822)
3	4.58	4.08	-0.50*** (0.000)	1.97	1.81	-0.16(0.225)
(3) - (1)	0.48*** (0.001)	-0.39*** (0.000)		0.18 (0.328)	0.25** (0.000)	
Panel E: Legislative intensity						
PAI	Low	High	High- Low (P-value)	Low	High	High- Low (P-value)
1	4.41	4.45	0.04 (0.638)	1.55	1.60	0.05 (0.712)
2	4.53	4.45	-0.08 (0.311)	1.37	1.38	0.01 (0.908)
3	4.17	4.12	-0.05 (0.675)	1.52	1.87	0.35*** (0.010)
(3) - (1)	-0.24** (0.027)	-0.33*** (0.000)		-0.03 (0.812)	0.27*** (0.000)	

that causes underinvestment it can generate the perception of higher risk among investors. This effect could be even stronger when firms become too dependent on government spending.[14] Third, *PAI*'s impact on the cost of debt should be more pronounced when there is more corruption among local politicians. If firms' future cash flows are contingent on political initiatives that rely on the support of politicians that operate in a corrupt environment, they will be perceived as more risky by outside investors who assess the possibility of legal violations that can originate from social links between firms and politicians (i.e. risk of engaging in corrupt dealings).[15] Finally, policy risk should be particularly strong when there is greater legislative activity that relates to the firm because legislative activity can create uncertainty regarding the redistribution of future growth opportunities among firms within an industry and/or state. This effect intensifies in high *PAI* states, because politicians from these areas are typically better positioned to influence the political agenda and lead legislative initiatives. These arguments are supported by the evidence in Kim et al. (2012) who show that the effect of *PAI* on stock returns is stronger when there is a high level of legislative activity by local politicians and conclude that uncertainty injected in the market by legislative activity is a major source of policy risk.

I examine the importance of the aforementioned features of policy risk in Panels B through E in Table 4. Specifically, I report means of credit ratings and yield spreads across groups of firms formed after sorting on both *PAI* and on size, dependence on government spending, corruption (measured by the conviction rate of public officials), and legislative

[14] This notion is supported by the findings of Cohen, Coval and Malloy (2011) who use changes in congressional committee chairmanship as a source of exogenous variation in state-level federal government spending. They find that such spending shocks appear to significantly reduce corporate sector investment activity. Since high PAI areas are more likely candidates for representation in committee chairmanships, such an effect could be more pronounced among firms located in high PAI areas.

[15] This view is consistent with the findings of Chen, Ding and Kim (2010) who show that political connections aggravate information asymmetries between investors and managers, particularly in corrupt environments.

intensity, respectively.[16] The results show that the cost of debt (as reflected in lower credit ratings and higher yield spreads) is highest among firms located in high *PAI* areas when they are small, when they rely more on government spending, and when there is a high level of legislative intensity by local politicians. The interplay of *PAI* and the conviction rate does not produce a clearly stronger pattern of *PAI* impact across all three measures of the cost of debt. Overall, the results are consistent with the notion that, through its various dimensions, policy uncertainty is indeed associated with a greater cost of debt.

My univariate sorts presented in Table 4 suggest a relation between policy risk, credit ratings, and yield spreads. I more formally test this relation using multivariate methods controlling for firm, market, issuance, and state characteristics in the next section.

Model Description

Similar to Baghai, Servaes and Tamayo (2011) and Huang, Ritter and Zhang (2012) I use ordered logistic regressions to test the relation between policy risk and corporate bond ratings and ordinary least squares (OLS) regressions to test the relation between policy risk and yield spreads. Following Petersen (2009), I cluster standard errors at the firm-level and also control for industry, state, and year fixed effects.[17]

Rating agencies use both public and non-public information to evaluate firms' credit risk and assign credit ratings.[18] The list of firm-specific characteristics that are typically considered in

[16] The conviction rate has been used as a proxy of political corruption by Butler, Fauver, and Mortal (2009), Fisman and Gatti (2002), Fredriksson, List, and Millimet (2004), Glaeser and Saks (2006) among others. It is measured by the number of per capita corruption convictions of local, state, and federal officials (available from the U.S. Department of Justice's (DOJ) Public Integrity Section) and normalized by the state population. It is important to recognize that the conviction rate per se is not a direct measure of public officials' corruption. For example, a low conviction rate could indicate low levels of corruption among public officials or alternatively less strict enforcement of laws or muted prosecutorial zeal in that state (Boylan and Long, 2003).

[17] My results remain consistent if I cluster by state and control for state, year, and industry fixed effects.

[18] Jorion, Liu, and Shi (2005) find that the information content of credit ratings has increased after the passage of regulation FD on October 23, 2000. The regulation does not have restrictions on preventing credit rating agencies from receiving non-public information from companies.

this process includes the level of the firm's profits and earnings prospects, ability to pay interest and principal, the value of intangible assets, the quality of management, indicators for financial distress, among others (Ang and Patel, 1975; Anderson et al., 2003; Blume, Lim, and Mackinlay, 1998; Fons, Cantor, and Mahoney, 2002, Cremers et al., 2007; Qi et al., 2010; Baghai et al., 2011; Huang et al., 2012; Mansi, Maxwell, and Miller, 2011). After including other important control variables from the extant literature, my ordered logistic model takes the following form:

$MSCORE_{it}$ = *f(*PAI (or ΔPAI), DEFAULT SPREAD, RELPROCEEDS, LNMATURITY, SHELF, LNMKTCAP, LNAGE, ROA, LNMB, ICR1, ICR2, ICR3, ICR4, DEBT RATIO, BHRET, BETA, IDIO_RISK, TANGIBILITY, ALTMAN'S Z-SCORE, UTILITY, CONVICTION RATE, RBENEFIT_SALES, UNEMPLOYMENT RATE, STATE GDP GROWTH RATE, PERSONAL INCOME, INVERSE MILLS RATIO $_{\text{Bond Issue}}$) (2)

where the dependent variable *MSCORE* is the Moody's rescaled rating score with higher ratings reflecting higher credit quality. *PAI* is the political alignment index (*PAI*) constructed by Kim et al. (2012). This is the key variable in my tests that I use as a proxy for policy risk. I expect *PAI* to be negatively related to credit ratings if rating agencies view local policy uncertainty as a source of firms' credit risk. Alternatively, I also use the change in the PAI index, *ΔPAI*. I expect a similar relation between *ΔPAI* and corporate bond ratings.

The major focus of this paper is to estimate the relation between policy risk and the yield spread, which is a direct measure of a firm's borrowing cost. I use an ordinary least squares (OLS) regression model to test the determinants of the yield spread as follows:

YIELD SPREAD (%) = *f(*PAI (or ΔPAI), DEFAULT SPREAD, RELPROCEEDS, LNMATURITY, SHELF, LNMKTCAP, LNAGE, ROA, LNMB, ICR1, ICR2, ICR3, ICR4, DEBT RATIO, BHRET, BETA, IDIO_RISK, TANGIBILITY, ALTMAN'S Z-SCORE, UTILITY, CONVICTION RATE, RBENEFIT_SALES, UNEMPLOYMENT RATE, STATE GDP GROWTH RATE, PERSONAL INCOME, MSCORE_RES, SPSCORE_RES, INVERSE MILLS RATIO $_{\text{Bond Issue}}$) (6)

where *YIELD SPREAD (%)* is computed as the difference between the yield to maturity of the new bond issue and the rate of a treasury bond with similar maturity. If policy risk is related to the cost of debt, I expect that *PAI* is positively related to the yield spread (*YIELD SPREAD (%)*). This model is identical to the model predicting credit ratings with one exception. *MSCORE_RES* is the residual from the OLS regression of Moody's ratings estimated using the variables in Model (3) with the addition of *SPSCORE*. Similarly, *SPSCORE_RES* is the residual from OLS regression of S&P ratings estimated using the variables in Model (3) with the addition of *MSCORE*. Since credit ratings are indicators of firms' creditworthiness and have been found to provide valuable information to investors about firms' credit risk I include these variables in my model.[19] I expect a negative relation between the residuals of credit ratings and the yield spread.

The remaining variables used in Table 5 are issuance and firm controls. *DEFAULT SPREAD (%)* is the default spread computed as the difference between Moody's BAA and AAA corporate bond yields. There is no obvious relation between credit ratings and the default spread, but clearly the default spread and yield spread should be positively related. *RELPROCEEDS* is the gross proceeds from the bond issue scaled by total assets. I expect lower credit ratings and higher yield spreads for firms with higher relative proceeds because as debt increases relative to total assets firms become riskier. *LNMATURITY* is the natural logarithm of the issue maturity and *SHELF* is a dummy which is set equal to one if an issue is shelf registered. I make no conjectures regarding the coefficients' signs of these issue characteristics.

I control for the following firm characteristics. *LNMKTCAP* is the natural logarithm of market capitalization. *LNAGE* is the natural logarithm of the issuing firm's age. *ROA* is return on total assets. I expect that larger, older, and more profitable firms are more likely to receive higher

[19] See Boot, Milbourn, and Schmeits (2006), Kliger and Sarig (2000), Kisgen (2006, 2009), Kisgen and Strahan (2010), and Purda (2011) for studies recognizing the importance of credit ratings.

credit ratings and have lower yield spreads. *LNMB* is the natural logarithm of the market-to-book ratio and since it is used as a proxy for future growth opportunities, I expect it to be positively related to credit ratings and thus negatively related to yield spreads. Blume et al. (1998) and Huang et al. (2012) suggest that the interest coverage ratio has a non-linear impact on credit risk, so I follow Huang et al. (2012) and create four interest coverage ratio variables: *ICR1*, *ICR2*, *ICR3*, and *ICR4*. *DEBT RATIO* is the ratio of total debt over total assets and I expect that more leverage transcends into lower bond ratings. *BHRET* is the stock's one-year buy-and-hold market-adjusted return before the issue date. If rating agencies use past performance in their determination of credit ratings, then I anticipate better performing firms will receive higher credit ratings. As suggested by Dichev and Piotroski (1999) and Avramov, Chordia, Jostova, and Philipov (2007), credit risk is related to equity returns. I expect lower yield spreads for firms with higher past stock returns. *BETA* is the beta estimated from the market model using daily returns. *IDIO_RISK* is the mean standard error of residual returns. Both *BETA* and *IDIO_RISK* are measured one year before the issue date and are expected to be negatively related to bond ratings and positively related to yield spreads because they capture systematic and firm-specific risk, respectively. *UTILITY* is a dummy variable equal to one if a firm belongs to the utility industry and zero otherwise. Since utilities are regulated and thus provide investors a safeguard against default, I expect that they receive better credit ratings and have lower yield spreads.

Some state characteristics might affect firms' cost of debt as discussed earlier. In my multivariate analysis, I also control for the extent of corruption (*CONVICTION RATE*), firms' dependence on state spending (*RBENEFIT_SALES*), the state GDP growth rate (*STATE GDP GROWTH RATE*), and personal income (*PERSONAL INCOME*).

Table 5: Policy Risk, Corporate Bond Ratings, and Yield Spreads

This table presents estimates from ordered logistic regressions and ordinary least squares (OLS) regressions. The dependent variables are Moody's rescaled credit ratings (MSCORE) for columns (1) and (2) and the yield spread in percentage, YIELD SPREAD (%), calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity for columns (3) to (6). PAI is the political alignment index at time t, and ΔPAI is the change of the political alignment index from time t-1 to time t. SPSCORE_RES and MSCORE_RES are the residuals from OLS regressions with similar variables in the first two columns plus either S&P or Moody's rescaled rating scores. Inverse Mills Ratio $_{\text{Bond Issue}}$ is the inverse Mills ratio from a probit model that predicts the probability for a firm to issue a straight corporate bond in Appendix A3. I follow Butler and Wan (2010) and estimate the model as such: Bond Issue Choice (0 or 1) = *f*(ΔPAI, LNAMIHUD, GROWTH, NET PROFIT MARGIN, LNMKTCAP, LNAGE, DIVIDEND_PAYER, LNMB, DEBT RATIO, ALTMAN'S Z-SCORE, TANGIBILITY, BHRET, RETVOL, State, Industry, and Year Fixed Effects). All variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.*t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *z* -values are in square brackets where clustered standard errors are computed using bootstrapping procedure with 200 replications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Moody's Ratings			Yield Spread (%)		
	(1)	(2)	(3)	(4)	(5)	(6)
PAI	-0.532**		0.174**	1.226***		
	(-2.22)		(2.10)	(2.72)		
	[-2.29]		[2.17]	[2.79]		
ΔPAI		-0.652***			0.167**	0.660
		(-3.23)			(2.22)	(1.64)
		[-3.11]			[2.19]	[1.57]
PAI*LNMKTCAP				-0.125**		
				(-2.40)		
				[-2.48]		
ΔPAI*LNMKTCAP						-0.057
						(-1.29)
						[-1.25]
DEFAULT SPREAD (%)	0.127	0.091	1.058***	1.065***	1.069***	1.065***
	(0.47)	(0.34)	(5.92)	(5.99)	(5.99)	(5.97)
Bond Issue Characteristics						
RELPROCEEDS	-5.413***	-5.423***	0.463***	0.484***	0.456***	0.462***
	(-5.35)	(-5.31)	(3.94)	(4.19)	(3.89)	(3.95)
LNMATURITY	0.096*	0.093*	0.086**	0.086**	0.086**	0.086**
	(1.74)	(1.68)	(2.37)	(2.39)	(2.38)	(2.39)
SHELF	0.579***	0.582***	-0.163***	-0.160***	-0.163***	-0.162***
	(4.92)	(4.92)	(-2.66)	(-2.62)	(-2.66)	(-2.65)
Firm Characteristics						
LNMKTCAP	1.171***	1.193***	-0.315***	-0.255***	-0.319***	-0.318***
	(6.64)	(6.81)	(-6.19)	(-4.52)	(-6.29)	(-6.26)
LNAGE	0.135	0.143	-0.010	-0.014	-0.012	-0.012
	(1.40)	(1.48)	(-0.34)	(-0.48)	(-0.40)	(-0.40)
ROA	1.882	1.725	-0.087	-0.090	-0.046	-0.079
	(0.99)	(0.90)	(-0.14)	(-0.15)	(-0.08)	(-0.13)
LNMB	-0.154	-0.175	-0.119**	-0.115*	-0.115*	-0.114*
	(-0.69)	(-0.79)	(-2.00)	(-1.95)	(-1.94)	(-1.92)

Firm Characteristics(cont'd)						
ICR1	0.439***	0.436***	-0.156***	-0.156***	-0.155***	-0.155***
	(6.10)	(6.07)	(-7.07)	(-7.11)	(-7.03)	(-7.07)
ICR2	0.053	0.061	-0.015	-0.015	-0.017	-0.017
	(1.10)	(1.25)	(-0.73)	(-0.74)	(-0.82)	(-0.79)
ICR3	0.067**	0.065**	0.009	0.010	0.010	0.009
	(2.52)	(2.45)	(0.92)	(0.95)	(0.96)	(0.91)
ICR4	0.012	0.012	-0.001	-0.001	-0.001	-0.001
	(1.37)	(1.42)	(-0.30)	(-0.28)	(-0.36)	(-0.33)
DEBT RATIO	-1.681*	-1.606*	0.771***	0.771***	0.758***	0.758***
	(-1.72)	(-1.65)	(2.96)	(2.98)	(2.91)	(2.91)
BHRET	-0.596***	-0.594***	-0.136**	-0.142***	-0.135**	-0.134**
	(-4.27)	(-4.24)	(-2.57)	(-2.71)	(-2.56)	(-2.54)
BETA	-0.422**	-0.435**	0.153**	0.150**	0.157**	0.158***
	(-2.35)	(-2.46)	(2.50)	(2.46)	(2.57)	(2.59)
IDIO_RISK (x100)	-1.070***	-1.080***	0.555***	0.554***	0.559***	0.559***
	(-8.16)	(-8.26)	(14.28)	(14.27)	(14.41)	(14.42)
TANGIBILITY	0.997*	1.021*	-0.087	-0.099	-0.089	-0.086
	(1.73)	(1.77)	(-0.56)	(-0.64)	(-0.58)	(-0.56)
ALTMAN'S Z-SCORE (/100)	20.69***	20.86***	-1.790	-1.827	-1.792	-1.751
	(3.40)	(3.45)	(-0.97)	(-0.98)	(-0.97)	(-0.95)
UTILITY	1.095	1.091	-0.018	-0.011	-0.012	-0.007
	(1.30)	(1.30)	(-0.10)	(-0.06)	(-0.07)	(-0.04)
State Characteristics						
CONVICTION RATE	-0.021	-0.015	-0.008	-0.008	-0.008	-0.008
	(-0.72)	(-0.52)	(-0.84)	(-0.91)	(-0.92)	(-0.91)
RBENEFIT_SALES	-0.232	-0.202	0.035	0.013	0.040	0.035
	(-0.26)	(-0.22)	(0.10)	(0.04)	(0.11)	(0.10)
UNEMPLOYMENT RATE	5.205	3.346	-2.153	-2.246	-1.907	-1.812
	(0.56)	(0.36)	(-0.57)	(-0.60)	(-0.51)	(-0.48)
STATE GDP GROWTH RATE	2.346	1.923	0.0100	0.206	0.173	0.269
	(0.90)	(0.74)	(0.01)	(0.18)	(0.15)	(0.23)
PERSONAL INCOME	23.16	15.34	10.57	10.43	11.47	11.33
	(0.94)	(0.62)	(1.28)	(1.27)	(1.40)	(1.38)
Other Controls						
INVERSE MILLS RATIO $_{\text{Bond Issue}}$	-2.402	-2.762	0.286	0.290	0.349	0.327
	(-1.15)	(-1.32)	(0.42)	(0.44)	(0.52)	(0.49)
SPSCORE_RES			-0.838***	-0.837***	-0.836***	-0.833***
			(-12.65)	(-12.77)	(-12.66)	(-12.77)
MSCORE_RES			-0.844***	-0.844***	-0.842***	-0.839***
			(-13.29)	(-13.43)	(-13.28)	(-13.39)
Intercept			0.434	0.080	0.421	0.397
			(0.78)	(0.14)	(0.77)	(0.72)
Firm Cluster	Y	Y	Y	Y	Y	Y
Year Fix Effects	Y	Y	Y	Y	Y	Y
State Fix Effects	Y	Y	Y	Y	Y	Y
Industry Fix Effects	Y	Y	Y	Y	Y	Y
N	5652	5652	5652	5652	5652	5652
R^2	0.4530	0.4538	0.6227	0.6234	0.6227	0.6227

Since firms might self-select into issuing bonds or the timing of bond issues, I include the inverse Mills ratio (*INVERSE MILLS RATIO* $_{Bond\ Issue}$) from a probit model that predicts the probability that a firm will issue straight corporate bonds using all Compustat firms.[20] Similar to Butler and Wan (2010), my predictors include Amihud's illiquidity, growth prospects, net profit margin, size, age, market-to-book ratio, dividend payer indicator, debt ratio, Altman's Z-score, tangibility, return, and volatility. I also control for election year, industry, and state fixed effects. Because multicollinearity between the inverse Mills ratio and regressors is likely to arise in the second stage, the covariance matrix generated in the second stage using OLS estimations might be inconsistent and thus standard errors are inflated. To address such concerns, I also report corrected standard errors by resampling through a bootstrapping procedure with 200 replications following Pagan (1984).

Multivariate Results

The first two models in Table 5 present the results from an ordered logistic regression of policy risk corporate bond ratings with other controls. As expected, my main variable of interest, *PAI* is negatively related to Moody's ratings on new bond issues, implying that ratings agencies consider local political uncertainty when they assess a firm's credit risk. The coefficient of my alternative measure of policy risk, *ΔPAI* is similarly negative and significant.[21] Holding other factors constant, for one standard deviation decrease in *PAI*(*ΔPAI)*, the odds of having a higher

[20] In Appendix A3, I show that the probability to issue straight corporate bond is lower for firms exposed to higher policy risk as proxied by the change in PAI index. Julio and Yook (2012) suggest that firms reduce their investment when there is higher political uncertainty during election years, and I also show that firms alter their debt financing practices even if they are exposed to higher political uncertainty. In Appendix A6, I find that there is not much difference in the average maturity of bond issues for states that are exposed to higher and lower political uncertainty.

[21] In my bootstrapping procedure to estimate Moody's ratings, convergence could not be achieved. Rather than force convergence, I use OLS regression estimation to report bootstrapped standard errors. The same applies to the result in Table 13.

Moody's rating score compared to a lower one increase by the factor of 0.890 (or 0.844).[22] The signs of other control variables are generally consistent with my expectations and the prior literature. The coefficient on the default spread is negative, albeit insignificant. Shelf registered offerings and firms that are larger, older, having higher interest coverage ratio, and higher Altman's Z-score receive higher credit ratings. Issuers with more proceeds, higher total leverage, higher volatility, higher firm specific risk, and better past one-year stock performance have lower credit ratings.

The right-hand side of Table 5 presents results from OLS regressions of yield spread on policy risk and other controls. In line with the results from the credit ratings regressions, the coefficient of *PAI* is positive and significant, suggesting that firms located in states with higher policy risk have a higher cost of debt than firms located in states with lower policy risk. I find similar results using the change of the *PAI* index. The corrected standard errors for both PAI and the change of the PAI index are also significant using the bootstrapping procedure with 200 replications. This result is consistent with the notion that the heightened uncertainty about the impact of future policies on firms' future cash flows is priced in the market for new corporate bond issues. Such policy risk, which emanates from greater proximity to political power, is larger among firms headquartered in high *PAI* states.

Based on the evidence from Kim et al. (2012) as well as from my results from Table 4, my expectation is that the policy risk effect on the cost of debt is going to be more pronounced among smaller firms. In order to verify this, I also explore models that include an interaction term between *PAI* and size. The coefficient of the interaction term *PAI*LNMKTCAP* is negative and significant, indicating that the *PAI* effect on the yield spread is stronger among smaller

[22] The way I compute factor changes is as such: 0.890 = exp (-0.532 x 0.22)) and 0.844 = exp (-0.652 x 0.26).

firms. For small firms the *PAI* effect is not only significant in statistical terms but also in economic terms. Specifically, for firms in the bottom quartile of market capitalization, a one standard deviation increase in *PAI* will result in an increase in the yield spread of 16 basis points.

Table 6: Yield Spreads for Short and Long Maturity Bonds

This table presents estimates of policy risk on yield spreads from ordinary least squares (OLS) regressions for bond issues with short and long maturities. Short maturity refers to bonds with maturities less than five years and Long maturity refers to bonds with maturities longer than five years. The dependent variable, YIELD SPREAD (%), is the yield spread in percentage calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity. PAI is the political alignment index, and ΔPAI is the change of the political alignment index from time t-1 to time t. All other variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.*t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *z* -values are in square brackets where clustered standard errors are computed using bootstrapping procedure with 200 replications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Yield Spread (%)			
	Short maturity		Long maturity	
Dependent Variable	(1)		(2)	
PAI	0.153		0.175**	
	(0.45)		(2.21)	
	[0.53]		[2.17]	
ΔPAI		0.328		0.143**
		(0.94)		(2.11)
		[0.73]		[2.27]
Bond Issue Characteristics	Y	Y	Y	Y
Firm Characteristics	Y	Y	Y	Y
State Characteristics	Y	Y	Y	Y
Inverse Mills Ratio $_{\text{Bond Issue}}$	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y
Firm Cluster	Y	Y	Y	Y
Year Fix Effects	Y	Y	Y	Y
State Fix Effects	Y	Y	Y	Y
Industry Fix Effects	Y	Y	Y	Y
N	544	544	5108	5108
R^2	0.5621	0.5621	0.7147	0.7146

Similar to the models explaining credit ratings, the signs of the coefficients on the other control variables coefficients are generally as expected. The coefficients of the residuals of the credit ratings are negative and significant as predicted, in line with the view that issues receiving better credit ratings display significantly lower costs of debt.

The impact of policy risk on yield spreads might be different for bonds with different maturities. Long-term bonds are exposed to more interest rate risk, and therefore their price fluctuations should be more sensitive to interest rate changes compared with those of short-term bonds. In Table 6, I divide my sample of bond issues into bonds with short and long maturities, where short maturity is defined as bonds with maturities of five years or less and long maturity is five years or more. Consistent with my conjecture that long maturity bonds are more sensitive to policy risk, I find that the coefficient of *PAI* or *ΔPAI* is not significant for the bonds with short maturities, but is positive and significant for bonds with long maturities.

Other Proxies for Policy Risk

Throughout my analysis I have used *PAI* developed by Kim et al. (2012) as a measure of political uncertainty. In this section I introduce two other proxies for policy risk related to legislative uncertainties. The first measure I employ is *ΔLNBILLNUM*, which is the time-series change of the natural logarithm of the number of bills introduced in Congress by politicians from a particular state that are serving in a given year in the U.S. House of Representatives and Senate chambers of the U.S. Congress. In Table 1, state politicians aligned with the President's party tend to introduce more bills, which is indicative of their influence on the legislative process. Generally, bills passing both chambers of Congress constitute rare events preceded by great uncertainty regarding their final form, which is typically determined during a lengthy legislative process where politicians of influence often manage to amend bills before they become law. As a consequence, firms in states of influential politicians whose legislative activities usually targets home constituents can be exposed to more policy uncertainty. Thus, the second measure is the ratio of the number of bills introduced over the number of bills passed, $LN\ (\frac{BILLNUM+1}{PLAWNUM+1})$, which

captures the part of the uncertainty in the legislative process that is associated with the likelihood that a bill will become law.

Table 7: Alternative Policy Risk Proxies

This table presents ordinary least squares (OLS) regressions estimates of yield spread using alternative proxies for policy risk. The dependent variable, YIELD SPREAD (%), is the yield spread in percentage calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity. LNBILLNUM is the natural logarithm of the number of bills introduced in Congress by politicians in a state for a given year, and ΔLNBILLNUM is the change of LNBILLNUM from year t-1 to year t. LN $(\frac{\text{BILLNUM}+1}{\text{PLAWNUM}+1})$ is the natural log of the ratio between the number of bills introduced (BILLNUM) by politicians from a particular state and the number of bills that finally become law (PLAWNUM). All other variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.*t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *z*-values are in square brackets where clustered standard errors are computed using bootstrapping procedure with 200 replications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Yield Spread (%)			
	(3)	(3)	(3)	(4)
Δ LNBILLNUM	0.147*	0.211***		
	(1.79)	(3.98)		
	[1.73]	[2.40]		
LN $(\frac{\text{BILLNUM}+1}{\text{PLAWNUM}+1})$			0.067**	0.066**
			(2.07)	(2.00)
			[2.03]	[2.01]
Bond Issue Characteristics	Y	Y	Y	Y
Firm Characteristics	Y	Y	Y	Y
State Characteristics	Y	Y	Y	Y
Inverse Mills Ratio $_{\text{Bond Issue}}$	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y
Firm Cluster	Y		Y	
Firm Fixed Effects		Y		Y
Year Fix Effects	Y	Y	Y	Y
State Fix Effects	Y	Y	Y	Y
Industry Fix Effects	Y	N	Y	N
N	5652	5652	5652	5652
R^2	0.6230	0.7417	0.6230	0.7412

Table 7 presents these results. The evidence is consistent with the results found using the *PAI* index.[23] Both measures are positive and significant in predicting yield spreads, providing further support for my notion that borrowing costs are higher for firms headquartered in states that are exposed to more political uncertainty.

[23] In unreported tests, I find that when both the PAI index and *ΔLNBILLNUM* are included in my models, their coefficients remain positive and significant.

Bond Issues around Presidential Elections

Julio and Yook (2012) and others have shown that there is substantial political uncertainty around presidential elections. Presidential elections represent political shocks as the outcomes can heavily weigh on future policies. Thus, such events could have a significant impact on bond yields.

Table 8: Bond Issues around Presidential Elections

The table presents regression analysis of yield spreads around presidential elections for states with very close election outcomes. Election outcomes by states are collected from http://uselectionatlas.org. I define close election outcomes as the lowest tercile group relative to the percentage margin of victory. PRE-ELECTION is within two years before presidential election date, and POST-ELECTION is within two years after the presidential election date. I sort my sample into low and high PAI states based on terciles of the PAI index at time t-1. Columns (1) and (2) present subsamples of bond issuers from low PAI states at time t-1, and Columns (3) and (4) present subsamples of bond issuers from high PAI states at time t-1.I also rank the change in PAI index (ΔPAI) into three groups. Positive ΔPAI (Negative) is a dummy which is one for the top (bottom) tercile of ΔPAI. For distribution statistics of PAI and ΔPAI, please refer to Appendix A5. The dependent variable, YIELD SPREAD (%), is the yield spread in percentage calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity. All other variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.*t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *z*-values are in square brackets where clustered standard errors are computed using bootstrapping procedure with 200 replications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Yield Spread (%)			
	(1)	(2)	(3)	(4)
	PRE-ELECTION	POST-ELECTION	PRE-ELECTION	POST-ELECTION
	Low PAI_{t-1}		High PAI_{t-1}	
Positive ΔPAI	-1.172*	1.367**		
	(-1.70)	(2.04)		
	[-0.18]	[1.86]		
Negative ΔPAI			2.921***	-12.13
			(2.90)	(-1.64)
			[1.73]	[-0.57]
Bond Issue Characteristics	Y	Y	Y	Y
Firm Characteristics	Y	Y	Y	Y
State Characteristics	Y	Y	Y	Y
Inverse Mills Ratio $_{\text{Bond Issue}}$	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y
Firm Cluster	Y	Y	Y	Y
Year Fix Effects	Y	Y	Y	Y
State Fix Effects	Y	Y	Y	Y
Industry Fix Effects	Y	N	Y	Y
N	200	383	305	217
R^2	0.7150	0.8379	0.8520	0.8849

In Table 8, I study corporate bond issues that occurred within a two-year period before and after tight ("close-call") presidential elections. This is when political uncertainty is presumably most severe. Election outcomes are collected from Dave Leip's Atlas of U.S. Presidential Elections.[24] I define tight election outcomes as those falling in the lowest tercile after sorting on the percentage margin of electoral victory.[25] Next, I rank issuers into three groups based on the *PAI* index of the issuer's state in the pre-election period. In columns (1) and (2), I include only issuers from states with the lowest *PAI* and rank them into three groups again based on the change in *PAI* following the election. Issuers in states with little change in *PAI* are the control group, and issuers in the states with a large positive change in *PAI* are the treatment group. In columns (3) and (4), I follow a similar approach but include only issuers from states with the highest *PAI* and define issuers in the states with little or no change in *PAI* as my control group and issuers with a large negative change in *PAI* as my treatment group.[26]

In column 1, before the election, the treatment group with a large positive change in *PAI* (*Positive ΔPAI*) does not incur higher borrowing costs. Recall these firms are located in states with low policy risk before the election. After the election (column 2) however, firms in states that become significantly more aligned with the presidential party indeed experience significantly higher borrowing costs.

In column 3, I examine the opposite case—alignment along opposition party lines. Before the election, firms in states that were highly aligned with the president's party experience significantly higher borrowing costs. Post-election, firms in states that move the farthest along

[24] See http://uselectionatlas.org/.

[25] The mean of the percentage margin of electoral victory from low to high based on tercile distribution is about 4%, 13%, and 29% separately in my unreported table. The percentage margin of electoral victory is computed as the percentage of votes to the President minus the percentage of votes to the opponent.

[26] Please refer to Appendix A5 for summary statistics for the tercile distribution of the PAI index and the change of the PAI index.

the PAI spectrum no longer experience a higher cost of debt. This test further reinforces the view that domestic policy risk is an important determinant of firms' borrowing costs.

Monthly Bond Returns

If policy risk is a determinant of corporate borrowing costs, it should be related to bond returns. I test this at the state level using time-series corporate bond data in a pooled OLS model that accounts for other known determinants of bond returns like the three Fama-French factors, Amihud's bond illiquidity factor, and several macroeconomic variables.[27] The advantages of this test are twofold. First, using time-series data allows me to examine whether policy risk has an impact on the prices of outstanding bonds. Second, and perhaps more importantly, there is little concern regarding self-selection bias in tests utilizing time-series data.

In addition to *PAI*, I also use the change in the *PAI* index, *ΔPAI,* and the time-series change of the natural logarithm of the number of bills introduced by politicians in a state, *ΔLNBILLNUM*. I follow Bessembinder, Kahle, Maxwell, and Xu (2009) to clean up the Trace database to avoid liquidity bias and follow Dick-Nielsen, Feldhütter, and Lando (2012) to compute monthly bond returns using trade-weighted prices. My dependent variable is the monthly equal-weighted return (*RET*) at the state level. I also use an alternative dependent variable, *RET-RF*, which is constructed by subtracting the one month T-bill rate from the monthly return. I control for state and month fixed effects in my regressions. Table 9 presents my empirical results. I find that all three measures of policy risk are positively and significantly correlated with both monthly bond returns and return spreads, implying that when local politicians inject uncertainty to their home state through legislative activities, bond investors demand higher returns to bear the additional risk.

[27] I use the bond illiquidity measure for the market constructed by Dick-Nielsen, Feldhütter, and Lando (2012).

Table 9: Monthly Bond Returns

This table presents pooled ordinary least squares (OLS) regressions of policy risk on monthly bond returns at the state-level collected from Trace over 2002 to 2009. The dependent variables are RET or RET – RF. RET is the monthly equally-weighted bond return at the state level, and RET – RF is the monthly equally-weighted bond return minus the one-month T-bill rate. PAI is the political alignment index, and ΔPAI is the change of the political alignment index from time t-1 to time t. ΔLNBILLNUM is the time-series change of the log of the number of bills introduced by politicians in a state. I collect the Fama-French three factors MKTRF, SMB, and HML from Ken French's website. DEFAULT SPREAD (%) is computed as the difference between Moody's BAA and AAA corporate bond yields from Federal Reserve Economic Data (FRED). TERM SPREAD (%) is calculated as the difference in yields between the thirty-year Treasury bond and the one-month Treasury bill. AMIHUD BOND ILLIQUIDITY is provided by Jens Dick-Nielsen on his website. All other variables are defined in Appendix A1. T-values are provided in parentheses below the coefficients. Standard errors are corrected for heteroskedasticity. State and month dummies are included but not reported. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable	RET	RET - RF	RET	RET - RF	RET	RET - RF
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.0491	0.0406**	0.0489	0.0275	0.0220	0.0006
	(0.87)	(2.00)	(0.87)	(0.49)	(0.37)	(0.01)
PAI	0.0097**	0.0096*				
	(2.14)	(1.86)				
ΔPAI			0.0077**	0.0077**		
			(2.56)	(2.56)		
ΔLNBILLNUM					0.0026*	0.0026*
					(1.85)	(1.85)
MKTRF	0.4043**	0.2858***	0.4067**	0.4070**	0.3189*	0.3193*
	(2.29)	(11.46)	(2.30)	(2.31)	(1.76)	(1.76)
SMB	0.7001***	-0.1709***	0.6796***	0.7377***	0.8169***	0.8749***
	(2.90)	(-5.18)	(2.81)	(3.05)	(3.28)	(3.52)
HML	1.4872***	0.1083***	1.4718***	1.4684***	1.4872***	1.4838***
	(5.82)	(2.68)	(5.76)	(5.75)	(5.84)	(5.83)
DEFAULT SPREAD (%)	-0.0266*	0.0149***	-0.0252*	-0.0262*	-0.0249*	-0.0259*
	(-1.78)	(4.36)	(-1.68)	(-1.75)	(-1.67)	(-1.73)
TERM SPREAD (%)	-0.0148	-0.0201***	-0.0152	-0.0110	-0.0099	-0.0057
	(-1.52)	(-6.34)	(-1.56)	(-1.13)	(-0.98)	(-0.56)
AMIHUD BOND ILLIQUIDITY	0.0031	-0.0128***	0.0028	0.0049	0.0020	0.0042
	(0.48)	(-6.90)	(0.43)	(0.77)	(0.32)	(0.66)
UNEMPLOYMENT RATE	0.3633***	0.2630**	0.4085***	0.4085***	0.3511	0.3511
	(2.89)	(1.90)	(3.22)	(3.22)	(0.01)	(0.01)
STATE GDP GROWTH RATE	0.0233	0.0199	0.0273	0.0273	0.0158	0.0158
	(0.70)	(0.52)	(0.81)	(0.81)	(0.64)	(0.64)
State Fixed Effects	Y	Y	Y	Y	Y	Y
Time Fixed Effects	Y	Y	Y	Y	Y	Y
N	2388	2388	2388	2388	2368	2368
R^2	0.3914	0.1885	0.3919	0.3945	0.3876	0.3899

Chapter Five: Corporate Political Strategies and Yield Spreads

In the previous chapter I provided evidence indicating that higher policy risk is associated with higher costs of debt. In this chapter, my aim is to determine whether corporate political strategies can effectively shield bond issuing firms from policy risk.

In Table 10, I divide my sample based on whether firms actively make campaign contributions and/or lobby. The sample for the group of lobbying issuers is confined to the November 2000 to October 2008 period, for which the full set of lobbying data is available. While corporate political strategies might help to hedge against policy risk, it is plausible that, for example, larger firms or firms with better performance are more likely to make political contributions or engage in lobbying. These firms are likely to have higher credit ratings and lower yields. Thus, it is imperative that I control for observable and unobservable characteristics that may jointly influence firms' political strategies and their cost of debt. As a first step in this direction, rather than using contribution or lobbying as exogenous explanatory variables, I divide my sample into four different groups: firms not contributing to PACs, PAC contributing firms, non-lobbying firms, and lobbying firms. I estimate models similar to Model 6 separately for each one of these four subsamples. I reason that if PAC contributions or lobbying are effective hedging strategies against policy risk, I should not observe a significant impact of *PAI* on yield spreads for contributing or lobbying firms.

The first column in Table 10 shows that for firms that do not make PAC contributions and also do not lobby, the impact of *PAI* on yield spreads is positive and significant. Columns (2) and (3) show the impact of *PAI* on yield spreads is insignificant for firms that make PAC

contributions, but positive and significant for firms that do not. These results are consistent with the notion that PAC contributions seem to protect firms from political uncertainty. I observe similar results for non-lobbying firms and lobbying firms. *PAI* is positively related to yield spreads for non-lobbying firms, but the impact of *PAI* on yield spreads disappears for lobbying firms. Overall, these results imply that both PAC contributions and lobbying can be effective hedging tools against political uncertainty.

Table 10: Corporate Political Strategies

This table presents analysis on the relation between policy risk and yield spreads using ordinary least squares (OLS) regressions. The dependent variable, Yield Spread (%), is the percentage yield spread calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity. PAI is the political alignment index. Column (1) presents estimates for non-contribution issuers and non-lobbying issuers. Columns (2) and (3) present estimates for non-contribution issuers and contribution issuers, respectively. Columns (4) and (5) present estimates for non-lobbying issuers and lobbying issuers, respectively. All variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.*t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *z*-values are in square brackets where clustered standard errors are computed using bootstrapping procedure with 200 replications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	Yield Spread (%)									
	Non-Contribution & Non-Lobbying Issuers		Non-Contribution Issuers		Contribution Issuers		Non-Lobbying Issuers		Lobbying Issuers	
	(1)		(2)		(3)		(4)		(5)	
PAI	0.596*	0.596**	0.258*	0.258**	0.110	0.110	0.591**	0.591***	-0.035	-0.035
	(1.88)	(2.06)	(1.92)	(2.40)	(1.02)	(1.37)	(2.40)	(2.67)	(-0.18)	(-0.23)
	[1.76]	[1.97]	[1.96]	[2.59]	[1.05]	[1.40]	[2.12]	[2.57]	[-0.18]	[-0.22]
Bond Issue Characteristics	Y		Y		Y		Y		Y	
Firm Characteristics	Y		Y		Y		Y		Y	
State Characteristics	Y		Y		Y		Y		Y	
Inverse Mills Ratio $_{\text{Bond Issue}}$	Y		Y		Y		Y		Y	
Other Controls	Y		Y		Y		Y		Y	
Year Fix Effects	Y		Y		Y		Y		Y	
State Fix Effects	Y		Y		Y		Y		Y	
Industry Fix Effects	Y		Y		Y		Y		Y	
Firm Cluster	Y	N	Y	N	Y	N	Y	N	Y	N
N	693		2430		3222		959		1360	
R^2	0.8185		0.7009		0.5324		0.8137		0.7110	

Matched Benchmarks

As previously shown in Table 3, firms with active corporate political strategies are different from those without such strategies in terms of several characteristics. For example, firm size of issuers that lobby and/or make contributions is substantially larger, on average, than that of non-lobbying issuers and/or non-contribution issuers. Thus, it might be that the hedging effect of corporate political strategies such as lobbying or making PAC contributions is just a size effect. In order to mitigate such endogeneity concerns, I compare the yield spreads of lobbying issuers and a matching sample of non-lobbying issuers based on size, book-to-market, and momentum. I identify all matched non-lobbying issuers for the sample of lobbying issuers that fall into the same size, book-to-market, and momentum (3 x 3 x 3) sorted portfolio following Daniel, Grinblatt, Titman, and Wermers (1997).

Table 11: Matched Benchmarks' Comparison of Yield Spreads

This table provides mean and median yield spreads for contributing issuers and their matched non-contribution benchmarks and lobbying issuers and their matched non-lobbying benchmarks with similar maturities. I identify benchmark issuers if they are located in the same industry and in the same size, book to market ratio, and momentum (3x3x3) portfolios as contributing or lobbying issuers. The portfolios are constructed using a similar approach following Daniel, Grinblatt, Titman, and Wermers (1997). I compare firm and controls for high (panel A) and low (panel B) terciles in changes in the PAI index (ΔPAI). Corresponding *p*-values from means tests (one-sided *p*-values from medians test) are reported. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: High ΔPAI							
	N	Mean	Median		N	Mean	Median
Contribution Issuers	163	1.22	0.90	Lobbying Issuers	89	1.74	1.47
Non-contribution Issuers	161	1.43	1.11	Non-lobbying Issuers	78	2.07	1.67
Difference		-0.21*	-0.21**	Difference		-0.33*	-0.20*
p-value		(0.056)	(0.030)	*p*-value		(0.078)	(0.095)
Panel B: Low ΔPAI							
	N	Mean	Median		N	Mean	Median
Contribution Issuers	131	1.36	1.14	Lobbying Issuers	75	1.86	1.73
Non-contribution Issuers	142	1.56	1.23	Non-lobbying Issuers	63	2.06	1.73
Difference		-0.20	-0.09	Difference		-0.20	0.00
p-value		(0.152)	(0.292)	*p*-value		(0.304)	(0.500)

In Table 11, I divide my sample based on terciles in the change in the *PAI* index. My results show that in states with large and positive changes in *PAI* (Panel A), PAC contributing

issuers have significantly lower yield spreads compared with their control firms, implying that size, growth and momentum are not the only factors that contribute to the lower borrowing costs for PAC contributing issuers when they are exposed to higher policy uncertainty. I find the same results for lobbying versus non-lobbying issuers. When the change in *PAI* is small, I find little difference between contributing and non-contributing or lobbying and non-lobbying firm yield spreads.

Political Networks and Lobbying Intensity

In this section, I consider whether contributions geared toward supporting better connected politicians in Congress are a more effective tool of dealing with policy risk. I hypothesize that firms could extract incremental benefits from supporting politicians who have stronger positions within the legislative co-sponsorship network in Congress because they would be in better position to pass legislation (and/or amendments) or implement regulations that are beneficial to firms they receive support from, essentially shielding such firms from the potentially adverse impact of new legislation, i.e. from policy risk. In order to test this conjecture, I estimate multivariate models that control for other determinants of yield spreads, as well as for the fact that firms may self-select in issuing bonds.

In order to develop measures of a firm's political connections to politicians, I merge Fowler's (2006) legislative co-sponsorship network data with firms' PAC contribution profiles by a politician's unique ID, which allow me to identify whom firms support in the legislative network. Fowler (2006) proposes several social network measures such as closeness, eigenvector centrality, and connectedness to assess how well an individual politician is connected to other legislators in the legislative network.[28] Closeness is the social distance from one politician to the

[28] Fowler (2006) uses all bills proposed in Congress and draws a directional link between politicians who sponsor and cosponsor a particular bill for the period from 1973 to 2004. The measures are computed using

other, and it indicates how much support one politician can receive from other politicians as well as how much support the politician's supporters can receive from others in the legislative network. Eigenvector centrality shows the magnitude of direct support that an individual politician can receive from other politicians in the network. Connectedness measures the strength of the social connections of a politician in the legislative network, and it also gauges the level of a politician's legislative influence in drafting, gathering support for and passing new bills. Both the centrality measure and the connectedness measure identify majority leaders, minority leaders, and committee chairs.

In this study, I aggregate each of the closeness, eigenvector centrality, and connectedness measures across all politicians supported by a firm to assess a firm's ability to benefit by its proximity to political power of Congress. I expect that the better the connections a firm has in Congress, the greater its ability to hedge against policy risk. The three firm-level measures of firm *i*'s political network strength are as follows:

$$CLOSENESS_{it} = \sum_{j=1}^{J} Closeness_{jt} \quad (4)$$

where $Closeness_{jt}$ is the closeness score of a politician who received a sponsoring firm *i*'s contribution in election cycle *t*.

$$CENTRALITY_{it} = \sum_{j=1}^{J} Eigenvector\ Centrality_{jt} \quad (5)$$

information related to the number of bills sponsored and cosponsored by legislators, the number of legislators cosponsoring a particular bill, the number of legislators cosponsoring bills sponsored by a particular legislator, and so on. Take the closeness measure for example, the distance between a sponsor and his/her cosponsors is one, and the distance is two between the sponsor and his/her cosponsors' cosponsors. The closeness score takes the average inverse value of the distance score assigned to each legislator. The eigenvector centrality is computed as the proportional sum of the centrality scores of the legislators who cosponsor the legislator's bills using an eigenvector centrality algorithm. Connectedness is calculated as the inverse of the shortest distance from one legislator to other legislators.

where $Eigenvector\ Centrality_{jt}$ is the centrality score of a politician who received a sponsoring firm *i*'s contribution at election cycle *t*.

$$CONNECTEDNESS_{it} = \sum_{j=1}^{J} Connectedness_{jt} \quad (6)$$

where $Connectedness_{jt}$ is the connectedness score of a politician who received a sponsoring firm *i*'s contribution at election cycle *t*.

Table 12: Political Networks and Lobbying Intensity

This table presents ordinary least squares (OLS) regressions of policy risk on yield spread based on the strength of political networks and lobbying intensity. The dependent variable, Yield Spread (%), is the percentage yield spread calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity. PAI is the political alignment index. The strength of political networks is measured based on ranks of the CLOSENESS, CENTRALITY, and CONNECTEDNESS measures constructed using Fowler's Co-sponsorship Network Data. Weak (Strong) Political Networks refers to the group of bond issuers that are located in the lowest (highest) quintile ranks of these measures. Lobbying Intensity is measured as the total amount of lobbying expenditures by a firm scaled by the total assets each year. Low (high) Lobbying Intensity refers to bond issuers located in the bottom (top) quintile of the lobbying intensity measure. All other variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.*t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable	YIELD SPREAD (%)							
	Weak Political Networks		Strong Political Networks		Low Lobbying Intensity		High Lobbying Intensity	
	(1)		(2)		(3)		(4)	
PAI	2.563*		0.156		13.911**		-2.611	
	(1.93)		(0.03)		(2.17)		(-0.63)	
PAI*LNMKTCAP	0.263		-0.062		-1.217		0.276	
	(-1.55)		(-0.13)		(-1.94)		(0.64)	
ΔPAI		1.987*		-0.296		0.871*		-0.532
		(1.91)		(-0.09)		(1.67)		(-1.45)
ΔPAI *LNMKTCAP		-0.248**		-0.010		0.041		0.048
		(-2.03)		(-0.03)		(0.50)		(0.76)
Bond Issue Characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Firm Characteristics	Y	Y	Y	Y	Y	Y	Y	Y
State Characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Inverse Mills Ratio $_{\text{Bond Issue}}$	Y	Y	Y	Y	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Firm Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
N	499	499	495	495	270	270	270	270
R^2	0.9059	0.9056	0.4402	0.4448	0.8961	0.8947	0.9219	0.9230

In the first two columns of Table 12, I divide firms into quintile groups formed after sorting *CLOSENESS*, *CENTRALITY*, and *CONNECTEDNESS* measures of politician influence in the legislative co-sponsorship network of the U.S. Congress. I use subsamples of issuers assigned to the top and bottom quintile groups after sorting on the aforementioned political network measures and compare whether yield spreads of firms with strong political network measures are significantly different from those of firms with weak political network measures. I find that *PAI* (*ΔPAI*) is positively related to *YIELD SPREAD* only in the regressions using the subsamples of issuers with weak political networks, whereas the *PAI* (*ΔPAI*) coefficients are insignificant using the subsamples of issuers with strong political networks. The results support the view that the effectiveness of campaign contributions as corporate political strategies also depends on whom firms support. By supporting influential, well-connected politicians in the congressional networks, firms can effectively hedge against policy risk.

In prior tests, I showed that lobbying activity helps firms reduce the impact of policy risk on the cost of debt. In this section, I explore if the intensity of lobbying is important in determining the degree to which lobbying firms can hedge against political uncertainty. I use annual lobbying expenses scaled by the total assets to assess the intensity of firms' lobbying activities. In columns (3) and (4), I test whether the impact of *PAI* (*ΔPAI*) on yield spreads varies with the intensity of lobbying activities by comparing a subsample of issuers located in the bottom quintile of lobbying expenses and a subsample of issuers located in the top quintile of lobbying expenses. I find that the effect of *PAI* (*ΔPAI*) on yield spreads is positive and significant in the lowest quintile of lobbying expenditures, but becomes insignificant in the highest quintile. These results are consistent with the view that the impact of policy risk is minimized for firms that spend more on lobbying.

Two-Stage Least-Squares Model

My tests related to corporate political strategies are potentially subject to one serious econometric problem—selection bias. Firms might self-select to participate in political activities based on unobserved characteristics which can also affect the amount of PAC contributions and (or) lobbying expenses and thus corporate bond ratings and yield spreads. To account for these concerns, I conduct Tobit two-stage least squares (2SLS) regressions following Maddala (1986), Graham and Rogers (2002), among others. In the first stage, I run a reduced form Tobit regression with instrumental variables to get the predicted values of PAC contributions and lobbying expenses using all Compustat firms. In the second stage, I use these predicted values as independent variables and run OLS regressions to predict yield spreads and ordered logit models to predict corporate bond rating. The 2SLS model requires exclusion restriction, so I exclude the key instrument variables used in the first stage but include all other control variables from the first stage which I think might affect yield spreads in the second stage. Standard errors in square brackets reported in Table 13 are bootstrapped standard errors using a bootstrapping procedure with 200 replications.[29] Appendix A4 shows the results from the first-stage Tobit regressions.

The key instrumental variable I use to predict the amount of firms' PAC contributions during an election cycle is (*TIGHT ELECTION (Senate)*), an indicator variable equal to one if it is a tight state senatorial election.[30] I expect that firms contribute more to politicians when the competition among candidates is fierce. Other control variables are averaged across the two-year election cycles. *P_RELCONAMT* in Table 13 is computed as the predicted dollar amount of a firm's predicted contributions scaled by the predicted industry total for a two-year election cycle. My results show that the lag of the predicted contribution amount, *P_RELCONAMT*, is

[29] Similar to Footnote 18, I estimate bond ratings using OLS models for the bootstrapped standard errors.

[30] I define *TIGHT ELECTION (Senate)* as a dummy which is one for a state if the margin in popular vote by percentage is within -2.5% and +2.5% for a presidential election and zero otherwise.

negatively and significantly related to *YIELD SREAD (%)*, suggesting that firms making PAC contributions have a lower cost of debt. It implies that a 10 percent increase in the contribution amount related to the industry total can reduce *YIELD SREAD (%)* by about 9 basis points holding everything else constant. The coefficient of the interaction term between the *PAI* index and *P_RELCONAMT* is negative and insignificant, implying that firms can protect against the impact of policy risk on their cost of debt through PAC contributions. For the analysis of bond ratings, I find that for firms exposed to higher policy risk, Moody's corporate bond ratings are higher for firms if they increase their PAI contributions.

When I focus on lobbying, I use the lagged *RELLOBEXP*, the relative lobbying expenditures scaled by the total industry lobbying expenditure, as my key instrument to predict firms' annual lobbying expenditures. I also follow Hill, Kelly, Lockhart, and Van Ness (2011) and use *CAPITALDUM* (an indicator variable that takes the value of one if a firm is headquartered in a state capital) as another instrumental variable. Table 13 shows that predicted lobbying expenditures (*P_RELLOBEXP*), computed as a firm's predicted lobbying expenditures in dollars divided by the predicted industry total in the previous year, are negatively related to yield spreads. The coefficient of *P_RELLOBEXP* is -0.426 and significant. The yield spread is about 8 basis points lower for a firm to increase their lobbying expenditures by 20% relative to the industry total. The coefficient of the interaction term between the *PAI* index and *P_RELLOBEXP* is negative. These results imply that the impact of policy risk on firms' cost of debt is reduced or diminished for firms spending heavily on lobbying. The results are consistent with corporate bond ratings.

Table 13: 2SLS Model

This table reports the relation between political contributions, lobbying expenses, and yield spreads (and corporate bond ratings) applying two-stage least squares (2SLS) models. The results are obtained from the OLS regressions in the second stage of the 2SLS model. The dependent variable, YIELD SPREAD (%), is the percentage yield spread calculated as the difference between the yield to maturity of an issue and the yield of a treasury security with similar maturity. Moody's Ratings are rescaled Moody's rating score. P_RELCONAMT is the predicted contribution amount scaled by predicted industry total for the past two-year election cycle. P_RELLOBEXP is the predicted annual lobbying expenses scaled by predicted industry total in year t-1.All other variables are defined in Appendix A1. Firm control variables are winsorized at the top and bottom 0.5%.Other control variables except main instruments used in the first stage are also included but not reported. *t*-values are in parentheses below the coefficients. Standard errors are clustered at the firm level. Industry, state, and year dummies are included but not reported. *z*-values are in square brackets where clustered standard errors are computed using bootstrapping procedure with 200 replications. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Contribution			Lobbying		
Dependent Variable	Yield Spread (%)		Moody's Ratings	Yield Spread (%)		Moody's Ratings
	(1)	(2)	(3)	(4)	(5)	(6)
PAI	0.251***	0.310***	-0.217***	0.266*	0.335**	-0.044
	(3.19)	(3.27)	(-2.85)	(1.83)	(2.15)	(-0.38)
	[2.86]	[2.96]	[-2.78]	[1.91]	[1.87]	[-0.34]
P_RELCONAMT	-0.872**	-0.578*	-0.094			
	(-2.83)	(-1.69)	(-0.38)			
	[-2.47]	[-1.45]	[-0.32]			
PAI*P_RELCONAMT		-0.786	1.570***			
		(-1.43)	(3.82)			
		[-1.11]	[2.92]			
P_RELLOBEXP				-0.426**	0.080	-0.345
				(-2.31)	(0.24)	(-1.50)
				[-1.77]	[0.15]	[-1.08]
PAI*P_RELLOBEXP					-0.834*	0.672**
					(-1.69)	(2.04)
					[-1.16]	[1.56]
Bond Issue Characteristics	Y	Y	Y	Y	Y	Y
Firm Characteristics	Y	Y	Y	Y	Y	Y
State Characteristics	Y	Y	Y	Y	Y	Y
Inverse Mills Ratio $_{\text{Bond Issue}}$	Y	Y	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y	Y	Y
Firm Cluster	Y	Y	Y	Y	Y	Y
Election Cycle Fix Effects	Y	Y	Y			
Year Fix Effects				Y	Y	Y
State Fix Effects	Y	Y	Y	Y	Y	Y
Industry Fix Effects	Y	Y	Y	Y	Y	Y
N	4851	4851	4851	2063	2063	2063
R^2	0.5946	0.5946	0.7066	0.7468	0.7469	0.7679

Chapter Six: Conclusion

Using a sample of new corporate bond issues, I find that policy uncertainty can positively predict yield spreads and negatively predict corporate bond ratings after I control for default risk. My proxy for policy risk is the degree of political alignment along party lines between state politicians and the president. The closer the political alignment, the more opportunities there are for local politicians to shape the political agenda and influence future policies that affect firms located in their home states. Consequently, these firms become more exposed to policy risk since new policies or regulations are more likely to originate from and be targeted toward firms in states with greater partisan alignment with the president. I also use alternative measures like the number of bills introduced in Congress by politicians from a firms' home state, the change in the number of bills introduced over the past year, and the percentage of bills that ultimately become law. My results indicate that all measures of policy risk are positively correlated with firms' cost of debt, suggesting that bondholders' financial claims are contingent on firms' political environment.

I examine whether firms can devise corporate political strategies that can be effective in terms of hedging against policy risk. Specifically, I study firms' political action campaign (PAC) contributions and lobbying activities. I find that both political contributions and active lobbying are effective tools firms can use for hedging policy risk. The impact of policy risk on yield spreads disappears when firms target their PAC contributions toward more influential politicians or when firms spend heavily on lobbying. These findings imply that the degree of protection

depends on the relative influence of the recipients of firms' PAC contributions and the depth of firms' lobbying reach.

By providing novel and comprehensive empirical evidence on the impact of exposure to policy risk on firms' cost of debt and on the effectiveness of firms' corporate political strategies in hedging against policy risk, my study offers important insights that can be helpful to investors, bond rating agencies, and policy makers and has indirect implications on explaining the credit spread puzzle.

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Appendix A1: Description of Variable Construction

Variable Name	Description
Panel A Bond issue characteristics and description	
MSCORE	Moody's rescaled rating score ranging from 1 to 7.
SPSCORE	S&P rescaled rating score ranging from 1 to 7.
YIELD SPREAD (%)	The difference between the yield to maturity and treasury bonds with similar maturity obtained from Federal Reserve Economic Data (FRED).
PROCEEDS ($M)	Gross proceeds of bond issues.
RELPROCEEDS	Gross proceeds scaled by total assets.
MATURITY	The maturity of the issue.
LNMATURITY	The natural logarithm of the maturity of the issue.
SHELF	A dummy which is one if the issue is shelf registered and zero otherwise.
DEFAULT SPREAD (%)	The default spread computed as the difference between Moody's BAA and AAA corporate bond yields from Federal Reserve Economic Data (FRED).
TERM SPREAD (%)	The difference in yields between the thirty-year Treasury bond and the one-month Treasury bill.
Panel B Firm characteristics and description	
MKTCAP	Market capitalization at the end of fiscal year calculated as the price at the end of fiscal year multiplied by total shares outstanding.
LNMKTCAP	The natural logarithm of market capitalization in millions.
AGE	Firm age is computed using the firm's founding date from Jay Ritter's website. In cases where founding date is missing, the earliest date on CRSP database is used.
LNAGE	The natural logarithm of firm age.
ROA	Net income over total assets.
ICR	The sum of operating income before depreciation and interest expense of long-term debt divided by interest expense of long-term debt. ICR1 to ICR4 are computed following Huang, Ritter, and Zhang (2012).
DEBT RATIO	Long-term debt plus current debt over total assets.
MB	Market value of equity divided by book value of equity.
LNMB	The logarithm of market-to-book ratio.
BHRET	The buy-and-hold market-adjusted return within one-year before the issue date.
RETVOL	The standard deviation of daily stock returns in a given year.
BETA	Beta is estimated with the market model using daily returns around one year before the issue date.
IDIO_RISK	The mean standard error of residual returns estimated with the market model.
TANGIBILITY	Total net property, plant, and equipment scaled by total assets
LNAMIHUD	The natural logarithm of annual Amihud (2002) Illiquidity measure computed as 1000000*abs(return)/(abs(price)*volume);
RELGOVSALE	Sales to U.S. government scaled by total sales to all customers.
MKTSHR	Firm's sales scaled by total industry sales.
LNBUSSEG	The natural logarithm of the number of a firm's business segments.
LNGEOSEG	The natural logarithm of the number of a firm's geographic segments.
FCF	Firm's free cash flows divided by total assets
GROWTH	Firm's capital expenditures scaled by total assets.
NET PROFIT MARGIN	Firm's net income divided by total sales.
ALTMAN'S Z SCORE	Computed as 1.2(working capital/total assets) + 1.4(retained earnings/total assets) + 3.3 (EBIT/total assets) + 0.6(total market capitalization/book value of total liabilities)+ 0.999(sales/total assets)

Panel C Industry characteristics and description	
HHI_SALES	The Herfindahl–Hirschman Index computed with sales information where industry groups take the first two-digit historical SIC codes from Compustat.
RELINDPAC	The number of Political Action Committees scaled by the number of firms in an industry by the first two-digit historical SIC codes from Compustat.
RELINDLOB	The number of lobbying firms scaled by the number of firms in an industry by the first two-digit historical SIC codes from Compustat.
RELLOBEXP	A firm's lobbying expenses divided by the total industry lobbying expenses.
REGDUM	A dummy which is one for financial firms (SIC codes 60-69) or utility firms (SIC codes 40-49) and zero otherwise.
UTILITY	A dummy which is one for utility firms (SIC codes 40-49) and zero otherwise.
PCTMEM	The percentage of employees who are also union members in an industry.
Panel D State characteristics	
BILLNUM	The number of bills introduced in Congress by politicians from a given state, where the bill information is collected from E. Scott Adler and John Wilkerson, Congressional Bills Project (1984-2008).
PLAWNUM	The number of bills introduced in Congress by politicians from a given state that finally became law, where the bill information is collected from E. Scott Adler and John Wilkerson, Congressional Bills Project (1984-2008).
RBENEFIT_SALES	The concentration of firms that depend on government spending in a state computed using sales information.
CONVICTION RATE	The conviction rate in percentage, which is the number of convictions dividend by the population of the state (in millions). Related information is collected from the U.S. Department of Justice Public Integrity Section (http://www.usdoj.gov/criminal/pin/) and U.S. Census Bureau (http://www.census.gov).
CAPITALDUM	A dummy which is one if a firm's headquarter is located in the state capital and zero otherwise, where firms' historical headquarters are collected from Compact Disclosure.
TIGHT ELECTION (Senate)	A dummy which is one for a state if the margin in popular vote by percentage is within -2.5% to +2.5% for a senatorial election.
STATE GDP GROWTH RATE	The annual state GDP growth rate computed using state GDP from Bureau of Economic Analysis.
PERSONAL INCOME	The state annual personal income (percent of US) from the Bureau of Economic Analysis.
UNEMPLOYMENT RATE	The annual unemployment rate from Federal Reserve Economic Data (FRED).
Panel E Political index and corporate political strategies	
PAI	The political alignment index constructed by Kim et al. (2011) at the state level. Refer to the text for detailed information on the construction of this index.
PACDUM	A dummy which is one if a firm has an established political action committee in year t and zero otherwise.
CONTRDUM	A dummy which is one if the issuer makes a contribution from November 1st of year t-3 to October 31st of year t and zero otherwise.
CONAMT($M)	The amount of PAC contributions made by a contributing firm for a general election cycle.
LOBDUM (From 2001)	A dummy which is one if the issuer engages in lobbying in the previous year and zero otherwise.
LOBEXP ($M, from 2001)	A firm's annual lobbying expenses.
CLOSENESS	The sum of closeness scores related to all politicians supported by a firm from November 1st year t-1 to October 31st year t, where closeness scores are from Fowler's Cosponsorship Data.
CENTRALITY	The sum of eigenvector centrality scores related to all politicians supported by a firm from November 1st year t-1 to October 31st year t, where eigenvector centrality scores are from Fowler's Cosponsorship Data.
CONNECTEDNESS	The sum of connectedness scores related to all politicians supported by a firm from November 1st year t-1 to October 31st year t where connectedness scores are from Fowler's Cosponsorship Data.

Appendix A2: Bond Ratings Conversion Scheme

This table provides the conversion scheme between letter rating scores and numerical rating scores for both Moody's and S&P. The rescaled scores are the scores I use in my analysis.

Moody's	S&P	Rating Score	Rescaled Score	Grade Category
Aaa	AAA	21	7	INVESTMENT
Aa1	AA+	20	6	INVESTMENT
Aa& Aa2	AA	19	6	INVESTMENT
Aa3	AA-	18	6	INVESTMENT
A1	A+	17	5	INVESTMENT
A & A2	A	16	5	INVESTMENT
A3	A-	15	5	INVESTMENT
Baa1	BBB+	14	4	INVESTMENT
Baa & Baa2	BBB	13	4	INVESTMENT
Baa3	BBB-	12	4	INVESTMENT
Ba1	BB+	11	3	SPECULATIVE
Ba & Ba2	BB	10	3	SPECULATIVE
Ba3	BB-	9	3	SPECULATIVE
B1	B+	8	2	SPECULATIVE
B & B2	B	7	2	SPECULATIVE
B3	B-	6	2	SPECULATIVE
Caa1	CCC+	5	1	SPECULATIVE
Caa& Caa2	CCC	4	1	SPECULATIVE
Caa3	CCC-	3	1	SPECULATIVE
Ca	CC	2	1	SPECULATIVE
C	C	1	1	SPECULATIVE

Appendix A3: Bond Issues Probit Model

This table presents results from the probit model to estimate the probability for a firm to issue a straight corporate bond for the period from 1984 to 2009 using the sample of all Compustat firms except financials (four-digit SIC code 6000-6999). I follow Butler and Wan (2010) and estimate the model as such: Bond Issue Choice (0 or 1) = *f*(ΔPAI,ΔLNBILLNUM, LNAMIHUD, GROWTH, NET PROFIT MARGIN, LNMKTCAP, LNAGE, DIVIDEND_PAYER, LNMB, DEBT RATIO, ALTMAN'S Z-SCORE, TANGIBILITY, BHRET, RETVOL, State, Industry, and Election Cycle Fixed Effects).The dependent variable is an indicator variable which is one if a firm issued a bond in a given year and zero otherwise. All the other variables are as defined in Appendix A1 and winsorized at the top and bottom 0.5%. Inverse Mills Ratio $_{\text{Bond Issue}}$ is the inverse Mills ratio for bond issues obtained from the first probit model below.

	(1)		(2)	
	Estimate	*P*-value	Estimate	*P*-value
Intercept	-5.149	0.000	-5.091	0.000
ΔPAI	-0.075	0.094		
ΔLNBILLNUM			-0.059	0.000
LNAMIHUD	-0.048	0.000	-0.050	0.000
GROWTH	1.032	0.000	1.035	0.000
NET PROFIT MARGIN	0.038	0.058	0.036	0.062
LNMKTCAP	0.346	0.000	0.343	0.000
LNAGE	0.048	0.000	0.048	
DIVIDEND_PAYER	0.178	0.000	0.177	
LNMB	-0.172	0.000	-0.172	0.000
DEBTRATIO	1.077	0.000	1.082	0.000
ALTMAN'S Z-SCORE	-4.306	0.000	-4.306	0.000
TANGIBILITY	0.172	0.025	0.167	0.029
BHRET	0.024	0.273	0.033	0.131
IDIO_RISK	-1.975	0.092	-1.939	0.098
Election Cycle Fixed Effects	Yes		Yes	
Industry Fixed Effects	Yes		Yes	
State Fixed Effects	Yes		Yes	
N	111666		111666	
Pseudo R^2	0.3665		0.3670	

Appendix A4: First Stage Tobit Model

This table reports results from the first stage Tobit model of the two-stage regression. TIGHT RACE (Senate) is the key instrument variable used in the Tobit model to predict the amount of contributions for every two-year election cycle. $RELLOBEXP_{t-1}$ and CAPITALDUM are the key instrument variables used in the Tobit model to predict firms' annual lobbying expenditures. The dependent variables are measured in millions of dollars. The natural logarithm of the predicted dollar values are used in the second stage OLS regressions. For the first model, all the control variables are averaged over a two-year election cycle. Please refer to Appendix A1 for variable definitions. Industry and time dummies are included but not reported.

Dependent Variable	Contribution Amount (1)		Lobbying Expenditures (2)	
	Estimate	*P*-value	Estimate	*P*-value
Intercept	-0.734	0.000	-4.053	0.000
TIGHT ELECTION (Senate)	0.024	0.001		
RELINDPAC	0.333	0.000		
PCTMEM	0.001	0.002		
$RELLOBEXP_{t-1}$			7.396	0.000
CAPITALDUM			0.121	0.026
RELINDLOB			3.744	0.000
CONVICTION RATE			1.484	0.096
RELGOVSALE	0.252	0.000	2.127	0.000
MKTSHR	0.453	0.000	0.182	0.727
HHI_SALES	0.070	0.155	-1.454	0.213
LNBUSSEG	0.018	0.000	0.122	0.000
LNGEOSEG	-0.004	0.138	-0.055	0.001
LNAGE	0.013	0.000	0.114	0.000
LNMKTCAP	0.085	0.000	0.591	0.000
LNMB	-0.050	0.000	-0.151	0.000
DEBT RATIO	0.053	0.000	0.047	0.405
FCF	0.062	0.000	-0.149	0.000
REGDUM	-0.061	0.340	-3.253	0.000
Election Cycle Fix Effects	Y			
Year Fix Effects			Y	
Industry Fix Effects	Y		Y	
N	60239		34527	
R^2	0.1673		0.2663	

Appendix A5: Distribution of PAI and the Change in PAI

This table presents summary statistics of PAI and the change in PAI (ΔPAI) based on the tercile distribution of PAI and ΔPAI. The number of observations is at the state-year level.

PI Terciles	N	Mean	Median	ΔPAI Terciles	N	Mean	Median
1 Low	470	0.19	0.23	1 Low	466	-0.27	-0.25
2	466	0.45	0.47	2	484	0.00	0.00
3 High	464	0.76	0.75	3 High	450	0.26	0.25

Appendix A6: The Change in PAI and Bond Maturity

This table presents summary statistics of the change in PAI (ΔPAI) and maturity of bond issues based on tercile sort of the change in PAI (ΔPAI) at firm-issue level.

ΔPAI	# of Issuers	# of Issues	ΔPAI		Maturity	
Terciles			Mean	Median	Mean	Median
1	571	1887	-0.27	-0.25	13	10
2	435	1470	-0.01	0.00	12	10
3	659	2295	0.22	0.16	13	10

Local Bias in State Pension Funds: Do Political Networks Play a Role?

Chapter Seven: Introduction

Studies have shown that there are local biases in investors' portfolio investments. Ivkovic and Weisbenner (2005), Massa and Simonov (2006), and Seasholes and Zhu (2010) find that individual investors tend to invest more in stocks that are close to home. Coval and Moskowitz (2001), Hong, Kubik, and Stein (2005), and Baik, Kang, and Kim (2010) find evidence on institutional investors' local bias behavior.[31] Local bias also exists in common equity (Brown, Pollet, and Weisbenner, 2012) and private equity portfolios (Hochberg and Rauh, 2013) of state public pension funds. The most common explanations for local bias are the information advantage hypothesis and the familiarity hypothesis. The information advantage hypothesis states that local investors can profit from their information advantage about geographically proximate firms (Baik, Kang, and Kim, 2010; Coval and Moskowitz, 2001). The familiarity hypothesis suggests that investors invest in home-state firms because they are more familiar with them (Brown et al., 2012). The findings of these studies reach different conclusions on why investors exhibit strong local biases.

In this paper, I examine the factors that might contribute to local bias mainly from a political perspective and analyze whether firms' political connections and networks are related to local bias and under-diversification in local investors' portfolio investments. Furthermore, I

[31] These studies such as Coval and Moskowitz (1999), Chan, Covrig, and Ng (2005), and Van Nieuwerburgh and Veldkamp (2009) also find that money managers have a strong domestic bias in their portfolio investments. Cumming and Dai (2010) find that certain venture capital investments also exhibit a local bias. Malloy (2005) suggests that local affiliated analysts have an information advantage about local stocks and perform better than non-local affiliated analysts.

explore whether state-level political networks, as part of the social networks, can explain this phenomenon.[32]

I conduct my analysis using a sample of public equity holdings in state public pension funds internally managed by trustees. One difference between state public pension funds and actively managed mutual funds is that trustees of state pension funds, particularly internally-managed funds, have asset allocation and portfolio construction discretion over external managers. More interestingly, some trustees are appointed by state governors or are ex-officios who have official positions in state public sectors. The appointed trustees serve the interests of state governors and local politicians.[33]

There are also substantial conflicts of interest in the public pension sector. For example, the public has scrutinized the recent state pension fund scandals, referred as pay-to-play practices between pension fund advisors and state politicians. These scandals appeared in the media first and finally draw regulators' attention. On June 30, 2010, the SEC issued Rule 206(4)-5 under the Investment Advisers Act of 1940 (the "Rule") that "prohibits an investment adviser from providing advisory services for compensation to a government client for two years after the adviser or certain of its executives or employees make a contribution to certain elected officials or candidates."[34] This suggests that political ties or political connections have contributed to business relations in the pension business over the past.

[32] Cohen, Frazzini, and Malloy (2008) find that mutual funds tend to overweight stocks of firms in which they have board connections through educational networks.

[33] For example, Missouri State Employees' Retirement System (MOSERS) had 10 trustees on the board in 2011. Among them, two were senators, two were House representatives, two were appointed by the governor, and two were ex-officio members.

[34] On June 30, 2011, the U.S Securities and Exchange Commission (SEC) filed charges on several companies for bribing state pension funds to buy their stocks. For more details about the charges, please go to this website: http://www.sec.gov/news/press/2011/2011-138.htm. Johnson-Skinner (2009) suggests that lawyers use campaign contributions to support leaders of state pension funds in order to get counseling business.

In my study, I question whether trustees of public pension funds with strong political ties carry this feature into asset allocations and whether local firms' political investments could influence trustees' stock selection and holding decisions. Specifically, I test the conjecture that public pension funds over-allocate home-state stocks with connections to local politicians. I construct two measures of local political connection bias: local PAC contributions and local lobbying. I find that from 1999 to 2009, the average value-weighted local equity bias in state pension funds is about 0.26 relative to the market portfolio, implying that state pension funds invest 26% more in local stocks compared with what a market portfolio predicts. The average local contribution bias is about 23%, so compared to the weight of firms making campaign contributions in the market, the average weight of local firms making contributions in state pension funds is about 23% higher. The average local lobbying bias is 17%, and this suggests that the average overweighting of local firms engaged in lobbying activities is about 17% higher compared to what a market portfolio would predict. The correlation between local bias and local contribution bias is 0.56, and the correlation between local bias and local lobbying bias is 0.65, both of which are highly significant.

If fund trustees are making rational decisions, they will invest in stocks that perform at least similarly to alternatives and have a positive contribution to their portfolio performance. This proposition is based on the assumption that fund trustees know more information about these firms and could make relatively more accurate investment decisions. Another possibility is that state pension fund trustees (or managers) can be tipped by firms' CEOs or managers through social connections. Therefore, they could know more information about the firm than outsiders do. In this way, pension funds are still able to profit from the private information they collect

through social networks. The information advantage hypothesis predicts that local bias has positive contribution to fund performance, but my evidence does not support this hypothesis.[35]

I compare the performance of local firms held by state pension funds with their local benchmarks not held by these funds from the same industry matched by size and book equity to market equity ratio. I then place local firms held by state pension funds and their local benchmarks not held by these funds into three groups based on the following characteristics: not politically connected, politically connected through PAC contributions, and politically connected through lobbying. I find that politically connected local firms underperform their local benchmarks in the pre-holding period but their performance improves during the holding period. This finding suggests past performance cannot explain why state pension funds favor these politically connected stocks; however, politically connected local firms might benefit from being held by these big institutional investors.[36]

My multivariate analysis examines the role that local bias plays in explaining the performance of state pension funds. I show that local bias in general does not impact fund performance significantly. However, local contribution bias and local lobbying bias are negatively and significantly related to pension fund performance.[37] Though Cooper, Gulen, and Ovtchinnikov (2010), Chen, Parsley, and Yang (2010), and Hill, Kelly, Lockhart, and Van Ness (2011) suggest that politically connected firms outperform non-politically connected firms, my

[35] Brown et al. (2012) suggest that the information advantage hypothesis, the familiarity hypothesis, and the non-financial/political hypothesis are not mutually exclusive. My next chapter has detailed discussions on the predictions of each hypothesis. The main focus of this paper is to explore alternative explanations of local bias rather than to disentangle the differences between familiarity hypothesis and political network hypothesis.

[36] My evidence might suggest that state pension funds have market-timing skills, but market-timing is a short-term tactic and what is more, state pension funds have incentives to invest in poorly performing local firms to boost the local economy. This study focuses on the security selection component of state pension fund investment.

[37] This finding does not conflict with my analysis in the previous paragraph. It suggests that though firms held by state pension funds see improvement in their performance during the holding period, the gain is not large enough to improve overall fund performance.

results imply that the politically connected local firms selected by the state pension funds in my sample do not have a positive impact on fund performance.

I next analyze political and governance characteristics that could influence local bias at the state level. I collect the public integrity index from the State Integrity Investigation Project which grades the effectiveness of policy and governance mechanisms on many categories such as political financing, state pension fund management, ethics enforcement agencies, et cetera. My results show that the public integrity index is negatively related to all measures of local bias.

I also find that political connection bias is stronger when local politicians have stronger connections in Congress and thereby are more influential in the congressional network.[38] My findings could also imply that more powerful politicians might be able to impose more political pressure on state pensions in returning favors to politically connected firms. However, the level of the standard local bias measure is not significantly related to Congressional connections, and actually it is much lower in states with high public integrity. Furthermore, there is less overweighting of local firms when there are more board trustees elected by state employees or retirees, but there is more overweighting of politically connected home-state firms when there are more ex-officio trustees on board.

My evidence suggests that state pension funds are more likely to invest in local firms that make direct political investment through political contributions or lobbying. State pension funds also tend to invest in large firms and firms with positive earnings surprises and high share turnover. I find that even for small and non-local firms that typically draw less attention from big

[38] I use the connectedness measure constructed by Fowler (2006) to assess politicians' Congressional connection. The connectedness index is computed as the inverse of the shortest social distance from one legislator to other legislators. It measures the strength of the political connections of a politician in the legislative network, and it also gauges the level of a politician's legislative influence in drafting, gathering support for and passing new bills.

local investors, political connections are still able influence the holding decision of state pension funds. My findings are robust after controlling for self-selection bias.

Finally, I examine the real economic impact of local bias and bias towards politically connected local firms by state pension funds through testing the relation between local biases and funding levels of state pension funds. My results show that local bias does not contribute to the underfunded status of pension funds; however, local contribution bias and local lobbying bias do significantly contribute to the underfunded ratios of state pension funds.

My study attempts to explain why state pension funds, a big component of local investors, tend to tilt their stocks toward local firms from the perspective of political and governance characteristics and political networks. I offer another angle on examining factors that influence asset allocations by managers or trustees of the state public pension funds. My study is in line with studies on the relations between politics and investment behavior. For example, Bonaparte, Kumar, and Page (2010) suggest that investors are more optimistic when their affiliated party aligns with the President, and they tend to invest in more of local stocks when the opposite party is in power. Aabo, Pantzalis, and Park (2012) suggest that political interferences induce geographic segmentation in the stock market and cause stock prices to exhibit a local component. My study also provides insights on why local investors under-diversify their portfolio investment.

The rest of this paper proceeds as follows. Chapter Eight presents literature reviews. Chapter Nine describes data and summary statistics. Chapter Ten analyzes empirical results, followed by a conclusion in Chapter Eleven.

Chapter Eight: Literature and Hypothesis Development

Pirinsky and Wang (2006) find strong local comovement in returns of local stocks, and the local comovement could not be explained by local fundamentals. Despite the existence of local comovement and the absence of the impact of local fundamentals, why do local investors underdiversify their portfolio? Several studies, such as Brown, et al. (2012), Hochberg and Rauh (2013), and Sinclair (2011), find strong local bias in state public pension funds and show that state pension funds overweight in-state stocks compared with out-of-state stocks.

One possible explanation behind state pension funds' local bias assumes information asymmetry. State pension funds have information advantages about in-state stocks compared with out-of-state stocks; therefore, if this hypothesis holds, local bias will be positively related to portfolio excess returns. The second possible explanation is that local investors tend to invest in firms they are more familiar with, and this explanation predicts that local bias might be negatively related to pension fund performance or not related to fund performance. Studies also suggest that that political pressure might cause public pension funds to support and thus invest greater weight in in-state equities. The results from empirical tests on these possible explanations are mixed. For example, Brown et al. (2012) support the information advantage hypothesis but not the familiarity hypothesis by showing that local stocks outperform non-locals. However, Hochberg and Rauh (2013) provide evidence that overweighting in in-state private equity has a negative impact on fund performance. Whereas Sinclair (2011) finds that pension fund managers have an information advantage about local stocks, he also suggests that political risk and political influencing might be related to local bias but does not provide direct evidence.

Although the information advantage hypothesis is not novel to studies on local bias, I want to examine this hypothesis by taking a different approach from what Brown et al. (2012) do in their study. Despite the fact that investors are more familiar with local firms, if information advantage still plays the major role in influencing state pension funds' investment decisions, I expect that local firms held by state pension funds should perform better than local firms not held by state pension funds, and local firms held by state pension funds should exhibit superior performance during the holding period than before or at least should not deteriorate in performance.

Several recent studies suggest that political factors can affect investment behaviors. For example, Hong and Kostovetsky (2010) find that mutual fund managers' political ideology can influence the types of stocks they invest in and less conservative managers (those who support the Democratic Party) are less likely to invest in socially responsible stocks. Hutton, Jiang, and Kumar (2011) suggest that conservative managers, in support of the Republican Party, are more conservative in adopting corporate policies and making investments. Bonaparte, Kumar, and Page (2010) suggest that investors' party affiliation can explain some of their investment behavior. When the investor's affiliated party aligns with the President's, the investor will be more optimistic and make risky investments. Brown et al. (2012) find that campaign contributions to local politicians by citizens in a county are related to local bias in state pension funds. Hochberg and Rauh (2013) imply that political pressure might drive local bias, but they do not provide direct evidence.[39]

I hypothesize that political factors like policy risk and regulation effectiveness are related to local bias. Furthermore, I examine local bias from the perspective of social networks. I argue that the extent of local politicians' networks could explain local bias in state pension funds. If

[39] They only show that corruption is related to local bias.

local politicians are well-connected in the congressional network and thus are able to pass more bill amendments on the floor, they might be able to exert more political pressure on state pension funds. These politicians can return favors to these firms that have supported them by offering or holding positions in state pension funds. I also conjecture that pension funds are more likely to select local firms that have made PAC contributions to the local politicians (or candidates)[40] or local firms that spend a large amount of money in lobbying.[41] Pension funds might select politically connected firms because trustees (or managers) can get some inside information about these firms through their social interactions. However, I predict that if the role of political connections dominates, the holding decisions of pension funds should not be solely driven by past performance.

Brown et al. (2012) also suggests that the information advantage, familiarity, and non-financial/political hypotheses are not mutually exclusive, so the main focus of this study is to examine whether political networks is another factor that can explain local bias in state pension funds rather than distinguish all three hypotheses.

Why do firms want to build up political connections? They choose to build up political connections so that their shareholders can benefit from state pension funds taking holding positions in their firms, particularly for longer period. Lakonishok, Shleifer, and Vishny (1992)

[40] Even though regulations by Federal Election Committee state that PACs on behalf of organizations, can only contribute to each candidate or candidate committee $5,000 during an election, loopholes allow firms to target contributions. According to The New York Times, January 8, 2012, "In the first six months of 2011, for example, the Super PAC operating on Romney's behalf, Restore Our Future, reported corporate contributions of $1 million each from Eli Publishing Inc. and F8 LLC, both based in Provo, Utah. $250,000 from The Villages of Lake Sumter, Inc. in The Villages, Fla.; and $100,000 from 2GIG Technologies in Lehi, Utah."

[41] Lobbying and campaign finance can be both substitutes and complements, Professor Heather Gerken from Yale Law School suggests. After President Obama called for the Campaign Finance Reform, lobbyists became the key players in channeling funds from the lobbying industry to the2012 presidential election campaign (See http://electionlawblog.org/archives/018727.html).

find that institutional (pension) trading has a positive impact on stock prices.[42] Wu (2004) finds that CALPERS could have positive impacts on firms' board structure and compel firms held by CALPERS to improve corporate governance. Gaspar, Massa, and Matos (2005) show that target firms are less likely to receive an acquisition bid, and acquisition firms have more bargaining power if they are held by long-term institutional investors. Cremers and Nair (2005) show that the public pension ownership is an effective proxy for a firm's internal governance. Their findings suggest that long-term institutional investors could provide diligent monitoring and make a considerable commitment to corporate governance. State pension funds write their fiduciary duties like proxy voting into the chapters of their Public Acts, implying that the State pension funds attempt to implement their delegated monitoring role. Ashraf, Jayaraman, and Ryan (2012) find that pensions strongly influence mutual funds' proxy voting on CEO compensation when mutual funds and pensions have business ties. I believe that either shareholders who want to maximize their wealth will encourage managers to engage in corporate political strategies that will build up political connections through campaign contributions or lobbying, or the managers who pursue their own interests are also likely to participate in these activities. [43]

[42]Woidtke (2002) suggests that political influence might drive the negative impact of public pension ownership on stock prices.

[43]My results show that indeed state pension funds can help improve firm performance, but our sample firms selected by these state pension funds do not have positive contributions to fund performance compared to other firms (most likely non-local) held by state pension funds.

Chapter Nine: Data and Variables

The information on equity holdings of state public pension funds is collected from the 13-F reports filed to the Securities and Exchange Commission (SEC) for the period from 1999 to 2009.[44] I require my sample to have at least 20 consecutive quarterly reports for analysis purpose. My final sample consists of 16 state public funds which are defined benefit plans. I hand collect information on characteristics of board trustees from the annual financial reports published by these state public pension funds. I also collect other information on pension plans from Public Plans Database produced the Center for Retirement Research at Boston College. My PAC contribution data and lobbying data are from the Center for Responsive Politics. Returns and accounting information of individual firms held by state pension funds are from CRSP and Compustat. Data on the Public Integrity Index is collected from the State Integrity Investigation Project sponsored by the Center for Public Integrity, Global Integrity, and PRI Public Radio International. Earnings surprises are estimated using data from Institutional Brokers Estimate System (IBES). I collect macroeconomic variables using Federal Reserve Economic Data (FRED) provided by the Federal Reserve Bank at St. Louis. I collect firms' historical headquarter information before 2006 from Compact Disclosure, and for years after 2006, I use headquarter information provided by Compustat directly.

Table 1 provides summary statistics of the state pension funds for the last report every year. I have 668 fund-quarter observations at the fund level. The average number of firms held by these state pension funds is 1,611 in my sample. The average holding value per firm is $13.06

[44] The SEC requires funds with total assets greater than $100 million to file with them on a regular basis.

million whereas the median is $1.99 million. The average of the total assets computed as the aggregate value of equity holdings in a fund is about $21 billion. New York State Common Retirement Fund (NYCRF) is the largest with an aggregate equity portfolio of $47 billion, whereas Missouri State Employees Retirement Fund (MOERF) is the smallest with about $660 million. The mean quarterly portfolio return is about 1.08%, and the median is 1.99%. On average, the trading returns earned by state pension fund managers is about -0.73%. The portfolio turnover is 0.12, which is relatively low compare to mutual fund turnover (see Carhart, 1997; Chen, Jagadeesh, and Wermers, 2000). The price and the number of shares used to compute fund characteristics are split adjusted.

Table 1: Summary Statistics of State Public Pension Funds

This table presents quarterly summary statistics of state public pension retirement systems. The Number of Firms is the number of firms held by the fund. Holding Value Per Firm is the holding value of a firm in the fund. Total Assets is the total assets of domestic equities invested by the fund. Portfolio Return is the quarterly value-weighted portfolio return for the fund. Trading Return is returns on buys minus forgone returns on sells assuming that trades are executed at each quarter end. Portfolio turnover is the sum of total buys and total sells minus net flows and then scaled by Total Assets.

State	Fund	N	The Number of Firms		Holding Value Per Firm ($ Millions)		Total Assets ($ Billions)		Portfolio Return		Trading Return		Portfolio Turnover	
			Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CA	CALPERS	44	2,882	3,405	7.09	0.65	20.37	6.91	1.66%	1.96%	-1.54%	-0.36%	0.16	0.13
CA	CALTRS	44	1,815	2,203	16.04	2.96	29.11	30.93	0.82%	2.04%	0.05%	-0.55%	0.06	0.05
CO	COPER	44	2,067	2,317	6.00	1.09	12.39	12.36	1.00%	2.27%	-1.12%	-1.17%	0.15	0.10
FL	FLRS	44	2,338	2,422	13.06	1.58	30.53	30.95	0.69%	1.89%	-0.81%	-0.42%	0.06	0.04
KY	KYTRS	44	1,109	1,123	1.97	0.78	2.18	2.15	1.30%	2.79%	-0.46%	-0.53%	0.18	0.17
MI	MIST	44	900	901	22.05	2.80	19.85	20.09	0.67%	1.58%	-0.43%	-0.27%	0.12	0.09
MO	MOERS	33	354	474	1.86	0.64	0.66	0.49	1.98%	2.60%	-2.07%	-1.99%	0.06	0.03
NY	NYCRF	44	1,620	1,749	29.13	7.25	47.17	47.01	0.87%	1.90%	-1.24%	-0.71%	0.10	0.09
NY	NYTRS	31	1,472	1,495	28.04	6.83	41.26	41.65	2.37%	2.40%	-1.59%	-1.00%	0.05	0.05
OH	OHPERS	42	2,567	2,750	9.86	1.33	25.32	25.90	0.43%	1.47%	-0.13%	-0.80%	0.10	0.10
OH	OHSTRS	43	2,112	2,085	10.83	1.52	22.87	22.92	0.78%	1.23%	-0.88%	-0.51%	0.17	0.14
PA	PAPSERS	37	1,988	2,153	6.73	2.45	13.37	15.18	1.22%	2.88%	0.16%	-0.77%	0.15	0.13
TX	TXERS	44	830	863	8.93	2.06	7.41	7.45	0.44%	1.71%	-0.74%	-0.49%	0.12	0.10
TX	TXTRS	44	1,377	1,477	33.87	8.94	46.64	43.95	1.04%	2.09%	-0.53%	-0.56%	0.13	0.11
VA	VARS	43	1,175	1,156	4.34	1.29	5.10	4.11	0.63%	1.80%	0.17%	0.30%	0.14	0.13
WI	WIIB	43	905	872	12.77	3.30	11.55	11.33	1.93%	1.80%	-0.91%	-0.35%	0.19	0.16
All Funds		668	1,611	1,491	13.06	1.99	21.03	17.81	1.08%	1.99%	-0.73%	-0.63%	0.12	0.10

Following studies like Seasholes and Zhu (2010) and Sinclair (2011), I construct two measures of local bias in general. The first measure (*Ratio #1*) is calculated as the ratio of the weight of local firms in the fund divided by the weight of local firms in the market portfolio minus one. The second measure (*Ratio #2*) is computed as the natural logarithm of the ratio of the weight of local firms in the fund divided by the weight of local firms in the market portfolio. The first measure is a direct measure of local bias and the second one is a robust measure which accounts for the skewness in the ratio. I construct the measures of local contribution bias and local lobbying bias in a similar approach. The local contribution bias is the ratio of the weight of local firms that make contributions in the fund divided by the weight of local firms that make contributions in the market portfolio. The local lobbying bias is the ratio of the weight of local firms that lobby in the fund and the weight of local firms that lobby in the market portfolio.

Table 2 presents summary statistics of these different local bias measures. In my paper, I define a local firm as a firm headquartered in the same state as the fund state. My results show that on average 6.2% of the state pension funds are invested in local firms, whereas the weight of local firms in the market portfolio is 5.5%. The mean local bias is 0.26, and the median is 0.17. I find that state pension funds tend to overweight local firms that make PAC contributions by 23% and local firms that lobby by 17% compared with the market portfolio. The local bias measure and local political connection measure are positively and significantly correlated.[45]

[45] In my unreported analysis, the correlation between the dependent variables which are the political bias measures and some key independent variables like PAI, Public Integrity Index, or Congressional Connection is not highly correlated in either direction. This also implies that my results are not driven by the spurious or endogenous correlations of my measures.

Table 2: Summary Statistics of Local Bias

This table presents summary statistics of local bias in state public pension funds at the end of each year. Panel A presents different measures of local bias, and Panel B presents the correlations of different local bias measures. Local firms are defined as firms headquartered in the same state as the fund. Local contribution firms are local firms that make contributions to local politicians. Local firms lobbying are local firms that lobby. I first calculate the weight of local firms (local contribution firms or local firms lobbying) invested in a fund. I then compute the weight of all local firms (all local contribution firms or all local firms lobbying) in the market. Ratio #1, the first bias measure, is computed as the ratio of the weight of local firms in the fund over the weight of all local firms in the market minus one. Ratio #2, the second bias measure, is computed as the natural logarithm of the ratio of the weight of local firms in the fund over the weight of all local firms in the market. P-values from the Pearson's correlation are presented in parentheses.

Panel A Summary Statistics

	Local Firms		Local Contribution Firms		Local Firms Lobbying		Local Bias		Local Contribution Bias		Local Lobbying Bias	
	% of Fund	% of Market	% of Fund	% of Market	% of Fund	% of Market	Ratio #1	Ratio #2	Ratio #1	Ratio #2	Ratio #1	Ratio #2
Year	(1)	(2)	(3)	(4)	(5)	(6)	$\frac{(1)}{(2)}$ -1	$Ln\frac{(1)}{(2)}$	$\frac{(3)}{(4)}$ -1	$Ln\frac{(3)}{(4)}$	$\frac{(5)}{(6)}$ -1	$Ln\frac{(5)}{(6)}$
12/31/1999	6.07	5.52	2.56	2.64	3.07	3.35	0.57	0.27	0.34	-0.04	0.15	-0.04
12/31/2000	5.55	5.19	2.61	2.71	2.82	3.24	0.39	0.17	0.34	0.13	0.31	0.05
12/31/2001	5.65	4.87	2.56	2.60	2.79	3.07	0.33	0.17	0.20	0.02	0.16	0.00
12/31/2002	5.19	4.64	2.78	2.72	2.98	3.01	0.17	0.09	0.14	0.05	0.12	0.01
12/31/2003	6.60	5.60	3.41	3.15	3.87	3.64	0.21	0.13	0.18	0.08	0.18	0.10
12/31/2004	6.47	5.40	3.43	3.13	3.84	3.54	0.20	0.20	0.13	0.13	0.10	0.11
12/31/2005	6.52	5.52	3.44	3.07	4.13	3.69	0.09	0.14	0.12	0.14	0.04	0.07
12/31/2006	6.30	5.57	3.57	3.15	4.15	3.78	0.12	0.16	0.10	0.11	0.06	0.09
12/31/2007	6.91	5.82	4.50	3.40	5.11	4.10	0.36	0.27	0.38	0.30	0.31	0.25
12/31/2008	6.56	6.04	4.35	3.60	4.97	4.09	0.22	0.14	0.34	0.24	0.29	0.20
12/31/2009	6.64	6.01	4.24	3.34	4.89	4.05	0.21	0.08	0.31	0.17	0.22	0.09
1999-2009	6.23	5.47	3.41	3.05	3.88	3.60	0.26	0.17	0.23	0.12	0.17	0.08

Panel B Correlations of Different Bias Measures

	Local Bias #1	Contribution Bias #1	Lobbying Bias #1		Local Bias #2	Contribution Bias #2	Lobbying Bias #2
Local Bias #1	1.000			Local Bias #2	1.000		
Contribution Bias #1	0.563	1.000		Contribution Bias #2	0.488	1.000	
	(0.000)				(0.000)		
Lobbying Bias #1	0.647	0.874	1.000	Lobbying Bias #2	0.629	0.873	1.000
	(0.000)	(0.000)			(0.000)	(0.000)	

Chapter Ten: Empirical Analysis

Local Firms' Pre-holding and Holding Performance

In order to validate my political connection hypothesis, I analyze local firms' one-year pre-holding and holding period performance by comparing local firms held by state pension funds with a sample of local benchmarks. I construct local benchmarks using an approach similar to that of Daniel, Grinblatt, Titman, and Wermers (1997). I first group firms into 25 portfolios based on firm size and book-to-market ratio. Unlike Daniel et al (1997), I use industry instead of the momentum factor. I construct portfolios which contain both local benchmarks not held by state pension funds and local firms held by state pension funds. Because the length of the holding period for each firm can vary substantially, I run monthly time series regressions by applying a calendar time portfolio approach. I use the Fama-French three factor model and the Fama-French three factor model plus the Carhart's (1997) momentum factor to estimate alpha. The results presented in Table 3 are from the four factor model.

From Table 3, I find that although non-politically connected local firms held by state pension funds underperform non-politically connected local benchmarks not held by these funds, their performance continues to fall during the holding period. So my evidence does not fully support the information advantage hypothesis.[46] Next, my results show that politically connected local firms held by state pension funds do not exhibit better performance compared with non-politically connected local firms held by state pension funds or compared with their politically connected local benchmarks not held by state pension funds before the holding period. During

[46] Brown et al. (2010) compares local firms held by state pension funds and non-local benchmarks not held by these funds. I take a different approach in my study.

the holding period, I see an improvement (from negative to positive) in the performance of politically connected local firms held by state pension funds even though they do not surpass their politically connected benchmarks not held by state pension funds. This provides some support for my political connection hypothesis. These politically connected local firms are not added to state pension funds by trustees because of their outstanding past performance, but their performance improves after being held by home-state pension funds.

Table 3: Local Firms' Pre-Holding and Holding Period Performance

This table compares local firms held by state pension funds with their benchmarks not held by the funds. Benchmark firms are matched with firms held by state pension funds on size, book to market, and industry. Panel A presents results for the one-year pre-holding performance, Panel B presents results for holding period performance, Panel C presents the holding duration in quarters from the first buy to the last sell or the last report date in my sample period. I apply the monthly time-series Fama-French three factor model plus the Carhart's (1997) momentum factor. The dependent variable is the value-weighted portfolio return. Contribution Firms are local firms that have made PAC contributions in the past election cycle. Firms Lobbying are local firms that have lobbied in the past year. I report annualized alphas (intercepts) and t-values (in parentheses) from time-series regressions after correcting for heteroskedasticity.

	Firms in Funds	Benchmarks Not in Funds	Firms in Funds	Benchmarks Not in Funds	Firms in Funds	Benchmarks Not in Funds
Contribution Firms	No	No	Yes	Yes	No	No
Firms Lobbying	No	No	No	No	Yes	Yes
Panel A One-Year Pre-holding Performance						
Alpha	0.0338	0.0707	-0.0384	0.0277	-0.0152	0.0602
t	(0.94)	(1.29)	(-0.70)	(0.42)	(-0.29)	(0.95)
R^2	0.8769	0.8344	0.6731	0.5666	0.6779	0.6398
Panel B Holding Period Performance						
Alpha	-0.0112	-0.0190	0.0136	0.0139	0.0193	0.0320
t	(-0.62)	(-0.59)	(1.06)	(0.75)	(1.67)	(1.66)
R^2	0.9559	0.9050	0.9594	0.9261	0.9719	0.9355
Panel C Holding Duration in Quarters						
Mean	12.94		23.57		21.93	
Median	9.00		24.00		20.00	

Local Bias and State Public Pension Fund Performance

Brown et al (2010) find that local firms outperform non-local firms, implying that state pension funds have an information advantage about local stocks. If political connections play an important role in influencing state pension funds' stock selection decisions, I expect that these political connected stocks have negative impact on fund performance. But if trustees of state

pension funds can gather some inside information about these politically connected firms through their social connections, I might see an opposite impact. Following a similar approach taken by Seasholes and Zhu (2010), I run an ordinary least squares (OLS) regression clustered on quarter in the following model[47]:

$$\text{Portfolio Return}_{it} = b_0 + b_1 * \text{Local Bias}_{it-1} \text{ (or Local Contribution Bias}_{it-1} \text{ or Local Lobbying Bias}_{it-1}) + b_2 * \text{Portfolio Return}_{it-1} + b_3 * \text{Ln (Total Assets)}_{it-1} + b_4 * \text{Trading Return}_{it-1} + b_5 * \text{Portfolio Turnover}_{it-1} + b_6 * \text{State GDP Growth Rate}_{iy-1} + b_7 * \text{Corporate Net Income Taxes}_{it-1} + b_8 * \text{Conviction Rate}_{iy-1} + b_9 * \text{State Dependence on Government Spending}_{iy-1} + b_{10} * \text{Union}_{iy-1} + \varepsilon_{it-1} \quad (1)$$

where *Portfolio Return*, local bias measures, *Total Assets*, and *Portfolio Turnover* are quarterly observations. *State GDP Growth Rate*, as a proxy for local economic growth, is the percentage change in state real GDP from the Bureau of Economic Analysis (BEA). *Corporate Net Income Taxes* is quarterly corporate net income taxes collected by a state divided by the total state tax revenues in the previous quarter.

Conviction Rate is a proxy for the level of corruption in a state, defined as the number of convictions of state politicians divided by the total population (in millions) in a state in the previous year.[48] *State Dependence on Government Spending* is calculated as the total sales of firms in industries that depend on government spending divided by the total sales of all industries in a state. *Union*, as constructed by Hirsch, Macpherson, and Vroman (2001),[49] is the percentage of non-agricultural employees who are union members in each state.

[47] As suggested by Thompson (2011), standard errors clustering on both firm and time are noisy if either dimension has very few clusters. I therefore cluster on quarter which has many more clusters than pension funds. Furthermore, I choose to estimate cluster corrected standard errors to allow for persistent common shocks within the fund, for example, the Public Integrity Index in my study. I also conduct robustness checks on whether this measure is efficient in Table 11.

[48] The number of convictions is collected from the U.S. Department of Justice Public Integrity Section (http://www.usdoj.gov/criminal/pin/). State population information is gathered from the U.S. Census Bureau.

[49] The union membership provided by Hirsch, Macpherson, and Vroman (2001). The data includes private sector employees. As suggested by the 2012 data published by the Bureau of Labor Statistics, private sector union members only account for 6.6%. So I believe that this is still good proxy to estimate the impact of public section union membership.

Table 4: Local Bias and State Pension Fund Performance

This table explains state pension fund performance with OLS regressions. The dependent variable is the quarterly value-weighted portfolio return for the fund. The different measures of local bias are as defined in Table 2. Lag (Portfolio Return) is the lagged portfolio return from the previous quarter. Ln (Total Assets) is the natural logarithm of total assets in the previous quarter. Trading Return is returns on buys minus forgone returns on sells assuming that trades are executed at each quarter end. Portfolio turnover is the sum of total buys and total sells minus net flows and then scaled by Total Assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Corporation Net Income Taxes is the ratio of corporation net income taxes over total tax revenues in a state. Conviction Rate is the number of convictions of politicians divided by state population in millions. State Dependence on Government Spending is calculated as the total sales of firms in industries that depend on government spending divided by total sales of all industries in a state. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Local Bias #1	-0.007					
	(-0.79)					
Local Bias #2		-0.012				
		(-1.54)				
Local Contribution Bias #1			-0.016***			
			(-2.94)			
Local Contribution Bias #2				-0.014*		
				(-1.92)		
Local Lobbying Bias #1					-0.022***	
					(-4.25)	
Local Lobbying Bias #2						-0.018**
						(-2.52)
Lag (Portfolio Return)	0.049	0.055	0.041	0.046	0.044	0.048
	(0.33)	(0.37)	(0.28)	(0.31)	(0.30)	(0.33)
Ln (Total Assets)	-0.006*	-0.005	-0.005	-0.004	-0.005	-0.004
	(-1.77)	(-1.34)	(-1.61)	(-1.09)	(-1.52)	(-1.14)
Trading Return	0.336**	0.370**	0.339**	0.372**	0.347**	0.378**
	(2.02)	(2.20)	(2.03)	(2.20)	(2.11)	(2.26)
Portfolio Turnover	-0.022	-0.023	-0.030	-0.033	-0.026	-0.031
	(-0.83)	(-0.88)	(-1.05)	(-1.15)	(-0.95)	(-1.09)
State GDP Growth Rate	-0.431	-0.429	-0.457	-0.462	-0.458	-0.458
	(-0.99)	(-1.00)	(-1.05)	(-1.06)	(-1.07)	(-1.06)
Corporation Net Income Taxes	0.241	0.248*	0.258*	0.240	0.253*	0.236
	(1.63)	(1.67)	(1.75)	(1.59)	(1.71)	(1.57)
Conviction Rate	-0.019	0.039	0.067	0.099	0.034	0.088
	(-0.18)	(0.41)	(0.63)	(0.89)	(0.31)	(0.84)
State Dependence on Government Spending	0.021	0.021	0.015	0.016	0.011	0.015
	(0.97)	(1.03)	(0.71)	(0.80)	(0.53)	(0.75)
Union	-0.033	-0.027	-0.043	-0.045	-0.031	-0.033
	(-0.49)	(-0.38)	(-0.62)	(-0.63)	(-0.44)	(-0.45)
Intercept	0.078*	0.069	0.075*	0.063	0.074*	0.065
	(1.87)	(1.34)	(1.80)	(1.23)	(1.76)	(1.25)
N	650	639	650	639	650	639
R^2	0.0592	0.0639	0.0646	0.0672	0.0714	0.0686

Table 4 provides evidence that *Local Bias* has a negative effect on pension fund performance after I control for other fund and state characteristics; however, the impact is insignificant. Table 4 also shows that the politically connected equity portion of pension fund

investments has a significant and negative impact on pension fund performance. If *Local Contribution Bias* increases by one standard deviation, fund performance decreases by about 0.83 basis points. If *Local Lobbying Bias* increases by one standard deviation, the fund performance declines by about 1.2%. My results also show that large pension funds have poor performance. *Portfolio Turnover*, *State GDP Growth Rate*, *Conviction Rate*, and *Union* are insignificant in explaining pension fund performance.[50]

State Political Characteristics and Local Bias

Several studies such as Brown et al (2012) and Hochberg and Rauh (2013) show that the magnitude of corruption in a state is significant in explaining local bias.[51] The policy and governance profiles can also be very different across states in the United States. The State Integrity Investigation Project (SIIP) provides an aggregate measure and also sub-measures of the public integrity based on evaluations on the effectiveness of policies or regulations in many areas like political financing, pension fund management, and ethics enforcement (see Appendix A3 for indicators about the sub-categories). The SIIP states, "The project's final indicators assess the existence, effectiveness, and citizen access to key governance and anti-corruption mechanisms in the fifty states. They seek to diagnose the strengths and weaknesses of the medicine applied against corruption in each state – openness, transparency, and accountability – rather than the disease of corruption itself."[52]

[50] I collect the composition of board trustees from the annual financial reports published on the website by the retirement system of each state on its own website and test whether trustee characteristics impact fund performance in Appendix A3. Consistent with Useem and Mitchell (2000) and Harper (2008), my results don't show that trustee characteristics are significantly related to fund performance. In details, I construct two variables, the percentage of elected trustees and the percentage of ex-officio trustees, and find that neither of them is significant in predicting fund performance. These results are presented in Appendix A3.

[51] The common proxy for corruption used by these two studies is the conviction rate, which is the number of public officials convicted of corruption divided by the population in a state.

[52] This website provides details on how the scores of public integrity are constructed: http://www.stateintegrity.org/methodology.

Table 5: Public Integrity and Local Bias in State Pension Funds

This table provides summary statistics of local bias measures based on the public integrity score cards provided by the State Integrity Investigation Project. The overall grade of public integrity categories is used as the Public Integrity Index which measures a state's policy and governance effectiveness from low to high. It is computed as the inverse of the aggregate public integrity ranks (from 1 to 50) of the fifty states. Political Financing Index and Pension Fund Management Index, and Ethics Enforcement Index, three other components of the integrity measures, are also constructed in a similar approach. Political Financing Index measures the effectiveness of state campaign financing policies. Pension Fund Management Index measures the effectiveness of state pension fund management policies. Ethics Enforcement Index measures the effectiveness of state ethics commission policies. Panels A through D provide average local bias ratios based on tercile groups of my four integrity indices separately. *t*-statistics are provided in the parentheses below the means.

	Local Bias		Local Contribution Bias		Local Lobbying Bias	
	Ratio #1	Ratio #2	Ratio #1	Ratio #2	Ratio #1	Ratio #2
Panel A Tercile Groups of Public Integrity Index						
1(low)	0.31	0.24	0.40	0.30	0.31	0.24
	(12.70)	(14.19)	(16.72)	(19.09)	(13.02)	(14.73))
2	0.32	0.14	0.23	0.06	0.20	0.06
	(7.14)	(4.65)	(6.83)	(1.76)	(5.71)	(1.86)
3(high)	0.03	0.11	-0.08	-0.13	-0.06	-0.09
	(0.98)	(5.23)	(-1.65)	(-2.30)	(-1.36)	(-1.72)
Panel B Tercile Groups of Political Financing Integrity Index						
1(low)	0.30	0.26	0.33	0.29	0.24	0.22
	(6.06)	(8.24)	(6.66)	(9.80)	(5.05)	(7.62)
2	0.27	0.14	0.19	0.09	0.18	0.09
	(7.18)	(5.82)	(9.61)	(3.32)	(6.67)	(4.11)
3(high)	0.23	0.16	0.24	0.04	0.17	0.02
	(8.04)	(6.27)	(4.79)	(0.71)	(4.47)	(0.35)
Panel C Tercile Groups of Pension Fund Management Integrity Index						
1(low)	0.17	0.13	0.27	0.21	0.20	0.16
	(4.94)	(5.22)	(7.78)	(7.50)	(6.07)	(5.30)
2	0.47	0.28	0.23	0.14	0.27	0.17
	(7.04)	(8.77)	(8.69)	(4.10)	(5.77)	(6.23)
3(high)	0.22	0.14	0.20	0.02	0.13	0.01
	(9.38)	(5.41)	(5.41)	(0.55)	(4.59)	(0.20)
Panel D Tercile Groups of Ethics Enforcement Integrity Index						
1(low)	0.27	0.18	0.44	0.30	0.31	0.20
	(9.86)	(8.10)	(14.17)	(12.04)	(11.61)	(8.10)
2	0.06	0.13	0.11	0.19	0.08	0.16
	(1.53)	(6.10)	(3.04)	(10.77)	(2.22)	(8.26)
3(high)	0.35	0.18	0.05	-0.11	0.11	-0.04
	(7.37)	(6.04)	(1.65)	(-2.70)	(2.82)	(-1.09)

I named the aggregate measure of public integrity as the *Public Integrity Index*, and the other three measures as *Political Financing Integrity Index*, *Pension Fund Management Integrity Index*, and *Ethics Enforcement Integrity Index*. To compute the indices, I take the inverse of the public integrity ranks of the fifty states in the U.S., so a higher index score indicates higher

integrity.[53] Table 5 provides univariate analysis of the relation between local bias measures and public integrity indices. I find that the extent of political connection biases is stronger for states with all public integrity indices, and the pattern is clear and monotonic. However, for *Local Bias*, I do not observe a monotonic pattern in the relation between *Pension Fund Management Integrity Index* and *Ethics Enforcement Integrity Index*. These findings together suggest that local bias of politically connected stocks is stronger when state governance and regulation mechanisms are less effective.

I next conduct multivariate analysis on the relation between local biases and political factors, governance and anti-corruption mechanisms, and board characteristics. I profile the political characteristics in a state with the following measures: *Public Integrity Index*, *Politician Turnover Rate* and *Political Homophily* between local politicians and citizens.[54] Below is my model:

$$\text{Local Bias Measures}_{it} = b_0 + b_1 * \text{Public Integrity Index}_i + b_2 * \text{Politician Turnover Rate}_{iy-1} + b_3 * \text{Political Homophily}_{it-1} + b_4 * \text{Conviction Rate}_{iy-1} + b_5 * \text{Corporation Net Income Taxes}_{it-1} + b_6 * \text{Ln (Total Assets)}_{it-1} + b_7 * \text{State GDP Growth Rate}_{iy-1} + b_8 * \text{Union}_{iy-1} + \varepsilon_{it-1} \quad (2)$$

where the *Public Integrity Index* is as described in the previous sessions. I expect a negative relation between the *Public Integrity Index* and local biases. *Politician Turnover Rate* is computed as the percentage of newly elected senators, representatives, and governors in a state. I expect that local bias is stronger for states with higher politician turnover rate because local firms with lower information asymmetry might be a safety net for these new politicians or because these new politicians need to return the favor they have received from local politically connected firms during their election.

[53] The original rank is one for the state with the highest integrity scores, and the rank is fifty for the lowest.
[54] I appreciate Jungchul Park's willingness to share data on Conviction Rate and Political Homophily.

Another important variable I use is *Political Homophily*, which is the inverse of the ideology distance between the state governments and their citizens.[55] The higher the homophily measure is, the stronger the tie between state politicians and citizens in that state. For states with high political homophily, state politicians are more likely to work for their local citizens' interests in terms of launching new policies and legislation. In this case, I expect *Political Homophily* to be negative in predicting local bias. However, firms' political activities might disalign the interests between local politicians and their citizens, leading to politicians working for the interests of local firms. For this scenario, I expect a positive relation between *Political Homophily* and political connection bias.

Consistent with previous studies, I expect the coefficient of *Conviction Rate* to be positive. I don't have a clear prediction for the sign of *State GDP Growth Rate*.[56] Nevertheless, I do not hypothesize a positive relation between *State GDP Growth Rate* and political connection bias measures if political connection is an important driver in local bias but not the economic performance of the industries in that area. *Union* is union density measured at the state level. Local labor unions, which represent state workers' rights, are more likely to protect local industries. I expect *Union* to be positively related to *Local Bias*. Union members are big supporters of politicians, thus I also expect the coefficient of *Union* to be positive.

Table 6 presents my findings from OLS regressions on different measures of local bias. Consistent with my predictions, I find that *Public Integrity Index* is negatively related to *Local Bias*. In states with high public integrity, state pension funds tend to invest less in local firms perhaps in consideration of the overall fund performance. Consistent with Brown et al. (2012)

[55] Prof. Richard Fording's website at the University of Kentucky provides the information on ideology scores: http://www.uky.edu/~rford/stateideology.html.

[56] For example, some pension funds might invest in local firms with poor performance to support local economy.

and Hochberg and Rauh (2013), local bias (*Local Bias #2*) is higher in more corrupt states as measured by *Conviction Rate*. *Corporate Net Income Taxes* are significant, so state pension funds are more likely to support local firms that can generate more tax revenues in their states. *Political Homohily* is negative but almost insignificant in explaining *Local Bias*. Both *Politician Turnover Rate* and *State GDP Growth Rate* are insignificant, thus local fundamentals are not the reason for the over-allocation of home-state firms in state pension funds.

Table 6: Factors That Explain Local Bias at the State Level

This table shows OLS regressions on state-level factors that affect local bias of state public pension funds. The dependent variable is different measures of local bias as defined in Table 2. Public Integrity Index measures a state's effectiveness on governance and anti-corruption mechanisms from low to high. Politician Turnover Rate is the turnover rate of state politicians including senators, representatives, and governors. Political Homophily is the inverse of the distance of political ideology between government officials and state citizens. Conviction Rate is the number of convictions of politicians divided by state population in millions. Corporation Net Income Taxes is the ratio of corporation net income taxes over total tax revenues in a state. Ln (Total Assets) is the natural logarithm of total assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Local Bias #1	Local Bias #2	Local Contribution Bias #1	Local Contribution Bias #2	Local Lobbying Bias #1	Local Lobbying Bias #2
Public Integrity Index	-1.338***	-0.628***	-1.729***	-1.794***	-1.497***	-1.417***
	(-7.22)	(-5.25)	(-6.00)	(-6.22)	(-5.09)	(-5.22)
Politician Turnover Rate	-0.120	0.004	-0.024	0.045	-0.035	-0.060
	(-0.97)	(0.05)	(-0.26)	(0.53)	(-0.35)	(-0.64)
Political Homophily	-0.376*	-0.158	-0.881***	-0.500***	-0.672***	-0.400**
	(-1.75)	(-1.17)	(-4.06)	(-2.66)	(-2.84)	(-2.01)
Conviction Rate	-0.191	1.795***	4.627***	5.225***	2.263**	3.679***
	(-0.14)	(3.03)	(4.42)	(4.84)	(2.13)	(4.33)
Corporation Net Income Taxes	3.892***	2.853***	4.403***	3.615***	3.185***	2.533***
	(7.09)	(6.79)	(7.13)	(6.54)	(6.32)	(5.55)
Ln (Total Assets)	-0.028	-0.071***	0.019	0.025	0.017	-0.007
	(-1.09)	(-4.56)	(0.85)	(1.63)	(0.79)	(-0.44)
State GDP Growth Rate	0.247	-0.244	-2.264***	-3.117***	-1.946***	-2.314***
	(0.34)	(-0.44)	(-3.90)	(-3.59)	(-3.02)	(-3.01)
Union	1.532***	1.580***	-0.162	-0.079	0.590*	0.733***
	(4.07)	(7.39)	(-0.58)	(-0.26)	(1.83)	(2.87)
Intercept	1.899*	1.178**	3.839***	2.007**	2.893***	1.799**
	(1.79)	(2.06)	(3.72)	(2.45)	(2.63)	(2.09)
N	668	657	668	657	668	657
R^2	0.1083	0.1794	0.1821	0.1655	0.1266	0.1503

From the models to predict *Local Contribution Bias* and *Local Lobbying Bias*, I find that the *Public Integrity Index* is significantly negative, which is consistent with my hypothesis. When state governance and regulation mechanisms are more effective, there is substantially less overweighting of politically connected local firms. *Political Homophily* is negatively and significantly related to local political connection biases, implying that if there is strong ideology alignment between local politicians and state citizens, firms' corporate political strategies are less effective in buying local politicians' favor. My results also show that for more corrupt states (with a higher *Conviction Rate*), state pension funds are more likely to hold more shares of firms headquartered in states. Local economic growth (*State GDP Growth Rate*) in the previous period is negatively related to local political connection biases. Union is not significant in explaining *Local Contribution Bias* but is positively related to *Local Lobbying Bias*.

Political Networks and Local bias

I hypothesize that if local politicians are more influential in the Congress and thus can pass bills or legislation that are more likely to benefit the local economy and local businesses, the extent of local bias will increase. I use *Congressional Connection*, which is the connectedness measure constructed by Fowler (2006)[57] as a proxy for local politicians' power in Congress and examine the impact of political networks on local bias in a model similar to Equation (2).

From Table 7, I see that *Congressional Connection* is significantly related to local bias, but there is also a strong and positive impact on local political connection biases. This finding has two implications. One is that influential politicians in the Congressional network might be able to help pass more bills that will benefit firms in their homes states, and state public pension funds might invest in these firms for their future growth opportunities. The second is that

[57] I collect information on cosponsorship networks from James Fowler's website, http://jhfowler.ucsd.edu/cosponsorship.htm. The *Congressional Connection* is constructed as an average of the connectedness measures of local politicians in a state.

influential politicians might be able to use their power to impose pressure on pension trustees to return favors to politically connected local firms because these firms have provided financial support to politicians. Public Integrity Index remains negative and significant after we control for congressional connections.

Table 7: Political Connections and Local Bias

This table shows OLS regressions of political connections on local bias of state public pension funds. The dependent variable is different measures of local bias as defined in Table 2. Congressional Connection is the connectedness measure constructed by Fowler (2006). Public Integrity Index measures a state's effectiveness on governance and anti-corruption mechanisms from low to high. Politician Turnover Rate is the turnover rate of state politicians including senators, representatives, and governors. Political Homophily is the inverse of the distance of political ideology between government officials and state citizens. Conviction Rate is the number of convictions of politicians divided by state population in millions. Corporation Net Income Taxes is the ratio of corporation net income taxes over total tax revenues in a state. Ln (Total Assets) is the natural logarithm of total assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Local Bias #1	Local Bias #2	Local Contribution Bias #1	Local Contribution Bias #2	Local Lobbying Bias #1	Local Lobbying Bias #2
Congressional Connection	1.254***	0.722***	0.953**	1.108**	1.414***	1.027**
	(3.92)	(2.80)	(2.06)	(2.41)	(3.62)	(2.10)
Public Integrity Index	-1.155***	-0.243	-2.381***	-2.229***	-1.927***	-1.751***
	(-3.56)	(-1.02)	(-4.88)	(-4.89)	(-5.14)	(-5.52)
Politician Turnover Rate	-0.306	-0.150	0.0561	0.175	-0.0293	-0.0783
	(-1.29)	(-1.03)	(0.30)	(1.19)	(-0.14)	(-0.47)
Political Homophily	-0.927***	-0.353*	-1.608***	-0.888***	-1.484***	-0.936***
	(-3.87)	(-1.69)	(-7.49)	(-3.33)	(-8.66)	(-4.07)
Conviction Rate	-3.733***	0.908	4.714***	7.428***	0.632	4.343***
	(-3.01)	(1.24)	(2.87)	(4.61)	(0.48)	(3.47)
Corporation Net Income Taxes	4.057***	2.676***	4.444***	2.972***	2.428***	1.605***
	(5.36)	(5.37)	(4.49)	(3.56)	(3.56)	(2.91)
Ln (Total Assets)	-0.007	-0.028	0.024	0.074***	0.043**	0.043**
	(-0.27)	(-1.48)	(1.27)	(5.90)	(2.50)	(2.46)
State GDP Growth Rate	2.133*	-0.191	-2.525***	-4.822***	-2.101***	-3.379***
	(1.67)	(-0.28)	(-3.80)	(-4.28)	(-3.10)	(-4.48)
Union	2.519***	2.090***	-0.565	-0.571	0.818**	0.682**
	(5.35)	(7.78)	(-1.48)	(-1.30)	(2.17)	(2.53)
Intercept	3.756***	1.407	6.844***	3.034**	5.981***	3.509***
	(3.00)	(1.58)	(6.52)	(2.50)	(7.59)	(3.36)
N	423	417	423	417	423	417
R^2	0.1936	0.2299	0.274	0.2531	0.2343	0.2566

Trustee Characteristics and Local Bias

Even though certain trustee characteristics related to board composition cannot explain fund performance after I control for many other factors as can be seen from my results in Appendix A3 and other studies like Useem and Mitchell (2000), Harper (2008), I explore whether the composition of trustees is related to the portfolio allocation characteristics in state pension funds. I hand collect the composition of board trustees from the annual financial reports published on the website by the retirement system of each state and construct these two variables, *Elected Trustees* and *Ex-officio Trustees* where *Selected Trustees* is the percentage of trustees elected by state employees from various organizations and *Ex-officio Trustees* is the percentage of ex-officio trustees who have important positions like state treasurer, state comptroller, or even the governor.

I expect the coefficient of *Elected Trustees* to be negative and *Ex-officio Trustees* to be positive in the prediction of over-allocation of politically connected local firms by state pension funds because elected trustees serve the interests of state employees or retirees and the majority of ex-officio trustees, maybe politicians too, work for the governor and are under the pressure from local politicians.[58] In my unreported tests, I find that the correlation between *Elected Trustees* and *Ex-officio Trustees* is -78%, so I test these two variables separately in my regressions presented in Table 8. The models I use follow Equation (2) but *Corporate Net Income Taxes* is excluded because this variable has relatively high correlation with several other variables in my smaller sample.

[58] Ex-officio members for few states are superintendent of public instructions which are non-partisan positions. Though the Center for Retirement Research at Boston College provides the number of trustees who are also plan participants, I find that the information related to the number of trustees in their survey is less accurate than the board information from the annual financial report published by each retirement system on its own website. Therefore, I use my hand-collected information about board composition instead although these reports don't provide the number of trustees who are also plan participants.

Table 8: Trustee Characteristics and Local Bias

This table shows OLS regressions of trustee characteristics that affect local bias of state public pension funds. The dependent variable is different measures of local bias as defined in Table 2. Elected Trustees is the percentage of board trustees elected by state employees or retirees. Ex-officio Trustees is the percentage of ex-officio members on the board. Public Integrity Index measures a state's effectiveness on governance and anti-corruption mechanisms from low to high. Politician Turnover Rate is the turnover rate of state politicians including senators, representatives, and governors. Political Homophily is the inverse of the distance of political ideology between government officials and state citizens. Conviction Rate is the number of convictions of politicians divided by state population in millions. Ln (Total Assets) is the natural logarithm of total assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Local Bias #1		Local Contribution Bias #1		Local Lobbying Bias #1	
	(1)	(2)	(3)	(4)	(5)	(6)
Elected Trustees	-0.228***		-0.198**		-0.191**	
	(-2.85)		(-2.35)		(-2.35)	
Ex-officio Trustees		0.012		0.248***		0.164***
		(0.29)		(5.34)		(3.40)
Public Integrity Index	-1.430***	-1.344***	-1.269***	-1.227***	-1.252***	-1.201***
	(-4.61)	(-4.82)	(-4.56)	(-4.74)	(-3.65)	(-3.77)
Politician Turnover Rate	-0.104	-0.113	-0.028	-0.058	-0.039	-0.061
	(-0.72)	(-0.75)	(-0.30)	(-0.60)	(-0.38)	(-0.57)
Political Homophily	0.302	0.307	0.302	0.365	0.003	0.045
	(1.07)	(1.02)	(1.42)	(1.85)	(0.01)	(0.17)
Conviction Rate	-2.728	-2.916	4.289***	3.480**	0.875	0.299
	(-1.48)	(-1.58)	(3.49)	(2.56)	(0.52)	(0.17)
Ln (Total Assets)	0.019	0.020	0.081***	0.073***	0.051*	0.046*
	(0.69)	(0.72)	(4.10)	(3.67)	(1.97)	(1.83)
State GDP Growth Rate	1.178	1.361	-0.485	-0.166	-0.545	-0.289
	(1.00)	(1.06)	(-0.67)	(-0.23)	(-0.57)	(-0.30)
Union	2.640***	2.804***	1.380***	1.170***	1.747***	1.656***
	(5.63)	(5.50)	(5.31)	(4.55)	(4.91)	(4.24)
Intercept	-1.380	-1.534	-2.013*	-2.330**	-0.342	-0.590
	(-0.98)	(-1.03)	(-1.94)	(-2.49)	(-0.25)	(-0.46)
N	471	471	471	471	471	471
R^2	0.1141	0.105	0.1641	0.1803	0.1058	0.1067

We test the first local bias measures for brevity. The first column in Table 8 shows that for retirement systems with a larger percentage of elected trustees elected by state employees (*Elected Trustees*), there is less overweighting of home-state firms. Column (2) shows that the percentage of ex-officio trustees is insignificant in predicting *Local Bias*. Next, in regressions on *Local Contribution Bias* and *Local Lobbying Bias*, the coefficient of *Elected Trustees* is negative and significant, implying that if the elected trustees represent the interests of state employees or

retirees who are more concerned about the performance of the fund, they are less likely to be the big voters to invest in politically connected firms, particularly those with poor performance in the pre-holding period as shown in Table 3. However, *Ex-officio Trustees* is positively and significantly related to local political connection biases. It suggests that ex-officio trustees, perhaps under political pressure, favor local firms who are supportive to home-state politicians.

State Pension Funds' Holding Decisions of Local Firms

In this section, I examine the possible firm-level factors that influence pension funds' asset allocation decisions of these local firms. Local firms have less information asymmetry to local investors, but why poor-performing local firms compared with their benchmarks are more likely to be included in the pension fund portfolio? My explanation is that pension managers show preferences for some local firms over others because of potential political benefits. I use the probit model to conduct my test with a sample that includes all Compustat local firms (local to the state pension fund) with available information to construct the variables I need. I consider commonly used factors in previous studies plus the two proxies I take for political connections. My model takes the following form:

$$HTHLDDUM_{it} = b_0 + b_1 *HTCONTRDUM_{iy-1}(\text{or } HTLOBDUM_{iy-1}) + b_2 *SUEPOS_{it-1} + b_3*PYRRET_{iy-1} + b_4 *TURNOVER_{it-1} + b_5 *LNMKTCAP_{it-1} + b_6 *LNAGE_{iy-1} + b_7 *ROA_{it-1} + b_8 *LNMB_{it-1} + b_9 * \text{DEBT RATIO}_{it-1} + b_{10} *SPDUM_{it-1} + b_{11} *\text{Inverse Mills Ratio} + \varepsilon_{it-1} \quad (3)$$

where *HTHLDDUM* is a dummy which is one if a local firm is held by a state pension fund in a quarter and zero otherwise where a local firm is defined as a firm that is headquartered in the public pension fund state. *HTCONTRDUM* is set to one if a local firm has made PAC contributions to local politicians in the past election cycle and zero otherwise. *HTLOBDUM* is a dummy set to one if a local firm lobbied in the past quarter and zero otherwise. *SUEPOS* is a dummy which is one if earnings surprise estimated using a random walk model is positive and zero otherwise. *PYRRET* is the buy and hold return in the past year. *TURNOVER* is average

turnover computed using daily volume information in the past quarter. *LNMKTCAP* is the natural logarithm of market capitalization. *LNAGE* is the logarithm of age. *ROA* is net income over total assets. *LNMB* is the natural logarithm of the ratio of market equity to book equity. *DEBT RATIO* is the ratio of long-term debt plus current debt over total assets. *SPDUM* is a dummy which is one if a firm is an S&P 500 firm and zero otherwise. Following Petersen (2009) and Thompson (2011), I correct standard errors in my model by clustering on time. I also include the *Inverse Mills Ratio* from the models in Appendix A4 to control for selection bias due to unobserved factors that are not captured in my model.

I expect the coefficients of *HTCONTRDUM* and *HTLOBDUM* to be positive and that politically connected local firms are more likely to be included in the state pension funds compared with other firms. I predict that firms with large size, long existence, and good past performance, high turnover, and high growth opportunities are the attention grabbing firms and are thus more likely to be selected by the state pension funds. I also predict that local firms with fewer attention grabbing factors can also influence investors' holding decision through corporate political strategies, so small local firms should be more likely to be held by a state pension fund if they have political connections with the politicians in a state.

My results in Table 9 provide evidence for my conjecture. As predicted, after controlling for S&P 500 firms, the two proxies for political connections are positively related to the likelihood of a firm to be held by a state pension fund, so political connection plays an important role in explaining pension fund asset allocation decisions. The signs of other variables like *SUEPOS*, *PYRRET*, *LNMKTCAP*, and *DEBT RATIO* are also consistent with my expectations. It is not a surprise to see that S&P firms are positive and significant. The interaction term of political connection proxies and firm size is negative and significant after I conduct the

correction as suggested by Ai and Norton (2003) and Norton, Wang, and Ai (2004). It confirms my hypothesis that small firms can buy investors' attention if they have political ties.

Table 9: State Pension Funds' Holding Decisions of Local Firms

This table presents the results from probit models used to predict the probability for a local firm to be held by a state public pension fund after controlling for selection bias. The dependent variable is one if a local firm is held by a state pension fund and zero otherwise. LOCALDUM is set to one if a firm is headquartered in the pension fund's state and zero otherwise. HTCONTRDUM is set to one if a local firm makes contributions to local politicians in the pension fund's state in year t-1 and zero otherwise. HTLOBDUM is set to one if a local firm lobbies in year t-1 and zero otherwise. SUEPOS is set to one if earnings surprise estimated using seasonal random walk is positive in quarter q-1 and zero otherwise. PYRRET is the previous one year return. TURNOVER is the average monthly share turnover in previous quarter calculated as trading volume over shares outstanding. LNMKTCAP is the logarithm of market capitalization in quarter q-1. LNAGE is the natural logarithm of firm age. ROA is net income over total current assets in quarter q-1. LNMB is the natural logarithm of market equity to book equity ratio in quarter q-1. DEBT RATIO is the sum of long-term debt and current debt over total assets in quarter q-1. SPDUM is one if a firm is an S&P 500 firm and zero otherwise. CONIMR is the inverse mills ratio from the probit model to predict a firm's propensity to make PAC contributions. LOBIMR is the inverse mills ratio from the probit model to predict a firm's propensity to lobby. *p*-values are reported as below. Standard errors are cluster corrected on quarter.

	(1)		(2)		(3)		(4)	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
HTCONTRDUM	0.893	0.000	0.922	0.000				
HTLOBDUM					0.566	0.000	0.397	0.000
SUEPOS	0.346	0.000	0.355	0.000	0.342	0.000	0.300	0.000
PYRRET	0.191	0.003	0.128	0.094	0.191	0.003	0.155	0.138
TURNOVER	-0.098	0.006	-0.118	0.004	-0.096	0.007	-0.106	0.048
LNMKTCAP	0.027	0.000	0.035	0.000	0.027	0.000	0.036	0.000
LNAGE	0.110	0.000	0.042	0.000	0.108	0.000	0.011	0.189
ROA	-0.742	0.000	-0.579	0.000	-0.722	0.000	-0.561	0.000
LNMB	0.009	0.715	0.037	0.261	0.008	0.751	0.113	0.000
DEBT RATIO	-0.767	0.000	-0.764	0.000	-0.770	0.000	-0.704	0.000
SPDUM	0.548	0.000	0.513	0.000	0.486	0.000	0.533	0.000
HTCONTRDUM*LNSIZE	-0.125	0.000	-0.136	0.000				
HTLOBDUM*LNSIZE					-0.070	0.000	-0.053	0.001
CONIMR			0.008	0.649				
Intercept	-2.650	0.000	-2.419	0.000	-2.633	0.000	-1.993	0.000
Pseudo R^2	0.2295		0.2311		0.2294		0.1956	
N	79505		61056		79505		45655	
Corrected Interaction Effect based on Norton, Wang, and Ai (2004)								
Interaction Term	-0.025		-0.03		-0.011		-0.013	
Z-value	(-4.74)		(-4.94)		(-1.94)		(-2.38)	

Table 10: State Pension Funds' Holding Decisions of Non-Local Firms

This table presents probit regressions to predict the probability for a non-local firm to be held by a state public pension fund. The dependent variable is one if a non-local firm is held by a state pension fund and zero otherwise. CONDUM is set to one if a non-local firm makes contributions to the politicians in the pension fund's state in year t-1 and zero otherwise. LOBDUM is set to one if a non-local firm lobbies in year t-1 and zero otherwise. SUEPOS is set to one if earnings surprise estimated using seasonal random walk is positive in quarter q-1 and zero otherwise. PYRRET is the previous one year return. TURNOVER is the average monthly share turnover in previous quarter calculated as trading volume over shares outstanding. LNMKTCAP is the logarithm of market capitalization in quarter q-1. LNAGE is the natural logarithm of firm age. ROA is net income over total current assets in quarter q-1. LNMB is logarithm of market equity to book equity ratio in quarter q-1. DEBT RATIO is the sum of long-term debt and current debt over total assets in quarter q-1. SPDUM is one if a firm is an S&P 500 firms and zero otherwise. CONIMR is the inverse mills ratio from the probit model to predict a firm's propensity to make PAC contributions. LOBIMR is the inverse mills ratio from the probit model to predict a firm's propensity to lobby. *p*-values are reported as below. Standard errors are cluster corrected on quarter.

	(1)		(2)		(3)		(4)	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONDUM	0.999	0.000	0.687	0.011				
LOBDUM					1.066	0.000	0.547	0.000
SUEPOS	0.440	0.000	0.221	0.087	0.440	0.000	0.331	0.107
PYRRET	-0.087	0.024	-0.107	0.018	-0.085	0.027	-0.114	0.057
TURNOVER	0.021	0.000	0.020	0.006	0.019	0.001	0.035	0.001
LNMKTCAP	0.334	0.000	0.497	0.000	0.339	0.000	0.391	0.000
LNAGE	0.300	0.000	0.233	0.000	0.301	0.000	0.231	0.000
ROA	-0.137	0.003	-0.069	0.423	-0.119	0.005	0.132	0.392
LNMB	-0.055	0.048	-0.103	0.048	-0.062	0.025	0.013	0.792
DEBT RATIO	-0.272	0.000	-0.482	0.000	-0.255	0.000	-0.365	0.000
SPDUM	-0.071	0.534	-0.489	0.000	-0.013	0.919	-0.589	0.000
CONDUM*LNSIZE	-0.111	0.006	-0.147	0.000				
LOBDUM*LNSIZE					-0.132	0.000	-0.120	0.000
CONIMR			0.140	0.000				
LOBIMR							0.079	0.038
Intercept	-2.309	0.000	-2.470	0.000	-2.342	0.000	-1.816	0.000
Pseudo R2	0.213		0.275		0.215		0.215	
N	103749		73364		103749		51262	
Corrected Interaction Effect based on Norton, Wang, and Ai (2004)								
Interaction Term	-0.039		-0.026		-0.043		-0.021	
Z-Value	-4.040		-1.070		-6.980		-2.030	

Because firms might self-select to make PAC contributions or engage in lobbying activities, Model 1 and Model 3 in Table 8 might suffer self-selection bias. In order to address this problem, I apply a two stage least squares (2SLS) model. In the first stage, I use a probit model to estimate the probability for a firm to make PAC contributions or lobby and compute the

Inverse Mills Ratio. As seen in Appendix A4, the structure of the probit model on PAC contributions follows Cooper, Gulen, and Ovtchinnikov (2010) with slight modification.[59] I run the probit model year by year to avoid looking-forward bias. In the second stage, I include the inverse Mills ratio as a control for self-selection bias. In Model 2 and Model 3, I use inverse mills ratio from the second stage as a control. I find that my results still hold after I control for self-selection bias.

State Pension Funds' Holding Decisions of Non-Local Firms

Do non-local firms benefit from being politically connected? Many state pension funds still hold a large portion of non-local firms in their portfolios. There are many reasons, such as diversification and profit opportunities, local investors may hold non-local stocks. Local investors are more cautious in investing in non-local stocks compared with local stocks because of information asymmetry. If non-local firms consider the role institutions play as important, they may want to commit to political involvement in order to buy state pension funds' attention. In Table 10, I conduct a similar analysis as in Table 9 and find that for the non-local firms, the probability of being selected into a state pension fund is higher if they lobby or if they make PAC contributions to the politicians in a state. I also find that political connection can help small firms in influencing pension fund managers' stock selection decisions. The signs of the other variables remain consistent.

Local Bias and the Underfunding of State Pension Funds

In this section, I raise questions that may concern most tax payers and current or future retirees. What is the real economic impact of local bias? Does local bias contribute to the underfunding status of public pension funds? Many state pension funds are underfunded, which

[59] I exclude sales and the number of employees because these two variables are highly correlated with a firm's market capitalization.

means that the total liabilities of these funds are greater than their total assets and the fund is inadequate to cover the current or future retirees' pension payments. The underfunding status of state pension funds is related to many factors such as interest rates, unemployment status, and economic growth prospects. The public also blames poor governance by pension trustees for underfunding. Buying campaign support by promising pension benefits might be another cause.

In Table 11, I conduct an analysis of the factors that may drive the underfunding status of state pension funds. The dependent variable is the underfunding ratio computed as the ratio of a retirement plan's total actuarial liabilities divided by total actuarial assets minus one.[60] The main independent variables in this analysis are the different local bias measures. I find that *Local Bias* is negatively related to the underfunding status of state pension funds, suggesting it is not a bad thing to invest in local firms. However, the *Local Contribution Bias* and the *Local Lobbying Bias* are positively related to the underfunding of pension funds, suggesting that political connections are detrimental to the funding status of state pension funds. The underfunded ratio increases by about 1.6% (0.030 x 0.52) when *Local Contribution Bias* (Ratio #1) increases by one standard deviation and increases by about 2.2 % (0.042 x 0.53) when *Local Lobbying Bias* increases by one standard deviation. This implies that for a pension fund with $50 billion of total actuarial assets, one standard deviation increase in the *Local Lobbying Bias* measure, the underfunded portion of the plan increases by about $1.1 billion ($50 billion x 2.2%).

Discount Rate is negative but insignificant, which suggests that discount rates provided by state pension funds are not reliable in estimating the funding status of state pension funds. For

[60] The information on the pension plans' total actuarial assets and total actuarial liabilities is collected from Public Plans Database at the Center for Retirement Research at Boston College. The total actuarial assets here include all investments made by state pension plans including domestic equities, private equities, bonds, and so on. So the total assets here are different from the total assets, which are total equity assets, presented in the Table 1. I only use the total aggregate assets to compute the funding levels.

Table 11: Factors that explain the funding level of state pension funds

This table analyzes factors that affect the funding level of state public pension funds. The dependent variable is the underfunded ratio of a plan, which is computed as the ratio of the total actuarial liabilities of a retirement system over the total actuarial assets of the plan and then minus one. The different measures of local bias are as defined in Table 2. Ln (Total Assets) is the natural logarithm of total assets in the previous quarter. Discount Rate is the investment return assumption provided by retirement plans. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Corporation Net Income Taxes is the ratio of corporation net income taxes over total tax revenues in a state. Conviction Rate is the number of convictions of politicians divided by state population in millions. State Dependence on Government Spending is calculated as the total sales of firms in industries that depend on government spending divided by total sales of all industries in a state. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Local Bias #1	-0.007					
	(-0.56)					
Local Bias #2		-0.017				
		(-0.94)				
Local Contribution Bias #1			0.030**			
			(2.41)			
Local Contribution Bias #2				0.024***		
				(2.65)		
Local Lobbying Bias #1					0.042***	
					(2.94)	
Local Lobbying Bias #2						0.050***
						(5.27)
Ln (Total Assets)	-0.025***	-0.036***	-0.028***	-0.037***	-0.029***	-0.037***
	(-9.47)	(-6.98)	(-11.22)	(-7.67)	(-11.35)	(-8.11)
Discount Rate	-1.941	-1.402	-0.706	-0.586	-0.428	-0.150
	(-1.03)	(-0.74)	(-0.34)	(-0.29)	(-0.22)	(-0.08)
State GDP Growth Rate	-2.036***	-1.932***	-1.946***	-1.891***	-1.884***	-1.839***
	(-7.75)	(-7.60)	(-7.63)	(-7.50)	(-7.47)	(-7.24)
Corporation Net Income Taxes	0.951***	0.902***	0.897***	0.870***	0.859***	0.840***
	(3.49)	(3.22)	(3.27)	(3.07)	(3.11)	(2.97)
Conviction Rate	0.377	0.349	0.254	0.232	0.268	0.176
	(1.11)	(1.06)	(0.81)	(0.73)	(0.81)	(0.54)
Union	-0.519***	-0.445***	-0.528***	-0.474***	-0.528***	-0.485***
	(-4.46)	(-4.82)	(-4.60)	(-4.77)	(-4.62)	(-4.86)
Intercept	0.636***	0.691***	0.558**	0.630***	0.541**	0.600***
	(4.15)	(4.56)	(3.44)	(4.16)	(3.51)	(4.04)
N	471	460	471	460	471	460
R^2	0.1783	0.1895	0.1831	0.1913	0.1886	0.1999

states with better local economic outlook, the underfunding level is lower. For states that are collecting more taxes from corporations, the underfunded ratio is greater, possibly due to the large number of employees in the states or due to the need to collect more taxes to reduce the state budget deficit. In more corrupt states, the underfunded ratio is larger. *Union* is negative and significant, so union members are diligently monitoring the performance of their retirement funds.

Table 12: Robustness Checks on the Measure of Public Integrity

This table replicates Table 6 and Table 7 using a new measure of Public Integrity. The dependent variable is the first measure of local bias as defined in Table 2. Congressional Connection is the connectedness measure constructed by Fowler (2006). New Public Integrity Index is Public Integrity Index multiplied by the number of bills passed in a state for a given quarter. Politician Turnover Rate is the turnover rate of state politicians including senators, representatives, and governors. Political Homophily is the inverse of the distance of political ideology between government officials and state citizens. Conviction Rate is the number of convictions of politicians divided by state population in millions. Corporation Net Income Taxes is the ratio of corporation net income taxes over total tax revenues in a state. Ln (Total Assets)$_{q-1}$ is the natural logarithm of total assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Local Bias #1		Local Contribution Bias #1		Local Lobbying Bias #1	
	(1)	(2)	(3)	(4)	(5)	(6)
Congressional Connection		1.163***		1.083***		1.374**
		(5.45)		(2.90)		(3.26)
New Public Integrity Index	-0.054***	-0.059***	-0.055***	-0.099***	-0.050***	-0.090***
	(-7.09)	(-5.05)	(-4.34)	(-5.75)	(-3.71)	(-6.55)
Politician Turnover Rate	-0.151	-0.210	-0.061	0.166	-0.055	0.100
	(-1.11)	(-0.84)	(-0.57)	(0.78)	(-0.48)	(0.44)
Political Homophily	-0.515**	-0.996***	-1.031***	-1.661***	-0.892***	-1.568***
	(-2.32)	(-4.49)	(-4.54)	(-7.45)	(-3.93)	(-9.16)
Conviction Rate	-1.767	-3.876**	4.510***	5.001***	1.670	0.598
	(-1.38)	(-3.60)	(3.84)	(3.21)	(1.45)	(0.50)
Corporation Net Income Taxes	3.919***	3.900***	3.886***	3.839***	2.835***	2.067***
	(7.46)	(5.96)	(6.38)	(4.81)	(5.42)	(3.49)
Ln (Total Assets)	-0.010	0.001	0.041**	0.042**	0.041**	0.056***
	(-0.38)	(0.02)	(2.02)	(2.36)	(2.03)	(3.29)
State GDP Growth Rate	-0.205	2.227*	-2.939***	-2.482***	-2.885***	-1.998**
	(-0.24)	(1.78)	(-3.74)	(-3.05)	(-3.80)	(-2.47)
Union	1.544***	2.557***	-0.333	-0.483	0.376	0.882**
	(3.76)	(5.46)	(-1.07)	(-1.17)	(1.11)	(2.20)
Intercept	2.390**	3.980***	4.334***	6.796***	3.726***	6.176***
	(2.21)	(3.65)	(4.01)	(6.66)	(3.57)	(8.08)
N	621	423	621	423	621	423
R^2	0.1262	0.1964	0.1799	0.2718	0.1371	0.1371

Robustness Checks

The State Integrity Investigation project started in 2011 and ended in 2012, so using the public integrity index in my analysis might suffer looking-forward bias. To address this problem, I propose a new measure of public integrity index, *New Public Integrity Index*, which is the original measure of public integrity index multiplied by the number of bills that become law in a quarter where the bills are introduced by legislators in a given state. If there is any change in a state's legislative effectiveness, the number of bills that become law will be different over time.[61] As seen in Table 12, the new measure of public integrity index is also negative and significant in explaining local bias in state pension funds after including a time variant component which proxies the change in the policy or regulation effectiveness in a given state.

[61] I collect the bills information from the website of Congressional Bills Project.

Chapter Eleven: Conclusion

Local bias in state pension fund investments has been observed by several studies. Some studies find local stocks held by state pension funds underperform non-local stocks while others find that local holding stocks outperform non-local benchmarks. My study suggests although local bias does not have a negative impact on overall fund performance, the overweighting of politically connected stocks drives down pension fund performance significantly while we control for many other factors such as the size of the fund, state economic status, corruption, et cetera. This finding cannot be explained by the information advantage hypothesis. Local political connection bias also contributes to the underfunding status of state pension funds.

I find that local bias in state pension funds can be explained by state political characteristics and regulation policy effectiveness. My analyses show that in states with lower Public Integrity scores, the local political connection bias is stronger. But the impact of regulation policy effectiveness on local political connection bias becomes positive when the local politicians' congressional connectedness comes in. My explanation is that local politicians might be supporting firms that support them and my evidence suggests that for state pension funds with a higher percent of ex-officio trustees, local political connection bias is stronger but for funds with a higher percent of elected trustees, there is weaker local bias. Furthermore, I conduct an analysis at the firm level and find that a firm's connection with local politicians can influence the state pension fund's holding decision.

My study contributes to the literature in explaining local biases and under-diversification of local investors' investments and implies that state political and governance characteristics can

explain local bias. My work sheds lights on the relation between political networks, part of the social networks, and behavioral biases.

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Appendix A1: Description of State Pension Fund

STATE	NMSHORT	Full Name	Sample Period	Separate Investment Counsel
CA	CALPERS	California Public Employees Retirement System	03/31/1999-12/31/2009	Yes
CA	CALTRS	California State Teachers Retirement System	03/31/1999-12/31/2009	No
CO	COPER	Public Employees Retirement Association of Colorado	03/31/1999-12/31/2009	No
FL	FLRS	State Board of Administration of Florida Retirement System	03/31/1999-12/31/2009	No
KY	KYTRS	Teachers Retirement System of The State of Kentucky	03/31/1999-12/31/2009	No
MI	MIST	State Treasurer State of Michigan	03/31/1999-12/31/2009	Yes
MO	MOERS	Missouri State Employees Retirement System	03/31/1999-03/31/2007	No
NY	NYCRF	New York State Common Retirement Fund	03/31/1999-12/31/2009	No
NY	NYTRS	New York State Teachers Retirement System	03/31/1999-12/31/2009	No
OH	OHPERS	Public Employees Retirement System of Ohio	06/30/1999-12/31/2009	No
OH	OHSTRS	State Teachers Retirement System of Ohio	03/31/1999-12/31/2009	No
PA	PAPSERS	Pennsylvania Public School EMPLS RETRMT SYS	12/31/2000-12/31/2009	No
TX	TXERS	Employees Retirement System of Texas	03/31/1999-12/31/2009	No
TX	TXTRS	Teacher Retirement System of Texas	03/31/1999-12/31/2009	No
VA	VARS	Virginia Retirement Systems Et Al	06/30/1999-12/31/2009	No
WI	WIIB	State of Wisconsin Investment Board	03/31/1999-12/31/2009	No

Appendix A2: Trustee Characteristics and Fund Performance

This table presents the test of trustee characteristics on state pension fund performance. The dependent variable is the quarterly value-weighted portfolio return for the fund. The different measures of local bias are as defined in Table 2. Elected Trustees is the percentage of trustees elected by state employees on the board. Ex-officio Trustees is the percentage of ex-officio members on the board. Lag (Portfolio Return) is the lagged portfolio return from the previous quarter. Ln (Total Assets) is the natural logarithm of total assets in the previous quarter. Trading Return is returns on buys minus forgone returns on sells assuming that trades are executed at each quarter end. Portfolio turnover is the sum of total buys and total sells minus net flows and then scaled by Total Assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Conviction Rate is the number of convictions of politicians divided by state population in millions. State Dependence on Government Spending is calculated as the total sales of firms in industries that depend on government spending divided by total sales of all industries in a state. Union is the percentage of non-agriculture employees who are union members in each state. *t*-values are presented below coefficients. Standard Errors are cluster-corrected on quarter. *, **, and *** indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Elected Trustees	-0.006		-0.010		-0.009	
	(-0.64)		(-0.78)		(-0.87)	
Ex-officio Trustees		-0.002		0.004		0.002
		(-0.32)		(0.60)		(0.33)
Local Bias #1	-0.010	-0.010				
	(-1.07)	(-1.01)				
Local Contribution Bias #1			-0.033***	-0.033***		
			(-3.90)	(-3.89)		
Local Lobbying Bias #1					-0.031***	-0.030***
					(-4.79)	(-4.73)
Lag (Portfolio Return)	0.023	0.023	-0.004	-0.002	0.013	0.014
	(0.15)	(0.15)	(-0.03)	(-0.02)	(0.08)	(0.09)
Ln (Total Assets)	-0.006	-0.006	-0.003	-0.003	-0.004	-0.004
	(-1.65)	(-1.58)	(-0.97)	(-0.98)	(-1.17)	(-1.16)
Trading Return	0.399**	0.397**	0.399**	0.398**	0.408**	0.406**
	(2.27)	(2.25)	(2.26)	(2.26)	(2.35)	(2.34)
Portfolio Turnover	-0.031	-0.034	-0.059	-0.060	-0.036	-0.039
	(-0.65)	(-0.74)	(-1.23)	(-1.27)	(-0.77)	(-0.84)
State GDP Growth Rate	0.017	0.022	0.012	0.018	0.006	0.012
	(0.03)	(0.04)	(0.02)	(0.03)	(0.01)	(0.02)
Conviction Rate	-0.293*	-0.295**	-0.135	-0.151	-0.248	-0.260
	(-1.94)	(-2.00)	(-0.81)	(-0.92)	(-1.50)	(-1.60)
State Dependence on Government Spending	-0.006	-0.006	-0.018	-0.017	-0.018	-0.016
	(-0.22)	(-0.22)	(-0.68)	(-0.62)	(-0.64)	(-0.60)
Union	0.085	0.093	0.089*	0.092*	0.100*	0.105*
	(1.50)	(1.56)	(1.69)	(1.68)	(1.87)	(1.90)
Intercept	0.070	0.066	0.052	0.048	0.059	0.055
	(1.47)	(1.41)	(1.13)	(1.06)	(1.25)	(1.18)
N	466	466	466	466	466	466
R^2	0.0533	0.053	0.0729	0.0724	0.0791	0.0784

Appendix A3: Indicators of the State Integrity Investigation Project

This table provides the indicators used to construct the investigation categories of the public integrity index. This information below is provided by the State Integrity Investigation, which is a project conducted by the Center for Public Integrity, Global Integrity, and PRI Public Radio International.

Investigation Categories	#	Indicators
Political Financing	1	Are there regulations governing the financing of political parties?
	2	Are there regulations governing the financing of individual political candidates?
	3	Are the regulations governing the political financing of parties effective?
	4	Are the regulations governing the political financing of individual candidates effective?
	5	Can citizens access records related to the financing of political parties?
	6	Can citizens access records related to the financing of individual candidates' campaigns?
State Pension Fund Management	1	Are there laws and regulations requiring that state-run pension funds be managed transparently?
	2	Are the laws and regulations requiring that state-run pension funds be managed transparently effective?
	3	Are there regulations governing conflicts of interest of members of the board or the management of the state run pension funds?
	4	In practice, regulations governing conflicts of interest of members of the board or the management of the state-run pension funds are effective?
Ethics Enforcement	1	Are there laws and regulations to promote and protect a professional ethics enforcement agency (or set of agencies)?
	2	Are the laws and regulations to promote and protect a professional ethics enforcement agency (or set of agencies) effective?
	3	Are there regulations governing conflicts of interest by the ethics enforcement agencies?
	4	Are the regulations governing conflicts of interest by the ethics enforcement agencies effective?

Appendix A4 Structure of the probit model

This table provides the structure of the probit model to produce inverse Mills Ratio used to control for self-selection bias. PACDUM is set to one if a firm makes political campaign contributions to the politicians in year t and zero otherwise. LOBDUM is set to one if a firm lobbies in year t and zero otherwise. RELINDPAC is the number of Political Action Committees scaled by the number of firms in an industry by the first two-digit historical SIC codes from Compustat. RELINDLOB is the number of lobbying firms scaled by the number of firms in an industry by the first two-digit historical SIC codes from Compustat. PCTMEM is the percentage of employees who are also union members in an industry. RELGOVSALE is firms' sales to U.S. government scaled by total sales to all customers. Conviction Rate is the number of convictions of politicians scaled by state population in millions. CAPITALDUM is a dummy which is one if a firm's headquarter is located at the state capital and zero otherwise where firms' historical headquarters are collected from Compact Disclosure. REGDUM is a dummy which is one for financial firms (SIC codes 60-69) or utility firms (SIC codes 40-49) and zero otherwise. MKTSHR is a firm's sales scaled by total industry sales. HHI_SALES is the Herfindahl–Hirschman Index computed with sales information where industry groups take the first two-digit historical SIC codes from Compustat. LNAGE is the logarithm of firm age. LNBUSSEG is the logarithm of the number of business segments. LNMKTCAP is the logarithm of market capitalization. LNMB is logarithm of market equity to book equity ratio. DEBT RATIO is the sum of long-term debt and current debt over total assets. FCF is firms' free cash flows divided by total assets.

Variable Names	**PAC Contributions**	**Lobbying**
Dependent Variable		
PACDUM	YES	
LOBDUM		YES
Independent Variable		
RELINDPAC	YES	
PCTMEM	YES	
RELGOVSALE	YES	YES
CONVICTION RATE		YES
CAPITALDUM		YES
RELINDLOB		YES
REGDUM	YES	YES
MKTSHR	YES	YES
HHI_SALES	YES	YES
LNAGE	YES	YES
LNBUSSEG	YES	YES
LNGEOSEG	YES	YES
LNMKTCAP	YES	YES
LNMB	YES	YES
DEBTRATIO	YES	YES
FCF	YES	YES

Appendix A5: Correlations

Congressional Connection is the connectedness measure constructed by Fowler (2006). Public Integrity Index, which measures a state's effectiveness on governance and anti-corruption mechanisms from low to high. Politician Turnover Rate is the turnover rate of state politicians including senators, representatives, and governors. Political Homophily is the inverse of the distance of political ideology between government officials and state citizens. Conviction Rate is the number of convictions of politicians scaled by state population in millions. Corporation Net Income Taxes is the ratio of corporation net income taxes over total tax revenues in a state. Ln (Total Assets)$_{q-1}$ is the natural logarithm of total assets in the previous quarter. State GDP growth rate is the annual percentage change in seasonal adjusted CPI index. Union is the percentage of non-agriculture employees who are union members in each state.

	Congressional Connection	Public Integrity Index	Politician Turnover Rate	Political Homophily	Conviction Rate	Corporation Net Income Taxes	Ln (Total Assets)	State GDP Growth Rate	Union
Congressional Connection	1								
Public Integrity Index	-0.378	1							
Politician Turnover Rate	0.105	0.175	1						
Political Homophily	-0.202	0.048	0.166	1					
Conviction Rate	-0.163	-0.254	-0.018	-0.057	1				
Corporation Net Income Taxes	-0.032	0.409	0.054	-0.023	-0.076	1			
Ln (Total Assets)	-0.328	0.015	-0.161	-0.113	-0.077	0.159	1		
State GDP Growth Rate	-0.094	0.146	0.016	0.056	-0.093	-0.046	0.078	1	
Union	-0.055	0.150	-0.031	-0.180	-0.158	0.520	0.289	-0.306	1