THREE ESSAYS ON CORPORATE GOVERNANCE AND FINANCIAL REPORTING QUALITY

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Dedication

To my parents, Tae Soon Yoon & Chung Eun Lee.

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ABSTRACT

Corporate governance broadly refers to the oversight activities undertaken by internal and external actors to assure a fair distribution of cash flows and wealth transfers among the contracting parties. One of the most important functions of corporate governance is to ensure the integrity of the financial reporting process. A substantial body of work highlights the role of corporate governance mechanisms in curtailing earnings management that stems from managerial opportunism. Prior research has also found a direct link between weak corporate governance and financial misstatements and reporting frauds. While the effects of governance mechanisms on corporate reporting quality are well documented in the extant literature, little is known on the how temporary fluctuations in attention and/or monitoring intensity affect this relation. This dissertation contributes to this thread of literature by investigating the role of corporate governance mechanisms in ensuring the reliability of financial reporting in response to macroeconomic uncertainty and institutional investor inattention.

The first essay examines how economic policy uncertainty (EPU) affects accounting quality in a cross-country setting. We find that accounting quality, measured based on Nikolaev's (2018) model, increases during periods of high policy uncertainty. This relation is confirmed by the negative association between EPU and performance-adjusted discretionary accruals in a multivariate setting, and it extends to various alternative measures of earnings properties. We also find that the positive relation between

EPU and accounting quality is more pronounced for government-dependent firms and firms with higher political risk. Additional analyses based on institutional investors' trading behavior, media freedom, and press circulation suggest that market participants' attention is a mechanism through which EPU affects accounting quality. Further, we find that the positive relation between policy uncertainty and earnings quality is more pronounced for firms in countries with strong institutions, where market participants can monitor management more effectively, and for firms with a greater need for external capital, which increases managers' incentives to meet investors' demand for transparency.

The second essay examines the impact of institutional investor distraction on the costs of debt capital. Using a new measure of shareholder inattention based on exogenous industry shocks to institutional investor portfolios, we document that firms with distracted shareholders are associated with a higher cost of debt financing. This effect is stronger for firms with more powerful CEOs, firms with higher information asymmetry, and those operating in less competitive product markets. Bond covenants, as a mechanism designed to reduce the agency problems inherent in lending, attenuate the increase in bond yield spreads resulting from shareholder distraction. Further testing suggests that the distraction–cost of debt relation is driven by dual holder and non-dual holders. The results are robust to controlling for inattention at the retail investor level and for other external monitors such as credit rating agencies, financial analysts, and Big 4 auditors. Overall, our evidence suggests that shareholder inattention has an incrementally negative effect on bond pricing.

The third essay examines whether and how board cultural diversity affects bond pricing during bad times. Using a novel approach to identify directors' cultural backgrounds based on their ancestral origins, I find that greater cultural diversity within

the board membership and cultural distance between the board—especially the audit committee—and the CEO attenuate the adverse effect of economic policy uncertainty on yield spreads. Further testing shows that the effect of board cultural diversity and cultural distance extends above and beyond the presence of other external monitors such as Big 4 auditors, financial analysts, and long-term institutional investors. I also find corroborative evidence that boards with greater proportion of independent directors, higher female participation and director engagements, and less busy directors moderate the adverse impact of economic policy uncertainty. The results suggest that change in bondholders' assessment of firm performance during periods of high policy uncertainty is a function of differences in board characteristics.

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CHAPTER 1

POLICY UNCERTAINTY AND EARNINGS MANAGEMENT: INTERNATIONAL EVIDENCE[1]

1.1. INTRODUCTION

Although practitioners identify industry- and economy-wide factors as important determinants of accounting quality (Dichev, Graham, Harvey, and Rajgopal 2013), few studies to date have examined how economy-wide factors affect accounting quality. We attempt to fill this gap by examining the relation between policy-induced economic uncertainty and accounting quality in a cross-country setting. Policy-induced economic uncertainty (or economic policy uncertainty, hereafter, EPU) refers broadly to uncertainty about government actions that affect the economic environment. EPU is uncertainty about "who will make economic policy decisions, what economic policy actions will be undertaken and when, and the economic effects of policy actions (or inaction)" (Baker, Bloom, and Davis 2016, 1598).

The likelihood and nature of policy changes depend on the demands of (competing) constituents, as well as the policymaker's ideological preferences and re-election concerns (Alesina 1987, 1988; Wright 1996; Keim 2001). To the extent that investors cannot fully

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anticipate the effect of these competing forces on policy outcomes, they face uncertainty over which policies the government will implement, and ultimately over how they will impact profitability (Pástor and Veronesi 2012, 2013). This is a macro-, or aggregate-level, risk thatapplies to all firms in the economy. Thus, EPU differs from firm-level uncertainty that arises from factors unique to a firm, such as new product development, merger and acquisition activity, or management turnover. Firm-level uncertainty can be influenced by actions taken by managers or investors. In contrast, uncertainty about government economic policy stems largely from regulatory decisions beyond managers' control, and that are therefore unlikely to be influenced by most managers and investors (Nagar, Schoenfeld, and Wellman 2019).

We argue that policy uncertainty affects accounting quality through its effect on investors' attention to firm-specific information. Because of the cost of paying attention, not all investors opt to observe the information signal and be informed (Hirshleifer and Teoh 2003; Hirshleifer, Lim, and Teoh 2011). Uninformed investors infer some firm-specific information from the equilibrium price at no cost. As the variance of future returns increases under high uncertainty, the informativeness of the stock price decreases in economy-wide uncertainty. An increase in economy-wide uncertainty has two conflicting effects on investors' incentives to obtain firm-specific information (Andrei, Friedman, and Ozel 2019). On the one hand, it decreases these incentives by reducing the quality of information signals that informed investors observe. On the other hand, it strengthens these incentives by increasing the value of information as uninformed investors cannot easily infer information from the equilibrium price under high uncertainty. Andrei et al. (2019) argue that the second effect likely dominates the first, resulting in greater investor attention to firm-specific information during higher uncertainty episodes.

Prior studies (e.g., Teoh, Welch, and Wong 1998a, 1998b) show that limited investor attention often provides earnings management opportunities. Studies also find that investor inattention loosens monitoring constraints on corporate actions (e.g., Kempf, Manconi, and Spalt 2017; Garel, Martin-Flores, Petit-Romec, and Scott 2019; Abramova, Core, and Sutherland 2019; Basu, Pierce, and Stephan 2019), and weakens corporate governance oversight (Liu, Low, Masulis, and Zhang 2020). Thus, we predict that an increase in investors' attention to firm-specific information during higher-EPU periods motivates managers to improve accounting quality.

We test our prediction on the relation between EPU and accounting quality with data from 19 countries over the 1990–2015 period. We capture EPU with the policy uncertainty index developed by Baker et al. (2016) (hereafter, BBD). Considering that real firm activities that arise in response to EPU (Gulen and Ion 2016; Bonaime, Gulen, and Ion 2018) may affect accruals, separating its effect on accounting quality from its effect on performance is important in our setting. Thus, in the first set of tests, we measure accounting quality based on Nikolaev's (2018) model, which builds on the insights that earnings and cash flows are noisy measures of a firm's true economic performance, and measurement errors reverse over time. Nikolaev (2018) explicitly introduces true performance into the model, which helps better separate the error component of accruals and the performance component of accruals (i.e., adjustments made to reflect economic performance).

We find that the standard deviation of true economic performance is lower during periods of high EPU. We also find that the standard deviations of both the performance and error components of accruals are lower during high-EPU periods. More importantly, the results show that accounting quality is higher under elevated policy uncertainty. Considering that our measure of accounting quality reflects the signal-to-noise ratio of accruals, these results suggest that managers limit their accounting discretion during high-EPU periods. As a result, the accounting system measures performance more accurately during higher- than lower-EPU periods. We also find that accounting quality is higher for periods with longer-duration uncertainty, where EPU duration is defined as the number of consecutive months during the fiscal year in which a country's policy uncertainty index is above the 80th percentile. The fraction of the variance in accruals that is explained by the managed error component is lower when EPU is higher, suggesting that reduced incentives to manage earnings during times of elevated policy uncertainty contribute to an improvement in accounting quality.

Next, we investigate cross-sectional variation in the relation between EPU and accounting quality. Because policy uncertainty, unlike other macro uncertainty, is influenced by the political process, its effect may vary across firms depending on their level of political risk. Exploiting this unique feature of EPU, we examine whether the extent of investors' attention to firm-specific information during periods of high policy uncertainty differs depending on the firm's exposure to political risk. During high-EPU periods, investors are more likely to scrutinize financial information of firms with higher political risk, and such scrutiny would motivate managers to improve accounting quality. Consistent with this prediction, we find that the effect of EPU on accounting quality is more pronounced for firms that are more government-dependent.

In the second set of tests, we complement the analyses based on Nikolaev's (2018) model by examining the effect of EPU on discretionary accruals, a popular measure of earnings management, in a multivariate setting. Nikolaev's (2018) model enables us to control for true economic performance and evaluate the accounting system's ability to measure performance more accurately. But it does not allow us to measure accounting quality and accruals components at the firm-year level. We are thus limited in our ability to evaluate changes in accounting quality over time, to control for other time-varying factors that may affect accounting quality, and to explore the underlying mechanism driving the EPU-accounting quality relation. Considering that earnings management increases noise in accruals, and thus lowers accounting quality, we expect a negative relation between EPU and discretionary accruals. To control for the effect of policy uncertainty on economic performance, we estimate discretionary accruals adjusted for the effect of performance on accruals. The regressions include both firm- and year-fixed effects to control for unobservable heterogeneity across firms and over time. Controlling for factors previously shown to affect earnings management, we find that firms reduce earnings management as policy uncertainty rises.

Then, to address potential endogeneity concerns arising from omitted correlated variables, we conduct an instrumental variables analysis and a placebo test. We use political fractionalization and the exclusion of veto players from the government as instruments. Political fractionalization leaves more room for disagreement in policy decisions (Mian, Sufi, and Trebbi 2014), resulting in higher policy uncertainty. Henisz and Delios (2004) argue that the presence of multiple veto players makes it harder to change the existing policies, and it is thus associated with a lower level of policy uncertainty. The instrumented policy uncertainty variable is significantly and negatively associated with the level of earnings management. Although our results are robust to controlling for endogeneity using an instrumental variables approach, it can be difficult to prove that our instruments satisfy the exclusion restriction. Thus, these results should be interpreted with caution.

Next, we examine whether the relation between EPU and accounting quality extends to other measures of earnings properties. Reinforcing our main inferences, we find that an elevated EPU is associated with a lower level of income smoothing, higher earnings predictability, higher earnings persistence, higher accruals quality, and a lower degree of real earnings management. We also examine the role of firm-level political risk in a multivariate setting. In addition to a firm's government dependence, we use a firm-level political risk measure developed by Hassan, Hollander, van Lent, and Tahoun (2019). We show that the negative relation between EPU and earnings management is more pronounced for more government-dependent firms and firms with higher firm-level political risk.

In the third set of tests, we examine the mechanism underlying the effects of EPU on accounting quality. If firms are closely and continuously monitored by long-term institutional investors, they are likely to maintain high accounting quality, and there is little room for improvement during high-EPU periods. In addition, changes in EPU may not affect these firms because long-term investors rely less on firm disclosures (Bushee and Noe 2000). In contrast, short-term institutional investors, who tend to engage in frequent information-based trading (Yan and Zhang 2009), are likely to pay more attention to corporate disclosures when evaluating firm performance. Consistent with the increased investor attention during high-EPU periods, we find significantly higher investor turnover rates (churn rates) during periods of higher policy uncertainty. We also find that the relation between EPU and earnings management is more pronounced for firms with higher churn rates, and when short-term institutional ownership is higher than long-term institutional ownership. This finding suggests that increased attention to firm-specific information and increased demand for transparency during periods of high EPU, driven by the presence of short-term institutional investors, induces managers to improve accounting quality. Additional analyses show that the effect of EPU on earnings management is more pronounced for firms in countries with greater media freedom and circulation. This reinforces the idea that market participants' attention is a mechanism through which EPU affects accounting quality.

In our final investigation, we find that the legal institutions and the financial reporting environment at the country level, as well as growth opportunities and external financing needs at the industry level, affect the relation between earnings management and policy uncertainty. These findings are consistent with the view that as policy uncertainty increases, market participants become more prudent and in countries with stronger legal institutions and reporting environment, it is easier for outside stakeholders to demand greater transparency. This evidence further supports the idea that firms are motivated to meet investors' demand for higher reporting quality under elevated policy uncertainty when they need external financing and thus have incentives to lower the cost of capital.

This paper makes several contributions to the literature. First, it adds to the burgeoning research that examines the effects of policy uncertainty. Prior studies find that, at a macro level, policy uncertainty influences capital flows, the business cycle, and the speed of economic recovery (BBD 2016; Julio and Yook 2016; Bloom, Floetotto, Jaimovich, Saporta-Eksten, and Terry 2018). Research on how policy uncertainty impacts firm-level decisions, however, is still in its infancy. Gulen and Ion (2016) estimate the effect of policy uncertainty on corporate investment, and Bonaime et al. (2018) relate policy uncertainty to merger and acquisition activity. Several other studies examine the effects of various sources of uncertainty on a firm's information environment (e.g., Bird, Karolyi, and Ruchti 2017; Boone, Kim, and White 2018; Jiang, Pittman, and Saffar 2020; Drake, Mayberry, and Wilde 2018). These studies focus largely on the role of election uncertainty in a U.S. context.

Bird et al. (2017) and Boone et al. (2020), for example, examine managers' disclosure decisions in response to transitory uncertainty around U.S. gubernatorial elections. They find that firms respond to election uncertainty by providing more frequent and informative voluntary disclosures over the pre-election period. Similarly, Dai and Ngo (2018) show that the policy uncertainty induced by U.S. gubernatorial elections increases accounting conservatism. Elections can lead to elevated uncertainty, but policy uncertainty can also rise during non-election years (Gulen and Ion 2016).

We focus on the effect of policy uncertainty beyond election period outcomes and in a broader cross-country setting. Using a continuous measure of policy-induced economic uncertainty, and controlling for the impact of political elections, we provide comprehensive evidence on the effect of policy uncertainty on accounting quality above and beyond that associated with elections.

Second, unlike prior studies that focus on voluntary disclosure choices in response to policy uncertainty, we study mandatory disclosure channels. Nagar et al. (2019), for example, examine how managers make voluntary disclosure decisions in response to an increase in information asymmetry due to EPU. In contrast, we examine how managers make financial reporting decisions in a mandatory disclosure environment, and explore investors' attention to firm-specific information during high-EPU periods as a channel. Importantly, consistent with the political process shaping the nature of policy uncertainty (e.g., Hassan et al. 2019), we show that a firm's exposure to political risk strengthens the relation between EPU and accounting quality. In addition, our comprehensive analysis of accounting quality and economic outcomes suggests that improving accounting quality during periods of heightened uncertainty mitigates the adverse consequences of EPU on corporate investment and valuation.

Third, we contribute to the literature by empirically implementing Nikolaev's (2018) accounting quality model. Nikolaev explicitly introduces true performance into his model, which helps better identify the error and performance components of accruals. Thus, Nikolaev's (2018) model enables us to examine the effect of EPU on various components of accruals and to measure accounting quality by focusing on the performance measurement role of accruals. We add to the literature by providing an important example where Nikolaev's model is useful in undertaking a comprehensive analysis of accounting quality.

The remainder of the paper is organized as follows. In Section II, we develop our main hypothesis. Section III presents our results based on Nikolaev's (2018) model, and, in Section IV, we present results based on discretionary accruals. Section V concludes.

1.2. Background, Related Literature, and Hypothesis Development

Policy-induced Economic Uncertainty

Building on BBD, we focus on policy-induced economic uncertainty, which broadly refers to uncertainty about government actions that affect the economic environment. While policy uncertainty is unobservable and difficult to quantify, BBD use newspaper coverage frequency to capture uncertainty about "who will make economic policy decisions, what economic policy actions will be undertaken and when, and the economic effects of policy actions (or inaction)" (p. 1598). Their measure requires that a newspaper article contain terms related to the three categories of uncertainty, the economy, and policy, and captures both near- and longer-term concerns. As such, the measure of policy uncertainty that we employ includes events that both involve government policy and affect market conditions. Appendix A provides a detailed discussion of BBD's index.

Policy-induced economic uncertainty, as captured by BBD's index (the Economic Policy Uncertainty index or EPU index), differs from other common sources of economic uncertainty, including general economic uncertainty and market-induced uncertainty, as well as uncertainty related to events, such as financial crises. First, measures of general macroeconomic uncertainty focus on economic fundamentals, whereas the EPU index accounts for uncertainty "directly related to the political situation without explicitly referring to macroeconomic fundamentals" (Beckmann and Czudaj 2017, 155). Moreover, the news-based component of the EPU index—the focus of our analysis—is consistent with the news shocks that drive policy uncertainty affecting stock prices above and beyond other economic state variables (Pástor and Veronesi 2013). Second, while policy uncertainty focuses on the political and regulatory system as a source of aggregate uncertainty that potentially affects all economic actors, market-induced uncertainty (e.g., uncertainty reflected in the VIX) is related to volatility in financial markets and thus reflects the perceptions of participants in these markets. Third, unlike other indicators of economic uncertainty, BBD's index captures distinct sources of variation in policy uncertainty, which BBD attribute to differences in scope between policy uncertainty and other indicators of uncertainty. In particular, BBD argue that their index contains information about policy-related economic uncertainty, as opposed to general financial market uncertainty. Fourth, policy uncertainty is more persistent than uncertainty-driven events, such as political elections and financial crises. While policy uncertainty correlates with such events, it allows for the continuous tracking of uncertainty by accounting for effects outside the timeframe in which these events take place (e.g., Brogaard and Detzel 2015).[2]

Policy-induced economic uncertainty also differs from firm-level uncertainty. Firm-specific uncertainty arises from factors unique to a firm, such as new product development, merger and acquisition activity, or management turnover, and thus it is diversifiable. Policy uncertainty, in contrast, stems largely from regulatory decisions beyond managers' control that affect a broad range of firms and hence is more difficult to diversify.

To help isolate the effects of policy uncertainty, in our multivariate analyses, we control for other micro- and macro-economic sources of uncertainty previously shown to affect accounting quality.

Related Literature

Our study is closely related to that of Nagar et al. (2019), who find that in the US, policy-induced economic uncertainty increases information asymmetry among investors and hence leads to higher stock illiquidity. While managers attempt to reduce information asymmetry through more frequent management forecasts and voluntary 8-K filings, these disclosures only partly mitigate the adverse effects of policy uncertainty on information asymmetry. Also focusing on the US, Jiang et al. (2020) examine the impact of policy

[2] For example, while the level of general economic uncertainty has decreased significantly compared to its high levels during the recent financial crisis, policy uncertainty has remained high. Prior research on policy-induced economic uncertainty shows that its effects on firms and stock markets extend beyond other measures of uncertainty (Brogaard and Destzel 2015; Gulen and Ion 2016; Bonaime et al. 2018).

uncertainty on three dimensions of textual disclosure and find that managers increase the disclosure length in response to elevated policy uncertainty but do not provide more readable or informative financial statements. Taken together, these studies suggest that while managers attempt to improve disclosures during periods of high policy uncertainty, such attempts fall short; that is, a substantial degree of information asymmetry continues to exist in periods of higher policy uncertainty. Our study complements these studies by focusing on managers' incentives with respect to accounting quality and its components. We also extend these studies by examining the effect of policy uncertainty in an international context. The effect of policy uncertainty on accounting quality cannot be easily inferred from the association between policy-induced economic uncertainty and firms' disclosure choices, because managers face mixed incentives in making financial reporting and voluntary disclosure choices. On the one hand, managers have incentives to reduce information asymmetry, as it is detrimental to stock liquidity. On the other hand, increased information asymmetry provides managers an opportunity to extract economic rents by obscuring accounting quality (Jo and Kim 2007). Our cross-country setting also allows us to examine the effect of country-level institutions on the relation between policy uncertainty and accounting quality.

Several studies on the role of election-induced uncertainty are also relevant to our paper. Bird et al. (2017) and Boone et al. (2020) examine managers' disclosure behavior in response to uncertainty related to U.S. gubernatorial elections. Consistent with Nagar et al. (2019), they show that by improving disclosure, managers can moderate the increase in information asymmetry during high uncertainty periods. Similarly, Dai and Ngo (2018) show that uncertainty associated with U.S. gubernatorial elections increases accounting conservatism. Focusing on the impact of U.S. presidential elections on the pricing of earnings information, Drake et al. (2018) find that during presidential election years, current prices reflect less information about future earnings because of the market's inability to form accurate forecasts. In our paper, we focus on the effect of policy uncertainty beyond election-period outcomes (Gulen and Ion 2016). Using a continuous measure of policy-induced economic uncertainty and controlling for the impact of political elections, we provide evidence on the effect of policy uncertainty on accounting quality above and beyond that associated with political elections.

Finally, our study is related to but differs from that of Chen, Hope, Li, and Wang (2018), who examine the effect of election uncertainty on mutual fund managers' investment decisions and find that fund managers shift their equity holdings to stocks with higher financial reporting quality when political uncertainty is high. While Chen et al. (2018) focus on mutual fund managers' investment strategies during periods of high election uncertainty, we examine the financial reporting choice from a managerial perspective. We also provide insights on the mechanisms through which policy-induced economic uncertainty affects accounting quality by examining how firms' growth opportunities and need for external financing affect the relation between policy uncertainty and accounting quality. Furthermore, by leveraging Nikolaev's (2018) model, we disentangle the performance measurement and error components of accruals and thereby provide insights on the effects of policy uncertainty on the components of accruals.

Hypothesis

A growing literature documents the economic consequences of policy-induced economic uncertainty. At the macro level, policy uncertainty hinders economic recovery

(Bloom 2014); at the industry level, it affects return volatility (Boutchkova, Doshi, Durnev, and Molchanov 2012). At the firm level, policy uncertainty is associated with a higher cost of debt capital (Kaviani, Kryzanowski, Maleki, and Savor 2020), lower stock prices (Pástor and Veronesi 2012), and reduced investment-cost of capital sensitivity (Drobetz, El Ghoul, Guedhami, and Janzen 2018). In response to these negative consequences, economic agents make more cautious decisions during periods of heightened uncertainty. For example, managers reduce investment expenditures and increase cash holdings (Julio and Yook 2012), decrease capital investment (Gulen and Ion 2016), avoid mergers and acquisitions (Bonaime et al. 2018), and cut back on hiring (Ilut and Schneider 2014). Similarly, consumers increase their precautionary savings during periods of increased uncertainty (Bansal and Yaron 2004), while investors rely more on analysts and analysts exert more effort (Loh and Stulz 2018).

Uncertainty may also lead market participants to evaluate firms' disclosure quality and performance more closely. Andrei et al. (2019) show analytically and empirically that higher economic uncertainty leads investors to be more attentive to firm-specific information. As the literature on limited attention suggests (e.g., Hirshleifer and Teoh 2003; Hirshleifer et al. 2011), paying attention to information is a costly activity, which leads only a fraction of investors to observe information signals. For an uninformed investor who does not pay attention to firm-specific information, stock prices may still reveal some firm-specific information at no cost. In short, while investors decide to become informed or uninformed, uninformed investors are still able to infer firm-specific information from the equilibrium price (Andrei et al. 2019). The stock price informativeness (the extent to which price reveals firm-specific information), however, decreases when the variance of future returns is high (Andrei et al. 2019). As the variance of future returns increases in economy-wide uncertainty, price informativeness decreases with economic uncertainty (Drobetz et al. 2018). Because uninformed investors cannot easily infer information from the equilibrium price under high uncertainty, the value of firm-specific information increases, leading to a greater incentive to collect firm-specific information. Although high uncertainty also reduces the quality of informed investors' information, Andrei et al. (2019) argue that the information value effect likely dominates the information quality effect, resulting in greater investor attention to firm-specific information during periods of higher uncertainty.

Investors' attention to and acquisition of firm-specific information will limit earnings management opportunities. Prior studies show that limited investor attention often provides earnings management opportunities. Teoh et al. (1998a, 1998b), for example, show that managers use their accounting discretion to exploit investors' neglect of accruals information. Kempf et al. (2017), Garel et al. (2019), Abramova et al. (2019), and Basu et al. (2019) find evidence that investor inattention leads to a loosening of monitoring constraints on corporate action. In addition, Liu et al. (2020) show that investor inattention weakens corporate governance (board oversight). To the extent that limited investor attention leads to earnings management opportunities (Teoh et al. 1998a, 1998b), and better alignment of managerial incentives with shareholder interests can improve accounting quality (e.g., Klein 2002), we expect the increased investor attention to firm-specific information during high-EPU periods to improve earnings quality.

Recent research also suggests that firms have incentives to improve their information environment during periods of high EPU. Nagar et al. (2019) find that an increase in EPU is associated with an increase in information asymmetry, as measured by the bid-ask spread and Amihud illiquidity. They also find that managers respond by increasing voluntary disclosures (measured by earnings guidance and 8-K filings in the following quarter). In other words, managers attempt to mitigate the adverse effect of EPU on information asymmetry through voluntary disclosure, which helps investors better assess firm prospects. Although managers may exploit an increase in information asymmetry during periods of high EPU to extract rents at the expense of better accounting quality, evidence in Nagar et al. (2019) suggests they respond by improving the information environment, rather than by exploiting information asymmetry. Thus, we expect to observe higher accounting quality during periods of higher EPU. We present our hypothesis in an alternative form, as follows:

H_1: Accounting quality is positively associated with economic policy uncertainty.

1.3. Empirical Analysis Based on Nikolaev's (2018) Model

Measuring Economic Policy Uncertainty

We use the policy uncertainty index developed by BBD (2016) to capture EPU. BBD (2016) use newspaper coverage frequency to measure uncertainty about government policy that affects the economic environment. They require that a newspaper article contains terms related to the three categories of uncertainty: the economy, policy, and both near- and longer-term concerns. As such, the measure we use includes events that involve government policy and affect market conditions.

Appendix A provides a detailed discussion of BBD's (2016) index. In our empirical tests, the variable of interest, *EPU*, is defined as the natural logarithm of the average of the monthly policy uncertainty index from BBD (2016) over the 12-month period ending in the month of the fiscal year-end. We also examine whether EPU persistence affects accounting quality. We measure EPU duration (*EPU_DURATION*) by the number of consecutive months during the fiscal year in which the country's policy uncertainty index is above the 80^{th} percentile.

Modeling Accounting Quality

By adjusting cash flows for timing errors, accrual accounting provides more information on firm performance than cash accounting (Dechow 1994; Dechow and Dichev 2002). However, accruals are imperfect measures of a firm's true performance for two reasons. First, accrual-based measures suffer from estimation errors (McNichols 2002; Kothari, Leone, and Wasley 2005; Hribar and Nichols 2007). Second, accruals quality is endogenously related to firm characteristics because financial reporting reflects contracting and accounting choices that are influenced by a firm's idiosyncratic fundamentals. It is thus difficult to isolate underlying performance from noise and accurately assess accruals quality.

As we noted earlier, Nikolaev (2018) explicitly introduces true performance into his model, which helps better disentangle the error and performance components of accruals. The key intuition is that earnings and cash flows 1) measure the same underlying performance (π), and 2) contain different measurement errors that reverse over time. It follows that different moment conditions of earnings, cash flows, and accruals can be modeled and solved to retrieve both the performance and error components of accruals.

Nikolaev (2018) characterizes accounting quality as "the degree to which accruals fulfill their performance measurement objective" (i.e., providing information about a firm's underlying performance), while minimizing accounting errors. Given this characterization, one can quantify accounting quality by comparing the accruals component introduced to capture true economic performance with the part that captures errors associated with measuring performance. Three variables estimated from the model are useful in measuring accounting quality: the variance of a firm's true economic performance (σ_π^2); the variance of the performance component of accruals (σ_w^2), which reflects the incremental informativeness of accrual accounting relative to cash accounting; and the variance of the accounting error component of accruals (σ_v^2), which reflects the noise that accruals introduce into earnings.

Given the processes for cash flows, earnings, and accruals, Nikolaev (2018) generates moment conditions to identify the three variance terms, σ_w^2, σ_v^2, and σ_π^2, in a *levels* specification. As an alternative, he considers a *changes* specification, in which he examines changes in the time series of earnings, cash flows, and accruals. Following Nikolaev (2018), we measure accounting quality, which is the bounded version of the signal-to-noise ratio, as:

$$\text{Accounting Quality Ratio} = \frac{\sigma_w^2}{\sigma_w^2 + \sigma_v^2}.$$

Modeling Earnings Management

The accounting error component can be further separated into intentionally "managed" and unmanaged errors (i.e., pure noise). Specifically, Nikolaev (2018) defines the accounting error component (v_t) as the sum of a managed error component (m_t) and an unmanaged random error component ($\tilde{v}_t$). Discriminating between the two components requires information about managers' incentives to manipulate earnings. Nikolaev (2018) suggests two approaches to capturing earnings management. The first is based on Gerakos and Kovrijnykh (2013), who model earnings management as income smoothing. The second allows for a more general form of earnings management but requires more assumptions and inputs.

Income Smoothing

Following Gerakos and Kovrijnykh (2013), Nikolaev (2018) models earnings management reflected in earnings via income smoothing as follows: $E_t = \pi_t - \gamma\epsilon_t + \gamma\epsilon_{t-1}$. This specification allows the accounting error component to be decomposed into an income-smoothing component and random noise: $v_t = -\gamma\epsilon_t + \tilde{v}_t$. Under no earnings management ($\gamma = 0$), the accounting error perfectly reflects the random noise ($v_t = \tilde{v}_t$). Building on the approach used to evaluate accounting quality in the previous section, we capture the fraction of accruals' variance that is explained by the managed component, as follows:

$$\text{Degree of Income Smoothing} = \frac{\gamma^2\sigma_\epsilon^2}{\sigma_w^2+(\gamma^2\sigma_\epsilon^2+\sigma_{\tilde{v}}^2)}.$$

Earnings Management

An alternative way to measure earnings management in Nikolaev's (2018) framework is to directly incorporate managerial incentives to manipulate earnings and accruals into the model. To this end, we use the indicator variable x_t to capture information about incentives to manage earnings. Adding this term to the model, we can decompose accounting error into the managed component ($\theta_v x_t$) and random noise ($\tilde{v}_t$), which is orthogonal to the managed portion: $v_t = \theta_v x_t + \tilde{v}_t$.

Following prior literature, we use two earnings management incentives: meeting or beating earnings benchmarks (Cohen, Dey, and Lys 2008; Kim, Park, and Wier 2012), and earnings management incentives arising from external financing needs (Teoh et al. 1998b). Under the baseline assumptions of the accruals quality model, we can derive a set of moment conditions to identify the necessary parameters. As per Nikolaev (2018), we capture the degree of earnings management as the fraction of accruals variance explained by the managed error component:

$$\text{Degree of Earnings Management} = \frac{\theta_v^2}{\sigma_w^2+(\theta_v^2+\sigma_{\tilde{v}}^2)}.$$

Sample Construction

We first obtain financial data for all firms from Compustat North America and Compustat Global. Next, we merge the Compustat data with BBD's (2016) EPU index, which covers 19 countries.[3] We exclude financial firms (SIC codes 6000–6999) because their operating decisions differ significantly from those of nonfinancial firms, and the nature of their accruals differs from that of industrial firms. We also omit firm-years for which SIC codes or other necessary data are missing. To mitigate the influence of outliers, we winsorize all continuous variables at the 1st and 99th percentiles. Our full sample consists of 27,888 unique firms from 19 countries over the 1990–2015 period.[4]

Results

Table 1.1 presents results for the key parameters of interest for both the *levels* and *changes* specifications. The variables in all tables are defined in Appendix B and the table notes. We derive the parameters by using time series estimation of moment conditions in the Nikolaev (2018) model.[5] Panel A reports the results using median EPU to define high- and low-policy uncertainty subsamples. We report the differences in means between firms

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[3] These countries are: Australia, Brazil, Canada, Chile, China, France, Germany, India, Ireland, Italy, Japan, Korea, the Netherlands, Russia, Singapore, Spain, Sweden, the U.K., and the U.S. Our core findings are not sensitive to sequentially excluding these countries one at a time.

[4] Depending on the model, the number of observations differs because different model specifications require different variables be non-missing.

[5] See Nikolaev (2018) for the moment conditions of the *levels* and *changes* specifications.

in the low- and high-EPU subsamples. Despite the fact that our estimates are based on a cross-country sample, they are comparable to those in Nikolaev (2018).

We find that the standard deviation of true economic performance (σ_{π} or $\sigma_{\Delta\pi}$) is lower during periods of high policy uncertainty, which perhaps reflects depressed economic activity. If performance itself is depressed, then the role of accruals in adjusting cash flows to make accounting numbers better reflect performance could weaken. Our results are consistent with this expectation, as is evident from the lower standard deviation of the performance component (σ_w) in the high-EPU subsample. We also find that the standard deviation of the error component of accruals (σ_v) is lower during periods of high policy uncertainty. Importantly, the differences between σ_w and σ_v and accounting quality ($\sigma_w^2/(\sigma_w^2 + \sigma_v^2)$) are significantly higher for the high-EPU subsample. The mean accounting quality ratio is 2.7% to 3.5% higher for the high-EPU subsample. These differences, which are statistically significant at the 1% level, suggest that policy uncertainty is conducive to firms providing more informative earnings figures. In the levels (changes) specification, this difference represents the 5.04% (6.42%) improvement from the mean accounting quality ratio in the low-EPU subsample, which is economically meaningful to investors and not so large as to be implausible. Although the performance component is lower during periods of high EPU, these results imply that the decrease in the error component is more substantial, and contributes to the observed improvements in accounting quality.

However, it takes time for firms to adjust to an uncertain environment, and to alter investment, financing, and financial reporting strategies. Thus, they may not respond to shorter-duration uncertainty. In Panel B of Table 1.1, we examine the effect of EPU duration on accounting quality. We define high- and low-policy uncertainty subsamples using median EPU duration. The results suggest that the standard deviations of true economic performance, the performance component of accruals, and the error component of accruals are all lower when firms are exposed to longer-duration uncertainty. We also find higher accounting quality during periods of longer-duration uncertainty. Thus, the results for EPU and EPU duration provide similar insights.

In Table 1.2, we examine the managed error component of accruals to identify the source of the difference in accounting quality between the high- and low-EPU periods. Our measures of earnings management capture the fraction of the variance of accruals that is explained by the managed error component. Through these analyses, we provide evidence on the source of improvements in accounting quality. We identify the parameters using the time series estimation of moment conditions from Nikolaev (2018).[6]

Panel A reports the results from the income-smoothing specification, and Panels B and C report results based on earnings management incentives to meet/beat benchmarks or issue securities, respectively. Consistent with Table 1.1, we find that accounting quality in all specifications is significantly higher for firms in a high-EPU environment. More importantly, we find that the degree of income-smoothing or earnings management is significantly lower for the high-EPU subsample, suggesting that reduced incentives to manage earnings during periods of high policy uncertainty contribute to an improvement in accounting quality.

[6] See Nikolaev (2018) for the moment conditions of income-smoothing and earnings management specifications.

Although EPU differs from firm-level uncertainty, policy changes are influenced by the political process (Alesina 1987, 1988; Wright 1996; Keim 2001). Policy uncertainty may affect firms differently based on their political risk. Thus, we also investigate the cross-sectional variation of the relation between EPU and accounting quality based on firm-level political risk. Our focus here is motivated by the findings of Hassan et al. (2019) that the dispersion of this risk increases significantly with high aggregate political risk. We expect the effect of uncertainty to be more pronounced for firms with higher political risk.[7]

Following Gulen and Ion (2016) and Drobetz et al. (2018), we also focus on the role of government dependence. As policy uncertainty increases, firms that are more dependent on government consumption may face higher demand uncertainty. We partition our sample into four subsamples, splitting at the highest and lowest quintile values of our *Government dependence* measure and median value *EPU*. We then estimate the necessary parameters using the moment conditions for each subsample. *Government dependence* is constructed at the industry level using the 2005 Organisation for Economic Co-operation and Development (OECD) Structural Analysis Input-Output tables, which provide information on purchases of a given industry's production by other industries, households, and the government. We calculate the government's share of purchases of an industry's production to measure its dependence on government.

We report the results in Table 1.3. Similarly to Table 1.1, in Panel A, we present results for the individual components of accruals and the accounting quality ratio. Similarly

[7] We also consider firm-level political risk, PRISK, which was developed by Hassan et al. (2019). It is not feasible to use this in Nikolaev's (2018) framework, however, because PRISK is a firm-year specific measure. The Nikolaev (2018) model does not allow estimation of firm-year measures of accounting quality. Instead, we turn to an analysis of performance-adjusted discretionary accruals in a multivariate setting.

to Table 1.2, in Panel B, we present results for the earnings management models. In both panels, for each subsample of high- and low-government dependence firms, we compare the means between the high- and low-EPU periods.

Consistent with the evidence in Table 1.1, we find in Panel A that the standard deviation of true economic performance is lower during high- than low-EPU periods, but the differences are generally insignificant. The standard deviation of the performance component is also lower during periods of high policy uncertainty. We do not find strong evidence that the differences across the high- and low-EPU subsamples are influenced by a firm's government dependence. The error component of accruals is significantly reduced during high-EPU periods, especially for high-government dependence firms.

Importantly, accounting quality is higher during high-EPU periods than during low-EPU periods in Panel B, but only in firms with higher government dependence. Consistent with the results in Table 1.2, the degree of earnings management is lower during high-EPU periods, especially for firms with higher government dependence. Taken together, the results in Table 1.3 indicate that the effect of policy uncertainty on accounting quality is more pronounced for firms that are more government-dependent.

The Nikolaev (2018) framework helps disentangle the performance and error components of accruals, enabling us to evaluate the accounting system's ability to measure performance more accurately. However, the model also imposes limitations on our analysis. In particular, we cannot estimate accounting quality and its components at the firm-year level, which makes it difficult to examine how changes in policy uncertainty impact accounting quality over time. It is also not possible to control for other factors known to influence firms' financial reporting decisions.

In the next section, we complement the analysis based on Nikolaev's (2018) model by examining performance-adjusted discretionary accruals, a popular measure of earnings management, in a multivariate setting. We use this measure because our results suggest that the difference in accounting quality between high- and low-EPU periods can be attributed to the managed error component of accruals. Nevertheless, we also consider various alternative measures of accounting quality.

1.4. Empirical Analysis Based on the Performance-Augmented Discretionary Accruals Model

We use discretionary accruals to confirm and extend the results from Nikolaev's (2018) framework. As in Kothari et al. (2005), we augment the modified Jones model (Jones 1991, as modified by Dechow, Sloan, and Sweeney 1995) with contemporaneous return on assets (*ROA*) to avoid potential misspecifications from the impact of profitability on accruals. Because earnings management can involve both income-increasing and -decreasing accruals (Healy and Wahlen 1999), we use the absolute value of discretionary accruals (*AbsDA*), where higher values indicate higher levels of earnings management.

To isolate the impact of policy uncertainty on earnings management, in our multivariate analysis, we control for a set of variables previously shown to affect the quality of accounting information. Given prior evidence that aggregate economic conditions influence corporate decisions, we first include real GDP growth (*GDP_GR*) from the World Bank's World Development Indicators (WDI) database to control for the effect of the general economic cycle. Following Dechow and Dichev (2002), we also control for firm size (*SIZE*) and operating cycle (*OPT_CYCLE*). Hribar and Nichols (2007) further recommend controlling for operating volatility to reduce potential bias in measures of accruals quality. Thus, we control for cash flow volatility (*CF_VOL*), sales volatility (*SALES _VOL*), and sales growth volatility (*SG_VOL*). We also control for leverage (*LEV*) because Sweeney (1994) shows that debt covenant provisions increase incentives for earnings management; annual sales growth (*SALES_GR*), as per Chaney, Faccio, and Parsley (2011); and both days payable (*DAY_PAYABLE*) and an indicator for whether a firm reported a net loss (*LOSS*), as in Gopalan and Jayaraman (2012). Finally, we control for financial performance using return on assets (*ROA*), as suggested by McNichols (2002) and Kothari et al. (2005). Appendix B provides variable definitions and data sources.

Descriptive Statistics

Appendix C reports descriptive statistics for our key variables by country. On average, firms in our sample engage in a considerable degree of earnings management: The sample mean of $AbsDA$ is 0.18. Australia has the highest mean $AbsDA$ at 0.27, followed by Canada (0.22) and India (0.22), while Chile and Italy have the lowest at 0.13. The level of EPU (the natural logarithm of the BBD index) is highest in France (5.03), followed by the U.K. (5.00) and Russia (4.91), and is lowest in Sweden (4.49). We do not discuss the other variables for brevity.

Implementation and Results

To test the effect of EPU on earnings management, we estimate the following model:

$$AbsDA_{it} = \beta_0 EPU_{it} + \beta_1 X_{it} + \alpha_i + \mu_t + \varepsilon_{it}, \quad (1)$$

where X is a vector that contains the firm-level control variables and real GDP growth (*GDP_GR*), and *EPU* is the natural logarithm of the average BBD (2016) index over the 12 months of a firm's fiscal year.

Because accrual decisions tend to be made toward the end of the fiscal year, or even after the fiscal period is over, our dependent variable ($AbsDA_{it}$) reflects decisions that managers make after observing economic policy uncertainty for the fiscal year. To address concerns about potential unobservable heterogeneity, we include firm- (α_i) and year- (μ_t) fixed effects in all the regressions. We cluster standard errors by firm in all regression models.[8]

Table 1.4 reports the results without control variables in column (1) and with control variables in column (2). We find that *AbsDA* is negatively associated with policy uncertainty in both columns, which suggests that heightened policy uncertainty induces firms to engage in less earnings management. In particular, in column (2), we find that a 100% increase in *EPU* leads, on average, to a 0.044 reduction in *AbsDA*, or a reduction of 24.4% (=0.044/0.18) from the sample mean.[9] Considering that earnings management increases the noise in accruals, and lowers the accounting system's ability to measure performance accurately, Table 1.4's results are consistent with those based on Nikolaev's (2018) model.

Robustness Tests

Table 1.5 presents the results from several robustness tests. To test the effect of uncertainty duration, we replace the EPU index in column (1) of Table 1.5 with the duration of the uncertainty episode (*EPU_DURATION*). We find a significantly negative coefficient on *EPU_DURATION*, which suggests that the negative relation between policy uncertainty

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[8] *EPU* is a country level measure and therefore adjusting standard errors for clustering at the country level would be ideal. However, because of the relatively few countries in our sample (19) and the low number of observations for some countries, this could cause a small cluster problem, which would lead to biased standard errors (Cameron and Miller 2015; Abadie, Athey, Imbens, and Wooldridge 2017). Thus, we tabulate the results based on standard errors clustered at the firm level. The results are qualitatively similar when we cluster standard errors at higher levels (e.g., by country).

[9] As noted earlier, *EPU* is the natural logarithm of the BBD (2016) index. Accordingly, we interpret the coefficient on *EPU* as the change in *AbsDA* due to a 100% increase in policy uncertainty.

and earnings management is stronger when firms are exposed to longer-duration uncertainty.

We also test for robustness to controlling for election years. We obtain data on elections and a government's political orientation from the World Bank's Database of Political Institutions (DPI). We focus on timed elections because they are exogenously recurring events, which helps mitigate the concern that the results may reflect confounding macroeconomic trends that coincide with elections not fixed in time (Julio and Yook 2012). Column (2) of Table 1.5 shows that the coefficient on the election indicator is statistically insignificant. More importantly, we find that our main evidence is not driven by uncertainty during election years.

Although our results are robust to controlling for GDP growth and additional fixed effects, other macroeconomic uncertainty unrelated to economic policy uncertainty may still be driving our results. To further mitigate this concern and to distinguish the effect of EPU on earnings management from that of other macroeconomic uncertainty, we test the robustness of our results to controlling for the World Uncertainty Index (*WUI*). This index is a comprehensive measure of economic uncertainty developed by Ahir, Bloom, and Furceri (2018). As column (3) of Table 1.5 shows, the inclusion of *WUI* does not affect the relation between policy uncertainty and earnings management. This suggests that the effect of EPU is distinct from the effect of general macroeconomic uncertainty.

Next, we address the concern that different reporting frequencies across countries may affect the relation between policy uncertainty and earnings management. Firms may have different reporting incentives if they are only required to submit semi-annual reports or if their reports are unaudited. Because some countries have changed reporting frequency over the years, we construct a firm-level frequency measure (*REPORTING_FREQ*) that equals 1 if the firm reports quarterly, and 0 if it reports semiannually in any given year. The results are in column (4) of Table 1.5 and show that our findings remain unaffected after accounting for the potential effect of reporting frequency. The positive coefficient on reporting frequency may suggest that quarterly reporting motivates managers to engage in earnings management to meet or beat short-term benchmarks.

Prior research suggests that different types of uncertainty may influence financial reporting quality (e.g., Kim, Pandit, and Wasley 2016). To address the concern that the negative relation between policy uncertainty and earnings management may reflect different sources of uncertainty, we include additional controls—both sequentially and together—for firm-, industry-, and macroeconomic-level uncertainty. Following Kim et al. (2016), we capture firm-level uncertainty using earnings volatility (*EARN_VOL*) and return volatility (*RET_VOL*). Following Harford (2005), we capture industry-level uncertainty using the first principal component from the industry-year medians of seven industry-level economic shock variables (*INDUSTRY_SHOCK*). Finally, following Bonaime et al. (2018), we capture macroeconomic uncertainty using the cross-sectional standard deviations of sales growth (*SD_SALES_GR*) and cumulative returns (*SD_RET*) over the past 12 months. The results, reported in columns (5) of Table 1.5[10], show that the coefficient on *EPU* remains negative and significant at the 1% level. They suggest that the effect of policy uncertainty on earnings management is distinct from the effects of other types of uncertainty.

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[10] Our results are robust to controlling for different sources of uncertainty one at a time.

Prior research shows that the adoption of IFRS affects managers' propensity to engage in earnings management (e.g., Houqe, van Zijl, Dunstan, and Karim 2012). If different constellations of policy uncertainty coincide with changes in accounting policies caused by IFRS adoption, the relation between policy uncertainty and earnings management could reflect the effect of IFRS adoption. To address this concern, in column (6) of Table 1.5, we include an IFRS adoption indicator (*IFRS_DUMMY*) as an additional control, which equals 1 for post-IFRS adoption years, and 0 otherwise. Our results are robust to controlling for this effect.

We also address concerns related to the fact that uncertainty is countercyclical (Bloom et al. 2018), which could affect both our proxy for earnings management and our measure of policy uncertainty. Our results may be reflecting managers' reluctance to deviate from normal operating levels given a poor economic outlook or changes in investment behavior in response to policy uncertainty. To address these issues, in column (7) of Table 1.5, we control for several proxies for macroeconomic conditions.

Following Gulen and Ion (2016), we control for forecasted real GDP growth rate (*R_GDP_F*), the consumer confidence index (*CCI*), and composite leading indicators (*CLI*), which all come from the OECD database. These macroeconomic variables capture market participants' expectations regarding economic outlook, with higher values denoting more favorable prospects. In addition, we control for capital investment (*CAPITAL_INV*) and research and development intensity (*R&D*), as well as an indicator for missing R&D (*R&D DUMMY*). This is to mitigate concerns that the negative relation between investment and policy uncertainty (Gulen and Ion 2016) could be driving our results. Both lower investment and lower earnings management can reflect a firm's overall tendency to avoid risk. Finally, we include controls for financing activities in order to further mitigate concerns that changes in earnings management may be merely an artifact of changes in real activities induced by policy uncertainty. Specifically, we control for firm-level equity and debt issuance (*SECURITIES_ISSUE*) and country-level IPO activity (*IPOs*).[11] The results show that the effect of policy uncertainty on earnings management remains significant after including these controls, suggesting that policy uncertainty has a distinct and persistent negative effect.[12]

Endogeneity

Potential bias may arise from omitted explanatory variables and measurement errors. Our analyses control for unobserved heterogeneity by including firm- and year-fixed effects, an extensive set of control variables, and various proxies for the effects of economic cycles. But additional analysis is warranted to ensure our results are not driven by endogeneity. To address any remaining endogeneity in our analyses, we employ an instrumental variables approach. The instruments include the *Political Fractionalization* and *Veto Player Drop %* indices.

A suitable instrument should satisfy both the relevance and exclusion restrictions. That is, it should be strongly correlated with our policy uncertainty index, and it should impact earnings quality only through its effect on the policy uncertainty index. Political fractionalization is defined as the probability that two deputies picked from the legislature

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[11] The results are not sensitive to including the number of common share issues (SEOs) or the sum of the number of IPOs and SEOs.

[12] Interestingly, all of the additional macroeconomic control variables load negatively, implying that firms engage in less earnings management as economic prospects improve. One possible interpretation of this result is that firms anticipate better financial performance as macroeconomic conditions improve, which leads to weaker incentives to mislead market participants about performance.

at random will be of different parties. Higher values of this measure indicate greater policy uncertainty (relevance restriction), as deputies from different parties have conflicting views on policy and hence tend to breed political uncertainty (Mian et al. 2014). This measure is unlikely to be directly related to any of our firm-level variables (exclusion restriction) because firm policies and the partisan distribution of legislative deputies are not linked. *Veto Player Drop %* is defined as the percent of veto players who drop out of the government in any given year. Our choice of this instrument is motivated by the work of Henisz and Delios (2004), who argue that the presence of multiple veto players makes it harder to reach an agreement to change existing policies and is thus associated with a lower level of policy uncertainty. It follows that a higher percentage drop in veto players in a given year would indicate greater policy uncertainty (relevance restriction). However, a percentage drop in veto players is unlikely to have firm-level policy implications (exclusion restriction).

To implement the instrumental variables analysis, we first regress *EPU* on the instrumental variable and control variables in vector *X* from Equation (1). We include the instruments sequentially and altogether to ensure our results are robust to controlling for different sources of political apparatus variations. Columns (1)–(3) of Table 1.6 report the first-stage regression results. We find that a higher level of political fractionalization and veto player drop is associated with greater policy uncertainty. The *F*-test rejects the null that our instruments do not capture changes in policy uncertainty at the 1% significance level. This suggests that the relevance condition of our instruments is satisfied. When we perform the Kleibergen–Paap *rk* LM test to check whether our regression is underidentified, the chi-square value rejects the null at the 1% significance level. This confirms that the model is well identified and that our instruments are correlated with *EPU*.

In particular, the Hansen *J*-statistics from combining the two instruments in column (3) allow us to evaluate the exclusion condition. We fail to reject the null (*p*-value = 0.7212), which indicates that the use of our instruments is empirically valid. Next, we use the fitted value from the first-stage regressions to replace the original value of EPU in Equation (1). The regression results, reported in columns (4)–(6) of Table 1.6, confirm the negative effect of policy uncertainty on earnings management.

To provide further evidence that this relation is not driven by spurious correlation, we conduct a placebo (falsification) test. Specifically, we randomly assign a placebo EPU index ($\widetilde{Placebo}\,EPU$) that follows the sample distribution of the true EPU measure. We then re-estimate our baseline regression by replacing the policy uncertainty variable with ($\widetilde{Placebo}\,EPU$). We repeat this process 100 times and report the average coefficient estimates. The results are in column (7) of Table 1.6 and show that the coefficient on $\widetilde{Placebo}\,EPU$ is neither statistically nor economically significant. This helps further alleviate any concerns that our findings are driven by a random correlation.

Alternative Accounting Quality Measures

Although discretionary accruals are widely used as an inverse measure of accounting quality, prior studies also use other earnings properties to capture accounting quality. In Table 1.7, we draw on some of these alternatives. We examine income smoothing (Tucker and Zarowin 2006), earnings predictability (Lipe 1990), persistence (Ali and Zarowin 1992; Francis, LaFond, Olsson, and Schipper 2004), accruals quality (Dechow and Dichev 2002; McNichols 2002), and real earnings management (Kim, Kim, and Zhou 2017). Appendix B presents detailed definitions of these measures.

Reinforcing our main evidence, we find that an increase in policy uncertainty is associated with a lower level of income smoothing (column (1)), higher earnings predictability (column (2)), higher earnings persistence (column (3)), higher accruals quality (column (4)), and a lower degree of real earnings management (column (5)). In columns (6) and (7), we also separately estimate the relation between EPU and performance-adjusted discretionary accruals for income-increasing and -decreasing samples. Because the dependent variable is the absolute value of discretionary accruals and higher values indicate higher levels of earnings management even in the income-decreasing sample, we expect a negative coefficient on *EPU* in both samples. Consistent with this prediction, we find that both income-increasing and -decreasing earnings management decline during periods of high policy uncertainty.

Role of Government Dependence and Firm-level Political Risk

In Panel A of Table 1.8, we revisit the analysis of Table 1.3 in a multivariate setting. Specifically, we re-estimate our baseline model in Equation (1) with the decile or quintile ranks of EPU, the decile or quintile ranks of the government dependence, and an interaction between the two. The decile or quintile ranks are normalized to range between 0 and 1. We replace *EPU* with normalized decile or quintile ranks to make interpreting the coefficient on the interaction term easier.

Reinforcing the results of Table 1.3, we find that the negative relation between EPU and earnings management is more pronounced for more government-dependent firms. The standalone measure of government dependence, *Normalized decile ranks* or *quintile ranks of Government Dependence*, is subsumed by firm fixed effects. The coefficient on the interaction between EPU and government dependence is negative and statistically significant at the 1% level, suggesting that firms with higher political risk are more likely to improve their accounting quality in response to high policy uncertainty.

In Panel B of Table 1.8, we use a more direct measure of firm-level political risk. Our investigation is motivated by Hassan et al. (2019), who suggest a strong firm-level component to political risk. Government dependence captures firm-level political risk indirectly because it measures the firm's exposure to political risk. In contrast, Hassan et al.'s (2019) measure is a direct measure of the firm-level component of political risk. We follow the same approach as in Panel A and re-estimate our baseline regression after adding Hassan et al.'s (2019) firm-level political risk measure and its interaction with the EPU measures. Because this measure is available for U.S. firms only, we limit our analysis to U.S. firms.

The results are in Table 1.8, Panel B, and show that the coefficients on the interaction of EPU measures and political risk are negative and statistically significant. Overall, the results suggest an interplay of (aggregate) policy uncertainty and (firm-level) variations in political risk.

Mechanism: Institutional Investors' Attention and Monitoring

We argue that investors' attention during periods of high EPU motivates managers to maintain high accounting quality. Strong external monitoring by institutional investors, however, is associated with better accounting quality even during normal times, leaving less room for improvement during high-EPU periods. In other words, firms with higher levels of long-term institutional investors may already be responding to strong external demand for high-quality information. In contrast, firms that lack strong monitoring by long-term institutional investors may respond to investors' attention and scrutiny more during high-EPU periods. Furthermore, long-term institutional investors do not generally rely on firm disclosures because they have better access to information through their long-term relationships with the firm. For short-term investors, who tend to trade more frequently based on information (Yan and Zhang 2009), corporate disclosures are useful in understanding firm performance (Bushee and Noe 2000). Thus, we expect the relation between EPU and earnings management to be more (less) pronounced for firms with high levels of short-term (long-term) institutional ownership.

To test this prediction, we collect institutional ownership data from FactSet LionShare and construct the institutional investor horizon following Gaspar, Massa, and Matos (2005). Specifically, we compute the churn rate, which is the fraction of portfolio holdings traded over a half-year period by each institutional investor. Higher values indicate more frequent trading. We then classify institutional investors as long- (short-) term if their average churn rate is in the bottom (top) tercile of all institutional investors. As a final step, we construct long- (short-) term institutional ownership as the fraction of a firm's market capitalization held by long- (short-) term institutions.

To document an increase in investor attention during high-EPU periods, we first examine the impact of EPU on institutional investors' churn rates. The result is presented in Table 1.9, Panel A. Following Döring, Drobetz, El Ghoul, Guedhami, and Schröder (2020), we include GDP growth, firm size, lagged market-to-book ratio, dividend yield, firm age, stock return volatility, stock returns, lagged stock returns, stock turnover, stock price, and an indicator for the inclusion in the MSCI index as control variables. We omit the coefficients on the control variables from the table for the sake of brevity. Consistent with the idea of increased attention from investors during high-EPU periods, we find a positive and statistically significant relation between EPU and churn rates. In Table 1.9, Panel B, we present the results from the regressions of *AbsDA* on *EPU* separately for the long- and short-horizon subsamples. In columns (1) and (2), we divide the sample based on the median churn rate. In column (3) (column (4)), we have firm-year observations where short-term institutional ownership is lower (higher) than long-term institutional ownership. We find that the relation between EPU and earnings management is more pronounced in the high-churn rate subsample than in the low-churn rate sub-sample. Similarly, we find that the relation between EPU and earnings management is more pronounced when short-term institutional ownership is higher than long-term institutional ownership. Thus, increased attention to firm-specific information and increased demand for transparency during periods of high-EPU, driven by the presence of short-term institutional investors, can motivate managers to improve accounting quality.

Role of Media

Investors' information demand is positively associated with media attention and news (Drake, Roulstone, and Thornock 2012). Thus, country-level institutions that foster media freedom and press circulation increase investor attention. To the extent that policy uncertainty increases attention, which in turn motivates managers to improve accounting quality, we expect the effect of EPU to be more pronounced for firms from countries with greater media freedom and press circulation.

To test this prediction, we use four measures related to the freedom and circulation of the media. Our measures encompass both the newspaper press as an older form of media and the Internet as a relatively newer form. Media freedom measures include the Freedom of the Press Index (FPI) and the Freedom on the Net Index (FNI) from Freedom House. The FPI measures degree of print, broadcast, and digital media freedom in terms of legal, political, or economic pressure that may influence news reporting. The FNI measures online freedom in terms of access to the Internet, content limitations, and violations of user rights. To proxy for media circulation, we employ the percentage of Internet users obtained from WDI, and Dyck and Zingales' (2004) newspaper circulation index.

The results are in Appendix D and are consistent with our prediction. In particular, the negative relation between policy uncertainty and earnings management is more pronounced for firms in countries with more media freedom and press circulation than for those in countries with less media freedom and press circulation. These results provide additional support for the view that firms limit accounting discretion and improve accounting quality during periods of high policy uncertainty because of increased attention.

Role of Institutions and External Financing Needs

We also examine whether legal institutions and the financial reporting environment at the country level, or growth opportunities and external financing needs at the industry level, affect the relation between earnings management and policy uncertainty. In the absence of strong institutions and legal protections, a firm's stakeholders have a limited ability to monitor and enforce a firm's information quality. We therefore expect the relation between policy uncertainty and earnings management to be more pronounced in countries with stronger institutions and a more transparent reporting environment. We test these predictions using proxies for the quality of the legal and reporting environments motivated by Ball, Kothari, and Robin (2000) and Leuz, Nanda, and Wysocki (2003). Appendix E reports the results. Across all proxies, we find a consistent evidence that the negative relation between policy uncertainty and earnings management is more pronounced in countries with stronger legal institutions (Panel A) and financial reporting environment (Panel B). These findings are consistent with the view that as policy uncertainty increases, market participants become more prudent and in countries with stronger legal institutions, it is easier for outside stakeholders to demand greater transparency. This evidence also supports the idea that where the reporting environment is strong, increased public scrutiny arising from policy uncertainty reduces managerial opportunism in financial reporting, thus improving accounting quality.

In addition, we examine whether firms' need for external capital affects the relation between policy uncertainty and financial reporting quality. Firms with more growth opportunities need more external capital (Gopalan and Jayaraman 2012) and thus have incentives to improve transparency to lower their cost of capital. If policy uncertainty increases investor scrutiny, then firms with a greater need for external capital are more likely to respond to investors' demand for higher accounting quality. We test this prediction using an industry-level measure of growth opportunities from Gopalan and Jayaraman (2012) and a measure of external finance dependence from Rajan and Zingales (1998). The results, reported in Panel C of Appendix E, show that the negative relation between policy uncertainty and earnings management is more pronounced for firms with a greater need for external financing. These results are consistent with the idea that firms are motivated to meet investors' demand for higher quality financial reporting under elevated policy uncertainty when they need external financing and thus have incentives to lower the cost of capital.

1.5. Conclusion

An increase in policy uncertainty calls for greater prudence. Thus, in response to an increase in policy-induced economic uncertainty, investors tend to increase their attention to and acquisition of firm-specific information. Facing greater investor attention and tightened monitoring of corporate actions, managers reduce earnings management and report more informative earnings.

We use Nikolaev's (2018) accounting quality model, which explicitly considers the performance measurement role of accruals. We find that the ability of the accounting system to measure performance more accurately is significantly higher under higher policy uncertainty. We confirm these results using performance-adjusted discretionary accruals in a multivariate setting, in which we control for known determinants of earnings management and firm- and year-fixed effects. Furthermore, we show that our results are robust to controlling for endogeneity, the effects of elections, other sources of uncertainty, IFRS adoption, macroeconomic conditions, the level of investment, securities issuance, and country-level IPO activity. Our results are also robust to various earnings properties as alternative measures of accounting quality. Consistent with policy uncertainty being shaped by the political process, we find that the effect of EPU on accounting quality is more pronounced for firms that are more government-dependent and firms with higher firm-level political risk.

In additional analyses, we show that the relation between EPU and earnings management is more pronounced when short-term investors, who tend to trade more frequently on information, dominate long-term institutional investors and for firms in countries with greater media freedom and circulation. Together with our evidence of increased investor turnover rates during higher-EPU periods, these findings reinforce the idea that market participants' attention is a mechanism through which EPU affects accounting quality. We also find that that the negative relation between policy uncertainty and earnings management is more pronounced for firms in countries with stronger legal institutions, a better reporting environment, and greater press freedom. The negative relation between policy uncertainty and earnings management is also more pronounced for firms with more growth opportunities and for firms with a greater need for external capital. These results are consistent with the idea that as policy-induced economic uncertainty rises, investors demand greater transparency and, in turn, managers reduce earnings management, resulting in higher accounting quality during periods of high policy uncertainty.

Table 1.1 Policy Uncertainty and Performance vs. Error Component of Accruals

Panel A. Specifications based on EPU

Variable		*Levels* Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.	*Changes* Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.
σ_π or $\sigma_{\Delta\pi}$	High	0.045	0.020	0.034	0.055	-0.003***	2,786	0.046	0.020	0.034	0.059	-0.002*	2,789
	Low	0.048	0.021	0.036	0.062	(-3.23)	3,903	0.048	0.021	0.035	0.063	(-1.90)	3,891
σ_w	High	0.017	0.005	0.013	0.025	-0.001**	2,786	0.017	0.006	0.013	0.024	-0.001	2,789
	Low	0.018	0.005	0.013	0.025	(-2.02)	3,903	0.017	0.005	0.013	0.024	(-1.40)	3,891
σ_v	High	0.015	0.004	0.011	0.021	-0.003***	2,786	0.013	0.003	0.010	0.019	-0.002***	2,789
	Low	0.018	0.004	0.012	0.026	(-6.82)	3,903	0.016	0.004	0.010	0.022	(-6.24)	3,891
$\sigma_w - \sigma_v$	High	0.002	-0.009	0.002	0.013	0.002***	2,786	0.004	-0.006	0.004	0.013	0.002***	2,789
	Low	-0.000	-0.011	0.001	0.012	(3.77)	3,903	0.002	-0.008	0.002	0.011	(3.76)	3,891
$\sigma_w^2/(\sigma_w^2 + \sigma_v^2)$	High	0.542	0.150	0.603	0.925	0.027***	2,786	0.580	0.246	0.661	0.944	0.035***	2,789
	Low	0.516	0.129	0.536	0.896	(2.86)	3,903	0.545	0.191	0.595	0.907	(3.83)	3,891

Panel B. Specifications based on EPU Duration

Variable		*Levels* Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.	*Changes* Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.
σ_π or $\sigma_{\Delta\pi}$	High	0.045	0.02	0.033	0.056	-0.003***	2,589	0.046	0.020	0.034	0.059	-0.003**	2,590
	Low	0.048	0.021	0.037	0.062	(-2.73)	4,244	0.049	0.021	0.036	0.064	(-2.56)	4,229
σ_w	High	0.017	0.005	0.013	0.025	-0.001*	2,589	0.017	0.006	0.013	0.024	-0.001**	2,590
	Low	0.018	0.005	0.013	0.026	(-1.92)	4,244	0.018	0.005	0.013	0.025	(-1.99)	4,229
σ_v	High	0.015	0.004	0.011	0.021	-0.004***	2,589	0.013	0.003	0.010	0.018	-0.003***	2,590
	Low	0.019	0.005	0.013	0.027	(-9.88)	4,244	0.017	0.004	0.011	0.023	(-8.89)	4,229
$\sigma_w - \sigma_v$	High	0.002	-0.009	0.002	0.013	0.003***	2,589	0.004	-0.007	0.003	0.013	0.003***	2,590
	Low	-0.001	-0.012	0.000	0.011	(6.24)	4,244	0.001	-0.009	0.002	0.011	(5.35)	4,229
$\sigma_w^2/(\sigma_w^2 + \sigma_v^2)$	High	0.543	0.152	0.598	0.923	0.040***	2,589	0.577	0.228	0.658	0.944	0.041***	2,590
	Low	0.503	0.113	0.513	0.887	(4.24)	4,244	0.536	0.177	0.579	0.899	(4.47)	4,229

Notes: This table reports results of subsample analyses based on the Nikolaev (2018) model. We examine the relation between accounting quality and policy uncertainty using the *levels* and *changes* specifications. Panel A reports results from identifying firm-years as belonging to the high- (low-) *EPU* subsample if the *EPU* of a given firm-year is above (below) the median for each country. Panel B uses median *EPU duration* for each country to classify firm-years into high- and low- EPU subsamples. σ_{π}^{2} ($\sigma_{\Delta\pi}^{2}$) is the variance of economic performance estimated from the *levels* (*changes*) specification. σ_{w}^{2} and σ_{v}^{2} measure the variance of the performance component and the accounting error component of accruals, respectively. $\sigma_{w}^{2}/(\sigma_{w}^{2}+\sigma_{v}^{2})$ is the measure of accounting quality that captures the fraction of accruals' variance explained by the performance component relative to the error component. For each parameter, we provide the difference in means between the high and low subsamples. *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. *EPU duration* is the number of consecutive months in a given fiscal year that are above the 80th percentile *EPU* level of each country during the full sample period. We winsorize all continuous variables at the 1% level in both tails of the distribution. *t*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.2 Policy Uncertainty, Accounting Quality, and Managed Error Component of Accruals

Panel A. Income Smoothing

Variable		Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.
$\sigma_w^2/(\sigma_w^2+\sigma_v^2)$	High	0.422	0.006	0.368	0.779	0.033***	1,429
	Low	0.389	0.000	0.310	0.734	(2.70)	2,465
$\gamma^2\sigma_\epsilon^2/(\sigma_w^2+(\gamma^2\sigma_\epsilon^2+\sigma_{\tilde{v}}^2))$	High	0.480	0.131	0.444	0.831	-0.073***	1,429
	Low	0.554	0.200	0.576	0.949	(-6.15)	2,465

Panel B. Earnings Management Incentives: Meeting/Beating Benchmark

Variable		Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.
$\sigma_w^2/(\sigma_w^2+\sigma_v^2)$	High	0.614	0.312	0.718	0.987	0.096***	1,784
	Low	0.518	0.089	0.534	0.925	(8.60)	3,153
$\theta_v^2/(\sigma_w^2+(\theta_v^2+\sigma_{\tilde{v}}^2))$	High	0.228	0.000	0.055	0.366	-0.044***	1,784
	Low	0.273	0.001	0.091	0.484	(-4.60)	3,153

Panel C. Earnings Management Incentives: Debt/Equity Issuance

Variable		Mean	Q1	Q2	Q3	H_0: Diff=0 (*t*-stat)	Obs.
$\sigma_w^2/(\sigma_w^2+\sigma_v^2)$	High	0.612	0.322	0.710	0.973	0.092***	1,733
	Low	0.519	0.130	0.524	0.907	(8.35)	3,126
$\theta_v^2/(\sigma_w^2+(\theta_v^2+\sigma_{\tilde{v}}^2))$	High	0.317	0.032	0.176	0.537	-0.035***	1,733
	Low	0.352	0.031	0.227	0.620	(-3.40)	3,126

Notes: This table reports results of subsample analyses based on the managed portion of accounting error from the Nikolaev (2018) model. Firm-years are identified as belonging to the high- (low-) *EPU* subsample if the *EPU* of a given firm-year is above (below) the median *EPU* for each country. In Panel A, we report results using the income-smoothing model. Panels B and C report results using external information that reflect incentives to manage earnings. σ_π^2 is the variance of economic performance. σ_w^2 and σ_v^2 measure the variance of the performance component and the accounting error component of accruals, respectively. $\gamma^2\sigma_\epsilon^2$ is the variance of the managed portion of accounting error attributable to income smoothing, θ_v^2 is the variance of the managed portion of accounting error attributable to external information, and $\sigma_{\tilde{v}}^2$ is the variance of the random noise portion of the accounting error. For each parameter, we provide the difference in means between the high and low subsamples. *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. We winsorize all continuous variables at the 1% level in both tails of the distribution. *t*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.3 Government Dependence, Policy Uncertainty, and Accounting Quality

Panel A. Performance and Error Components of Accruals

		Levels			*Changes*		
Variable		High EPU	Low EPU	H_0: Diff=0 (*t*-stat)	High EPU	Low EPU	H_0: Diff=0 (*t*-stat)
σ_π or $\sigma_{\Delta\pi}$	High Gov	0.040	0.043	-0.003 (-0.935)	0.043	0.045	-0.001 (-0.353)
	Low Gov	0.055	0.060	-0.005* (-1.930)	0.049	0.052	-0.003 (-1.212)
σ_w	High Gov	0.012	0.014	-0.002 (-1.587)	0.011	0.014	-0.003** (-2.38)
	Low Gov	0.022	0.024	-0.003*** (-2.690)	0.022	0.024	-0.002** (-2.332)
σ_v	High Gov	0.010	0.014	-0.004*** (-3.572)	0.008	0.012	-0.004*** (-3.326)
	Low Gov	0.015	0.017	-0.002* (-1.939)	0.013	0.014	-0.001 (-1.305)
$\sigma_w - \sigma_v$	High Gov	0.002	-0.000	0.002 (1.416)	0.002	0.001	0.001 (0.628)
	Low Gov	0.007	0.008	-0.001 (-0.722)	0.009	0.010	-0.001 (-1.077)
$\sigma_w^2/(\sigma_w^2 + \sigma_v^2)$	High Gov	0.577	0.497	0.080** (2.190)	0.578	0.535	0.043 (1.138)
	Low Gov	0.628	0.654	-0.026 (-1.340)	0.676	0.703	-0.027 (-1.573)

Panel B. Accounting Quality and Managed Error Components of Accruals

		Income Smoothing			*EM: Benchmark*			*EM: Issuance*		
Variable		High EPU	Low EPU	H_0: Diff=0 (*t*-stat)	High EPU	Low EPU	H_0: Diff=0 (*t*-stat)	High EPU	Low EPU	H_0: Diff=0 (*t*-stat)
$\sigma_w^2/(\sigma_w^2 + \sigma_v^2)$	High Gov	0.416	0.307	0.109** (2.432)	0.632	0.467	0.165*** (3.940)	0.666	0.452	0.214*** (5.277)

	Low Gov	0.426	0.456	-0.030 (-1.167)	0.632	0.672	-0.040* (-1.776)	0.626	0.652	-0.026 (-1.171)
$\gamma^2\sigma_\epsilon^2/(\sigma_w^2+(\gamma^2\sigma_\epsilon^2+\sigma_{\tilde{v}}^2))$ *or* $\theta_v^2/(\sigma_w^2+(\theta_v^2+\sigma_{\tilde{v}}^2))$	High Gov	0.457	0.591	-0.135*** (-3.139)	0.209	0.289	-0.080** (-2.432)	0.311	0.390	-0.079** (-2.143)
	Low Gov	0.455	0.505	-0.050** (-2.050)	0.224	0.209	0.015 (0.783)	0.313	0.314	-0.000 (-0.016)

Notes: This table reports the results of subsample analyses based on the Nikolaev (2018) model. We divide the subsamples based on two sorts using the median *EPU* of each country and top and bottom quartiles of *government dependence*. Panel A reports results from estimating the *levels* and *changes* models. Panel B presents the managed portion of accounting error from estimating the Nikolaev (2018) earnings management models. For each parameter, we provide the difference in means between the high and low subsamples. *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. *Government dependence* is the industry-level share of production consumed by each firm's government. σ_π^2 ($\sigma_{\Delta\pi}^2$) is the variance of economic performance estimated from the *levels* (*changes*) specification. σ_w^2 and σ_v^2 measure the variance of the performance component and accounting error component of accruals, respectively. $\gamma^2\sigma_\epsilon^2$ is the variance of the managed portion of accounting error attributable to income smoothing, θ_v^2 is the variance of the managed portion of accounting error attributable to external information, and $\sigma_{\tilde{v}}^2$ is the variance of the random noise portion of the accounting error. We winsorize all continuous variables at the 1% level in both tails of the distribution. *t*-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.4 Policy Uncertainty and Earnings Management

Dependent variable =	*AbsDA*	
	(1)	(2)
EPU	-0.047***	-0.044***
	(-9.77)	(-8.89)
GDP_GR		-0.371***
		(-6.32)
SIZE		0.002
		(1.11)
OPT_CYCLE		-0.012
		(-0.60)
CF_VOL		0.230***
		(16.99)
SALES_VOL		0.074***
		(9.94)
SG_VOL		0.000
		(0.06)
LEV		0.011
		(1.13)
SALES_GR		0.062***
		(20.10)
DAY_PAYABLE		0.006**
		(2.45)
LOSS		0.008**
		(1.97)
ROA		-0.050***
		(-3.83)
Constant	0.399***	0.333***
	(17.66)	(12.90)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	243,554	243,554
Adjusted R^2	17.3%	18.3%

Notes: This table reports regression results relating earnings management to policy uncertainty. The dependent variable is accrual-based earnings management, *AbsDA*, calculated from the performance-augmented modified Jones model as in Kothari et al. (2005). *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. We winsorize all continuous variables at the 1% level in both tails of the distribution. Appendix B provides variable definitions and data sources. All regressions include firm and year fixed effects. *t*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.5 Robustness Check

Dependent variable = *AbsDA*							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EPU		-0.029*** (-5.90)	-0.052*** (-9.88)	-0.048*** (-9.17)	-0.049*** (-9.00)	-0.044*** (-8.88)	-0.039*** (-6.34)
DURATION	-0.004*** (-6.27)						
TIMED ELECTION		0.001 (0.47)					
WUI			0.018 (0.59)				
REP FREQ				0.020*** (3.80)			
EARN VOL					-0.000 (-0.37)		
RET VOL					0.054** (2.33)		
IND SHOCK					0.025*** (8.21)		
SD SALESGR					0.000*** (5.03)		
SD RET					-0.005 (-0.87)		
IFRS						-0.002 (-0.42)	
R GDP F							-2.038*** (-4.87)
CCI							-0.268* (-1.73)
CLI							-0.300 (-1.54)

CAP INV							0.078***
							(6.50)
R&D							0.064***
							(2.89)
R&D DUMMY							0.001
							(0.23)
ISSUANCE							0.011***
							(5.62)
IPOs							0.009***
							(3.81)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	243,554	217,993	214,153	237,200	199,949	243,554	173,694
Adjusted R^2	18.3%	18.6%	17.8%	18.3%	16.0%	18.3%	19.0%

Notes: This table reports regression results relating earnings management to policy uncertainty using additional controls. The dependent variable is accrual-based earnings management, *AbsDA*, calculated from the performance-augmented modified Jones model as in Kothari et al. (2005). *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. We winsorize all continuous variables at the 1% level in both tails of the distribution. Appendix B provides variable definitions and data sources. Firm and year fixed effects are included but not reported. *t*-statistics from robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.6 Endogeneity

	Instrumental Variables Analysis						Placebo Test
	First-Stage			Second-Stage			
Dependent variable =	*EPU*			*AbsDA*			*AbsDA*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Political Fractionalization	0.128***		0.121***				
	(8.95)		(8.43)				
Veto Player Drop %		0.032***	0.031***				
		(23.30)	(22.62)				
Predicted EPU				-0.340**	-0.265***	-0.288***	
				(-2.02)	(-2.71)	(-3.70)	
Placebo EPU							-0.002
							(-0.13)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	243,541	243,554	243,541	243,541	243,554	243,541	243,554
F-statistic	80.15***	542.89***	336.24***				
Hansen *J*-statistic (*p*-value)			0.127 (0.721)				

Notes: This table reports the results of regressions addressing the endogeneity of policy uncertainty using instrumental variables analysis and a placebo test. In columns (1)–(3), we report results of the first-stage regressions using *Political Fractionalization* and *Veto Player Drop %* as instruments. Specifically, we regress *EPU* on the instruments, all of the control variables, and on- firm and year fixed effects. Columns (4)–(6) report results of the second-stage regression, which uses the *Predicted EPU* estimates from the first-stage regression. *Political Fractionalization* is the probability that two deputies picked at random from the legislature will be of different parties, and *Veto Player Drop %* is the percentage of veto players who drop from the government. Column (7) reports results from implementing the placebo test, where we present average coefficients from 100 estimations of coefficients from replacing *EPU* with *Placebo EPU*. *z*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.7 Alternative Accruals Quality Measures

Dependent variable =	*Income Smoothing*	*Earnings Predictability*	*Earnings Persistence*	*AQ*	*AbsAbnCFO*	*AbsDA*	*AbsDA*
						DA >0	*DA<0*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EPU	-0.027***	0.004***	0.011*	-0.016***	-0.016***	-0.012**	-0.054***
	(-2.91)	(4.13)	(1.96)	(-4.98)	(-3.23)	(-2.44)	(-5.87)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	162,796	147,105	147,105	195,653	243,554	97,863	145,691
Adjusted R^2	40.8%	85.8%	44.5%	60.4%	23.6%	32.2%	19.1%

Notes: This table reports regression results relating earnings management to policy uncertainty using alternative dependent variables. In column (1), income smoothing is the negative value of the correlation between changes in discretionary accruals and pre-discretionary income over the current year and the past four years. In column (2), earnings predictability is estimated as the negative value of the square root of variance from an auto-regressive model of order 1 (AR1) for annual ROA, using rolling ten-year windows. In column (3), earnings persistence is the slope coefficient estimate from an auto-regressive model of order 1 (AR1) for annual ROA, using rolling ten-year windows. In column (4), *AQ* is the standard deviation of residuals over the past five years, as in Francis et al. (2005). In column (5), *AbsAbnCFO* is a measure of real earnings management based on abnormal cash flows from operations, as in Kim et al. (2017). The dependent variable in columns (6) and (7) is the income-increasing and -decreasing portion of accrual-based earnings management, *AbsDA*, respectively, calculated from the performance-augmented modified Jones model as in Kothari et al. (2005). *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. We winsorize all continuous variables at the 1% level in both tails of the distribution. Appendix B provides variable definitions of the control variables and data sources. Firm and year fixed effects are included but not reported. *t*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.8 Role of Government Dependence and Firm-level Political Risk

Panel A. Government Dependence

Dependent variable = *AbsDA*	(1)	(2)
Normalized decile ranks of EPU	-0.001	
	(-0.10)	
Norm.decile(EPU) × Norm.decile(Govnt Dependence)	-0.042***	
	(-3.94)	
Normalized quintile ranks of EPU		-0.003
		(-0.49)
Norm.quintile(EPU) × Norm.quintile(Govnt Dependence)		-0.043***
		(-5.07)
Control variables	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	131,871	131,871
Adjusted R^2	18.1%	18.1%

Panel B. Firm-level Political Risk

Dependent variable = *AbsDA*	(1)	(2)
Normalized decile ranks of EPU	-0.020	
	(-0.67)	
Normalized decile ranks of Political Risk	0.040**	
	(2.20)	
Norm.decile(EPU) × Norm.decile(Political Risk)	-0.068**	
	(-2.45)	
Normalized quintile ranks of EPU		-0.014
		(-0.57)
Normalized quintile ranks of Political Risk		0.026*
		(1.75)
Norm.quintile(EPU) × Norm.quintile(Political Risk)		-0.046**
		(-2.16)
Control variables	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	22,572	22,572
Adjusted R^2	14.4%	14.4%

Notes: This table reports regression results based on a firm's heterogeneous exposure to government dependence and firm-level political risk. In Panel A, we examine how the interaction of *EPU* and *Government Dependence* relates to earnings management using normalized decile and quintile ranks of the two variables. The standalone measure of government dependence, *Normalized decile ranks of Government Dependence*, is subsumed by firm fixed effects. In Panel B, we examine how the interaction of *EPU* and firm-level *Political Risk* relates to earnings management using normalized decile and quintile ranks of the two variables. The dependent variable is the accrual-based earnings management, *AbsDA*, calculated from the performance-augmented modified Jones model as in Kothari et al. (2005). *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. *Government Dependence* is the industry-level share of production consumed by the government. Firm-level *Political Risk* is the share of the quarterly earnings conference calls of individual firms devoted to political risks, obtained from Hassan et al. (2019). We winsorize all continuous variables at the 1% level in both tails of the distribution. Appendix B provides variable definitions and data sources. All regressions include firm and year fixed effects. *t*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 1.9 Institutional Investors' Attention and Monitoring

Panel A. EPU loadings on Churn Rate

	(1)
Dependent Variable = *Churn Rate*	
EPU	0.042***
	(13.18)
Control variables	Yes
Firm fixed effects	Yes
Year fixed effects	Yes
Observations	94,341
Adjusted R^2	65.3%

Panel B. EPU and Institutional Investor Horizon

	Churn Rate		STIO versus LTIO	
	Low	High	LTIO > STIO	STIO > LTIO
Dependent Variable = *AbsDA*				
	(1)	(2)	(3)	(4)
EPU	-0.044***	-0.093***	-0.037***	-0.122***
	(-4.68)	(-7.60)	(-4.84)	(-6.77)
Control variables	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	60,924	60,918	88,142	33,700
Adjusted R^2	17.9%	17.4%	16.7%	19.3%
Difference in the coefficients on *EPU* (High – Low)	-0.049***		-0.084***	
	(-3.14)		(-4.33)	

Notes: This table reports the results of analyses examining how different institutional investor horizons affect the relation between *EPU* and earnings management. In Panel A, we show the results from regressing *Churn Rate* on *EPU*. Following Döring et al. (2020), we include GDP growth, firm size, lagged market-to-book ratio, dividend yield, firm age, stock return volatility, stock returns, lagged stock returns, stock turnover, stock price, and an indicator for the inclusion in the MSCI index as control variables. The coefficients on the control variables are omitted for brevity. In Panel B, we divide the sample into long- and short-horizon subsamples using median values of *Churn Rate*, and by comparing short- and long-term institutional ownership. We then examine the relation between earnings management and policy uncertainty in each subsample. Column (1) reports results using firm-year observations in the high *Churn Rate* subsample; Column (2) reports results for the low *Churn Rate* subsample. Columns (3) and (4) report results using firm-year observations where short-term institutional ownership is lower (higher) than long-term institutional ownership. Differences in the coefficients on *EPU* between the subsamples are provided in the last row of the table. The dependent variable is accrual-based earnings management, *AbsDA*, calculated from the performance-augmented modified Jones model as in Kothari et al. (2005). *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. We winsorize all continuous variables at the 1% level in both tails of the distribution. Appendix B provides variable definitions and data sources. All regressions include firm and year fixed effects. *t*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

CHAPTER 2

INSTITUTIONAL INVESTOR ATTENTION, AGENCY CONFLICTS, AND THE COST OF DEBT[13]

2.1. INTRODUCTION

A large literature shows that shareholder inattention is an important determinant of asset prices.[14] Much of this work examines inattention at the retail investor level using a variety of proxies including extreme returns, trading volume, news and headlines, advertising spending, and price limits. Because the majority of these studies use indirect proxies to measure investor attention, such events are often associated with contemporaneous changes in firm fundamentals. This makes it difficult to separate the effect of heightened investor attention from the effect of changes in firm fundamentals (Madsen and Niessner 2019). Da et al. (2011) propose a more direct measure of investor inattention using aggregate search frequency in Google and re-examine the effect of retail investor attention on asset prices. In addition to endogeneity, the main limitation of this literature is that using retail investors as a proxy for market participants may not accurately capture attention because retail investors do not represent an economically significant group of shareholders: they hold a small percentage of the aggregate value of all traded

[13] El Ghoul, S., Guedhami, O., Mansi, S., and Yoon, H.J. Submitted to *Management Science*, 07/08/2020.

[14] See, for example, Drake et al. (2012), Choi and Varian (2012), Da et al. (2011), Ginsberg et al. (2009), Teoh et al. (1998a,b), and Hirshleifer and Teoh (2003) for evidence on investor inattention.

stocks, they are not required to report their shareholdings to the Securities and Exchange Commission, and they are relatively uninformed due to their informational disadvantages and psychological biases (Barber and Odean 2008).

More recently, Kempf, Manconi, and Spalt (2017, KMS hereafter) focus on institutional rather than retail investors to address the small-shareholder inattention problem.[15] Institutional investors represent a special class of large shareholder that has unique incentives to monitor firm performance (Shleifer and Vishny 1986). These investors, however, may not have sufficient cognitive ability to process all of the information available in the market. KMS posit that institutional shareholders have only limited attention in the sense that they cannot constantly monitor all of the companies in their portfolios. As a result, they are likely to focus on certain firms while neglecting others. This argument suggests that, at the firm level, monitoring intensity is likely to vary over time. Consistent with such variation in firm-level monitoring intensity, KMS find that, when institutional shareholders are distracted, managers are less likely to be terminated for bad performance and are more likely to pursue privately optimal decisions that are detrimental to minority shareholders including making value-destroying acquisitions, granting timely CEO stock options, and curtailing dividends.

In this paper, we study the effect of shareholder inattention on bond pricing. From a bondholder perspective[16], it is theoretically unclear whether distraction should have a

[15] For the purpose of this research, the terms inattention, investor inattention, shareholder distraction, and investor distraction mean the same thing, namely the loosening of monitoring constraint by shareholders and potential investors.

[16] We focus on the bond market rather than the loan market because the former is less informationally efficient than the latter in terms of corporate defaults and bankruptcies (Altman et al. 2004). Similarly, Dichev and Skinner (2002) find that private lenders use

positive or negative effect on bond valuation. On the one hand, distraction adversely affects bond pricing by intensifying the agency conflicts associated with loosening monitoring constraints, which influences the likelihood of default. KMS show that inattention can exacerbate managerial agency problems and information asymmetry, which can lead firms to deviate from value maximization. Liu et al. (2020) study voting behavior of institutional investors in annual director elections and document that distracted shareholders weaken board oversight. Abramova et al. (2020) and Basu et al. (2019) find that investor inattention has negative consequences for firms' disclosure decisions. On the other hand, inattention implies that management faces less pressure to act in the interests of shareholders, which can potentially reduce bondholder-shareholder conflicts. For instance, KMS find that when institutional shareholders are distracted, managers are more likely to curtail dividends and make diversifying acquisitions, both of which could be beneficial to bondholders. Chu (2018) further shows that mergers between shareholders and creditors of the same firms reduce corporate payouts. Thus, whether shareholder distraction has a positive or negative effect on the cost of debt is an open empirical question.

We begin our analysis by examining the distraction–cost of debt relation in an institutional shareholder setting. To do so, we rely on KMS' firm-level proxy for institutional investor distraction. Their measure assumes that investor attention declines when a firm's institutional investors experience a shock to parts of their portfolio that are unrelated to the focal firm, i.e., when the firm's institutional investors experience large positive or negative returns in industries unrelated to the firm. Importantly, distraction

debt covenants as "trip wires" for borrowers, that private debt covenants are set tightly, and that violations are not necessarily associated with financial distress.

events arising in other industries are, by construction, exogenous to the firm and thus firms within an industry are differentially exposed due to variations in their investor base. KMS argue that their measure captures periods in which shareholders are likely to direct their attention to the parts of their portfolios that are affected by a shock and as a result away from the firm. This relaxation of monitoring constraints allows managers to actively pursue their own private benefits.

Using a sample of publicly traded bonds for 21,403 firm-quarter observations from 1,097 firms over the 1993–2015 period, we find evidence consistent with the distracted shareholder (i.e., variation in monitoring intensity) hypothesis. Specifically, we find a persistent and positive relation between institutional shareholder distraction and yield spreads that is incremental to the effect of institutional ownership. This result holds when we re-estimate the distraction measure separately for positive and negative extreme industry returns, and when we split the sample based on investment- and non-investment-grade debt categories. Economically, a one-standard-deviation increase in institutional shareholder distraction across all models is associated with an increase in yield spreads in the range of 11 to 27 basis points annually.

To validate our institutional shareholder setting, we examine the relation between inattention and the cost of debt financing at the retail investor level. Da et al. (2011) argue that the demand for public information via Google searches captures retail investors' attention. Drake et al. (2012), however, suggest that internet searches may also capture the attention of sophisticated traders. We expect retail-level investing in the equity market to be of little consequence for bond valuations because participants in the bond market are mainly institutional investors (Bessembinder and Maxwell 2008). Using hand-collected data for a large sample of search frequencies in Google, we do not find evidence of differences in yield spreads associated with retail investor inattention. For completeness, we re-run the distraction–cost of debt specification at the institutional level while controlling for retail investor inattention and continue to find insignificant results at the retail investor level. Our finding of a positive and significant relation between institutional shareholder distraction and yield spreads suggest that institutional shareholders play a more influential role than retail investors in the bond market.

Next, we investigate possible cross-sectional heterogeneity underlying our main finding. KMS show that CEOs who are more powerful than their boards may find it easier to exploit shareholder distraction to make privately optimal decisions that destroy firm value. Following Abernethy et al. (2015), we use a multidimensional measure of CEO power based on four agency variables known to influence the cost of debt: board co-option (Sandvik 2020), CEO pay slice (Bebchuk et al. 2011, Chen et al. 2013), CEO tenure (Hermalin and Weisbach 1998, Harford and Li 2007, Graham et al. 2020), and CEO duality (Aktas et al. 2019). Using the interaction between CEO power and distraction, we find that the effect of institutional shareholder inattention on yield spreads is more pronounced in firms with more powerful CEOs.

A large theoretical literature examines how information asymmetry affects the cost of capital (e.g., Leland and Pyle 1977, Stiglitz and Weiss 1981, Diamond 1985). Empirically, Cohen and Lou (2012) show that firms with higher levels of information asymmetry are more difficult to monitor and value. Han and Zhou (2014) show that measures of information asymmetry capture adverse selection in corporate bond trading, are key determinants of yield spreads, and help forecast corporate defaults. More recently, Derrien et al. (2016) use exogenous increases in information asymmetry to show that the cost of debt increases for firms that lose an analyst due to a broker closure or a merger. Accordingly, we also consider the role of several widely used proxies for information asymmetry including asset intangibility (Berger et al. 1996, Almeida and Campello 2007), analyst forecast dispersion (Mansi et al. 2011, Gao et al. 2020), and organizational complexity as captured by the number of business segments in which the firm operates (Mansi and Reeb 2002). Using interactions between the information asymmetry proxies and distraction, we find that the effect of institutional investor inattention on yield spreads is more pronounced in firms with relatively high levels of information asymmetry.

We further investigate whether the extent of product market competition impacts the effect of shareholder distraction on the cost of debt. Prior research suggests that a competitive product market serves as a powerful corporate governance mechanism that incentivizes management not to engage in value-reducing expropriation (Alchian 1950, Stigler 1958, Giroud and Mueller 2010, Chhaochharia et al. 2017). In our context, we predict that managers are more likely to exploit institutional shareholder distraction under weak product market competition. Using interactions between distraction and two commonly used measures of product competition, namely, the Herfindahl–Hirschman index and a measure of market concentration based on the four largest firms' sales, we find that the effect of investor distraction on bond yield spreads is greater in firms operating in product markets with a relatively low degree of competition.[17] Collectively, the cross-

[17] Alternatively, competition can influence the cost of debt through default risk and the loss given default. Because greater competition reduces future income, increases cash flow risk, and increases business risk (Bolton and Scharfstein 1990), it can increase firms' default risk (Valta 2012).

sectional results support our finding of a negative and significant relation between distracted institutional shareholders and yield spreads, and show that this effect is stronger in firms with a more powerful CEO, firms with greater information asymmetry, and those operating in less competitive product markets.

The results above suggest that conflicts of interests between management and all external stakeholders can exacerbate the distraction–cost of debt relation. In our next set of tests, we investigate whether bond covenants as a mechanism designed to limit bondholder-shareholder conflicts also help mitigate the increase in bond yield spreads resulting from shareholder distraction. Smith and Warner (1979) argue that when contracting is costly, debt covenants involve a trade-off between a reduction in the agency problems associated with debt and the costs of negotiating and enforcing covenants. This implies that debt with more covenants is associated with a lower probability of default and in turn lower financing costs. Therefore, we examine whether the use of bond covenants, as a governance mechanism, can attenuate the positive relation between institutional shareholder distraction and the cost of debt.

Using a large dataset on bond covenants over the 1993–2015 period, we construct three covenant indices that are appropriate in a bond contract setting: Payment Covenants Index, Asset Sales Covenants Index, and Borrowing Covenants Index (Billett et al. 2007, Mansi et al. 2021). These indices are based on 14 individual covenants that are directly related to the agency costs of debt, namely, asset substitution, dividend payment, underinvestment, and claim dilution (Myers 1977, Smith and Warner 1979, Kalay 1982). When we interact each covenant category with the shareholder distraction measure, we continue to find a positive and significant relation between shareholder distraction and yield spreads. More importantly, we find negative interaction terms for all three covenant indices as well as for the overall covenant index. These results indicate that while bond covenants weaken the positive relation between distraction and the cost of debt, they do not eliminate it.

Our analysis on the relation between distraction and the cost of debt does not distinguish between dual holders and non-dual holders. Recent research, however, suggests that dual holders, who represent a non-trivial part of institutional equity ownership and at the same time are creditors, play an important role in reducing shareholder-creditor conflicts. By holding both equity and debt claims on a firm, dual holders have stronger incentives to monitor managerial actions that would not be beneficial to creditors (e.g., risk-shifting). Moreover, dual holders are well positioned to exert monitoring on behalf of creditors for two main reasons. First, dual holders can obtain more information about the firm at a lower cost relative to pure shareholders or creditors (Peyravan, 2019, Auh and Bai 2020, Bodnaruk and Rossi 2021), which reduces the costs of monitoring. Second, dual holders are effectively creditors with voting rights (Bodnaruk and Rossi 2016), which facilitates engagement with managers. Consistent with dual holders acting as monitors on behalf of creditors, firms with dual holders have better access to bond markets (Bodnaruk and Rossi 2021), higher investment efficiency (Anton and Lin 2020), lower costs of financial distress (Chu et al. 2020), lower CEO compensation sensitivity to risk (Chen et al. 2019), and lower payouts (Chu 2018). Thus, we investigate whether the effect of distraction on the cost of debt is driven by distracted dual and non-dual holders. Because dual holders have greater incentives and ability to protect creditors from managerial expropriation, we expect the distraction of dual holders to have a stronger effect.

We find a positive and significant relation between shareholder distraction and yield spreads, with this relation driven by both dual holders and non-dual holders. Economically, a one-standard-deviation increase in distraction is associated with an increase in yield spreads of about 21 and 14 basis points annually for distracted dual holders and distracted non-dual holders, respectively. The larger economic effect of distracted dual holders is consistent with the monitoring function of these overlapping investors. These results add further support to the notion that shareholder distraction has an incrementally negative effect on bond pricing, and suggest that the impact of distraction on the cost of debt reflects the inattention of dual holders as well as a spillover effect between non-overlapping equity and bond markets (i.e., distraction of non-dual holders).

In our final set of analyses, we investigate the channels through which distraction affects the cost of debt. Motivated by prior research, we focus on corporate outcomes that matter to bondholders. Specifically, we examine the effects of distraction on measures capturing firm credit risk (Bhojraj and Sengupta 2003, Ashbaugh-Skaife et al. 2006, Harford et al. 2018). We find that shareholder distraction is associated with lower credit ratings, a higher probability of default, and increased firm-level risk. These results support the view that creditors price the change in management behavior in response to the temporary relaxation of monitoring constraints due to shareholder distraction.

Our research contributes to recent work on limited attention and asset prices. While a large strand of the literature explores the effect of investor inattention on stock prices and corporate outcomes, no paper to date has examined the effects of limited shareholder attention at the retail and institutional levels on bond pricing.[18] The bond market provides an ideal laboratory to study inattention because a relaxation of monitoring constraints by shareholders is easier to infer in this setting. For one, the bond market is dominated by its own institutional investors who possess superior monitoring ability, and thus shareholder inattention in the equity market should be inconsequential to investors in the bond market.[19] In addition, the main sources of information in the bond market are the credit rating agencies that constantly monitor based on their access to insider information when performing independent appraisals. The information contained in credit ratings is, therefore, likely to include and/or subsume the data available in institutional filings. The bond market therefore provides a setting in which the pricing model is well specified and the effects of other important information variables are known. Our finding of a positive and significant relation between shareholder inattention and bond yield spreads suggests that distraction contains information beyond the previously identified determinants of debt pricing. Our results also allows us to better understand the effects of inattention by both dual and non-dual holders on debt pricing. As such, our paper relates to growing research on the consequence of dual holders on corporate outcomes (e.g., Jiang et al. 2010, Bodnaruk and Rossi 2016, 2021, Chu et al. 2020).

Our study also contributes to the literature on the importance of information flow from the stock market to the bond market (Li 2020). Existing studies examine the timing

[18] In a sample of non-M&A bidders, KMS find that institutional distraction is costly to shareholders as it reduces future stock returns.

[19] Another reason shareholder inattention may not affect the cost of debt is the illiquid nature of the bond market. Li (2020) documents that differences in liquidity cannot explain the relation between sophisticated investor attention allocation, as proxied by trading volume, and price underreaction to information in the bond market.

of information efficiency in the stock and bond markets, with the majority of research documenting that stock prices lead bond prices. Kwan (1996), for example, finds that individual stocks tend to lead individual bonds when incorporating firm-specific information. Gebhardt et al. (2005) find no momentum spillover from corporate bonds to stocks, suggesting that past corporate bond return information is not useful for predicting stock returns in the cross-section. Downing et al. (2009) find that stock returns predict returns on non-investment-grade bonds at daily and hourly frequencies, which suggests that information in the stock market is valuable to traders in the bond market. More recently, Kecskés et al. (2013) provide evidence that equity short sellers are skilled information processors who supply predictive information to the bond market. Our research builds on this work by showing that a loosening of monitoring constraints by institutional shareholders provides predictive information to the bond market.

The remainder of this paper is organized as follows. Section 2 briefly discusses our motivation. Section 3 describes the data, variables, and summary statistics. Section 4 presents our main evidence on the relation between inattention and the cost of debt and reports results of cross-sectional heterogeneity tests. Section 4 also examines the use of bond covenants in mitigating agency problems associated with distraction and the role of distracted dual and non-dual holders. Section 5 concludes.

2.2. Distraction, Agency Conflicts, and the Cost of Debt

Financial institutions such as banks, pension funds, insurance companies, and other entities that trade in large share quantities own close to 70% of all equity shares invested in the US market. Together these institutions provide various stakeholders a valuable monitoring function by focusing on maximizing long-term value, as opposed to generating short-term profits, and by regularly engaging with management to achieve this objective (e.g., Monks and Minow 1995, Shleifer and Vishny 1997, Bushee 1998, Harford et al. 2018). However, recent research argues that institutional investors do not have the cognitive ability to monitor all firms in their portfolio (KMS). As a result, they are likely to focus on certain firms while neglecting others. Managers that are aware of a relaxation of monitoring constraints can pursue private benefits at the expense of firms' stakeholders. For example, KMS show that when shareholders are distracted, managers are more likely to make value-destroying acquisitions, grant timely CEO stock options, force fewer CEO turnovers for bad performance, and curtail dividends. Distracted shareholders are also less likely to engage with corporations, as evidenced by fewer conference calls and proposals in general meetings. Liu et al. (2020) find that shareholder distraction weakens board oversight. Abramova et al. (2020) and Basu et al. (2019) similarly document that shareholder distraction negatively affects firms' disclosure decisions. Overall, the literature suggests that a reduction in monitoring is associated with increased agency costs to all stakeholders.

From a bondholder perspective, however, it is theoretically unclear whether distraction has a positive or negative effect on debt valuation. On the one hand, managers can exploit a lack of institutional shareholder attention by pursuing activities that are privately optimal but deviate from value maximization (KMS). In this case, distraction can intensify agency conflicts and in turn the information asymmetry associated with managerial decision-making. These conflicts arise between management and all external stakeholders (both bondholders and shareholders) and between shareholders and bondholders (Ashbaugh-Skaife et al. 2006). The former conflict is due to the separation between ownership and control (Jensen and Meckling 1976), while the latter is due to the different incentives of bondholders and shareholders (Smith and Warner 1979). Both of these agency costs tend to decrease the expected value of the cash flows and increase the inability of firms to meet their debt obligations, leading to an increase in the cost of debt.

On the other hand, a lack of shareholder attention implies that management faces less pressure to act in shareholders' interests, which can reduce conflicts between debt and equity claimants. For instance, KMS find that when institutional shareholders are distracted, managers are more likely to curtail dividends (increase future cash flow) and make diversifying acquisitions (co-insurance), both of which could be beneficial to bondholders. Therefore, while the lack of shareholder monitoring allows managers to make more privately optimal decisions that are detrimental to shareholders, these decisions can be advantageous to bondholders and as a result lead to a decrease in the cost of debt capital. Existing empirical evidence on the effects of institutional shareholder distraction appears to provide support for both arguments (KMS).

Our empirical analysis on the role of dual holders sheds new light on this debate. Specifically, because dual holders hold both equity and debt claims on the same firm, they internalize the conflicts between shareholders and creditors. Dual holders' distraction therefore has unambiguous adverse effects on both shareholders and debtholders.

2.3. DATA, VARIABLES, AND SUMMARY STATISTICS

Data Sources and Sample Construction

The data come from several sources. Our main tests are based on the intersection of the Lehman Brothers (LBFI) and TRACE fixed income databases, the Fixed Income

Securities Database (FISD), the Compustat Industrial quarterly and annual databases, and the Thomson Reuters Financial (13F) database. Data for the institutional shareholder distraction measure are provided by Professor Elisabeth Kempf at the University of Chicago.

We use the LBFI database to obtain firms' cost of debt for the period 1993–2006, and the TRACE database to obtain firms' cost of debt in 2007 and thereafter. Both the LBFI and the TRACE databases cover the majority of publicly traded debt in the over-the-counter market and are representative of the sample of traded bonds (see, e.g., Klock et al. 2005, Kecskés et al. 2013, Billet et al. 2007). The final dataset contains month-end security-specific information such as bid price, coupon, yield to maturity, Moody's and S&P credit ratings, issue date, and maturity date on non-convertible bonds contained in the Lehman Brothers bond indices and traded on the Nasdaq exchange. Securities are included in the Lehman Brothers bond indices based on credit rating, liquidity, maturity, size, and trading frequency. Because the TRACE dataset only includes pricing and yield information, we merge it with the FISD to obtain debt-specific characteristics. All variables are lagged with respect to price and yield information.

Balance sheet and income statement data come from Compustat, and institutional ownership data from the Thomson Reuters Financial (13F) database. We exclude heavily regulated firms (SIC codes from 4900 to 4999) and financial firms (SIC codes from 6000 to 6999) because they are subject to different accounting rules and regulations. Our final sample consists of 21,403 firm-quarter observations from 1,097 firms over the 1993–2015 period.

Main Variables

Measuring the Cost of Debt Financing

We use the dependent variable, the log of the yield spread or the bond risk premium, to measure the cost of debt. *Yield Spread* is defined as the difference between the yield to maturity on a corporate bond and the yield to maturity on its equivalent duration-matched Treasury security. For firms with multiple observations in the sample, we compute a weighted-average yield spread, where the weight is equal to the amount outstanding for each security, divided by the total amount outstanding for all available publicly traded bonds (e.g., Mansi et al. 2009). In cases in which there is no corresponding Treasury yield available for a given maturity, we calculate the Treasury yield spread by using interpolation based on the Svensson (1994) exponential functional form model.

Measuring Shareholder Inattention

We capture institutional shareholder distraction at the firm level using KMS's aggregate measure of inattention. Although we cannot directly observe distraction, KMS use an identification strategy based on a firm's pool of institutional investors and its stock holdings in firms other than the focal firm. Specifically, to identify time-varying shifts in investor attention, KMS use exogenous shocks to unrelated industries held by a firm's institutional investors. The rationale is that, under the constraint of bounded attention, investors tend to shift their attention away from the focal firm to segments of their portfolio that are subject to industry shocks. In identifying distraction (i.e., attention-grabbing) events, KMS use "extreme" positive and negative industry returns in a given quarter. Because these events typically take time to develop and be understood, they can draw on limited attention capacity for an extended period, leading to a temporary relaxation of the monitoring constraints faced by the focal firm's managers.[20]

We obtain firm-level proxy for distraction (*Distraction*) by weighing the level of inattention for each institutional investor in a given firm and then aggregating the scores across all the institutional investors of the firm. In addition, we separately compute firm-level proxies for distraction for both positive (*Distraction Positive Shock*) and negative (*Distraction Negative Shock*) events by weighing the level of inattention for each institutional investor in a given firm driven by extreme positive and negative returns in unrelated industries, and then aggregating the scores across the firm's institutional investors. A higher value of these measures indicates that a representative investor experiences greater distraction, and therefore temporarily relaxes monitoring of a given firm.

By construction, these measures of shareholder distraction are affected by whether a shock occurs in an industry unrelated to the firm, whether the industry experiencing the shock is important to an investor's portfolio, and whether an investor that experienced an unrelated industry shock has incentives to monitor the focal firm. These measures thus have two main advantages for our purposes. First, they avoid endogeneity problems as they distinguish between exogenous changes in monitoring and attention-grabbing events that occur in other industries. Second, because these measures are time-varying, we can

[20] KMS provide several examples of attention-grabbing events, such as the recent global financial crisis (2007Q4 industry return: -10.1%), the tech bubble (2000Q1 industry return: +14.8%), and the Gulf of Mexico oil spill (2010Q2 industry return: -11.4%).

examine whether the time-variation in firm-level distraction explains the time-variation in bond yield spreads.

Turning to the retail investor inattention, we follow Da et al. (2011) and use Google's search volume index (SVI). The SVI is a relative search popularity score, defined on a scale of 0 to 100, based on the number of searches for a term relative to the total number of searches for a specific geography and for a given time period. We download weekly SVI information for the period 2004–2014 using a stock's ticker symbol and construct monthly SVI by averaging the weekly SVI for each stock. Similar to Da et al. (2011), we exclude ambiguous ticker symbols such as A, AUTO, ALL, B, BABY, BED, DNA, GPS, GAS, and GOLF, as they may not be related to equity. In instances in which weekly SVI data near the end of a calendar month include the first few days of the next month, we prorate the weekly SVI based on the number of days in that month. We then compute a stock's abnormal SVI as the log ratio of SVI to its SVI lagged value (*Retail Inattention*).

Control Variables

The remaining variables are firm- and security-specific controls. Firm-specific controls include size, leverage, profitability, market-to-book, sales growth, and cash flow volatility. Specifically, *Firm Size*, a proxy for economies of scale and a takeover deterrent, is measured as the natural log of total assets. *Leverage*, a proxy for financial health, is measured as the ratio of long-term debt to total capital. *Performance*, a proxy for financial profitability, is measured as the ratio of earnings before interest, taxes, depreciation, and amortization scaled by total assets. *Sales Growth* is the firm's annual growth in revenue. *Market-to-Book*, a proxy for growth opportunities, is computed as the market value of assets (measured as the number of shares outstanding times the share price, plus the book value of debt) scaled by the book value of assets. *Cash Flow Volatility* is the standard deviation of firm performance over the past 10 years. We further control for shareholder monitoring using institutional ownership, which is given as the ratio of common shares owned by institutions divided by the total number of common shares outstanding.

Security-specific control variables include credit rating, maturity, age, liquidity, callability, and a high-yield dummy. Firm credit rating is the average of Moody's and S&P bond ratings and represents the average credit rating at the date of the yield observation. Bond ratings are computed using a conversion process, whereby AAA-rated bonds are assigned a value of 22 and D-rated bonds a value of 1 (see Appendix F for the full list of the bond rating numerical conversions). We follow the literature and allow for the fact that the credit rating variable may incorporate part or all of the information from investor inattention (Klock et al. 2005). Specifically, to estimate the effect of credit rating excluding the effect of distracted shareholders, we regress the rating variable on the distraction variable. The error term from this specification, *Credit Rating*, incorporates credit rating information without the influence of distraction. This is our primary measure of credit ratings in our multivariate analysis.

We control for term structure effects using debt maturity, and for liquidity effects using bond age. For an individual security, *Bond Maturity* is the number of years remaining until the bond matures, and *Bond Age* is the length of time (in years) that a bond has been outstanding. For firms with multiple bonds, we compute weighted-average maturity, bond age, and credit rating using the sum of the weighted measures of all bonds for each firm, with the weight being the amount outstanding for each debt issue divided by the total amount outstanding for all publicly traded debt for the firm (Mansi et al. 2009). We also control for *Callability*, a dummy variable that equals 1 if the issue is callable, and for *High Yield*, a dummy variable that equals 1 when the debt is non-investment grade, to account for the non-linear relation between bond yield spreads and credit ratings. We winsorize all variables at the 1% level to mitigate the influence of outliers. Table 2.1 provides a description and data sources of the main variables used in the analysis.

Descriptive Statistics

Panel A of Table 2.2 presents sample summary statistics. Specifically, we report the mean, median, standard deviation, 25th percentile, and 75th percentile for the main variables used in our analyses. In the cost of debt analysis, the variable of interest is the yield spread, which has a mean, median, and standard deviation of 289, 192, and 304 basis points, respectively. Because the mean and median values differ substantially from each other, the yield spread is highly skewed. We therefore use the log of the yield spread in our multivariate analysis to provide a better fit, and to ensure that any fitted values remain positive. Looking at the firm-specific control variables, sample firms have a mean, median, and standard deviation of total assets of $11 billion, $4.4 billion, and $18 billion, respectively. The median leverage ratio is 30%, with a standard deviation of 16.7%, which implies that a large portion of the sample firms have significant liabilities in their capital structure. Sample firms are profitable with a mean profitability ratio of 3.6%, a market-to-book ratio of 3.12, and cash flow volatility of 4.3%. On average, institutions owned 71.4% of shares outstanding, with a standard deviation of 18.8%.

With respect to the bond-specific controls, the mean and median numerical bond ratings for the sample are equivalent to S&P ratings of BB+ and BBB-, respectively, which implies ratings at or slightly below investment-grade debt. On average, traded debt has a maturity of 9.1 years, with a standard deviation of 5.4 years, and has been outstanding for 3.4 years. The sample is tilted toward investment-grade debt, at 57.8%, with the remaining 42.2% consisting of non-investment-grade debt.

Panel B of Table 2.2 shows the full-sample distribution across industries using the Fama–French 12-industry classification. The firms in our sample are mainly concentrated in manufacturing (24.6%), wholesale and retail trade (15.1%), consumer non-durables (9.7%), business equipment (9.1%), chemicals and allied products (7.2%), healthcare (7%), energy (6.5%), telecommunications (4.3%), and other industries, which includes mines, construction, building material, transportation, hotels, business services, and entertainment (14.8%). The smallest concentrations of firms are is in utilities, money and finance, and consumer durables.

Panel C of Table 2.2 provides the Pearson correlation coefficients between shareholder distraction, cost of debt, and select controls. In general, the yield spread is positively correlated with the distraction measure, leverage, cash flow volatility, and analyst forecast dispersion, while it is negatively correlated with size, performance, market-to-book, credit ratings, bond maturity, and bond age. The correlation coefficients provide initial evidence that firms with distracted shareholders have a higher cost of debt.

2.4. EMPIRICAL ANALYSIS

Inattention and the Cost of Debt

In our main analyses, we examine the relation between the log of yield spreads and the inattention measures—*Distraction, Distraction (Positive Shock), Distraction (Negative*

Shock), and *Retail Inattention*—while controlling for firm- and security-specific factors known to influence the cost of debt. We perform multivariate regressions using various specifications. All models include firm fixed effects to control for unobservable firm-specific time-invariant factors and industry × quarter fixed effects to eliminate the effect of any factors that are invariant within industry-date. Standard errors are clustered at the firm level. Our primary regression model is as follows:

$$Log(Spread_{i,t}) = \alpha + \beta_1\, Inattention_{i,t-1} + \beta_{2\text{-}7}\, Firm\ Controls_{i,t-1} + \beta_{8\text{-}12}\, Debt\ Controls_{i,t} + Firm\ FE + Industry \times Quarter\ FE + \varepsilon_{i,t}\,, \quad (1^*)$$

where *Spread* is the bond yield spread and *Inattention* is one of our four measures of distraction. A positive and significant coefficient on inattention, β_1, would support the hypothesis that looser monitoring constraints are value-decreasing for bondholders.

Firm controls include size, leverage, profitability, market-to-book, and sales growth. We expect firm size to be negatively related to the log of the yield spread because larger firms enjoy greater economies of scale and stability. Leverage should be positively related to yield spreads because higher debt capacity is associated with a higher probability of default, while market-to-book should be negatively associated with yield spreads because firms with higher growth opportunities use less debt and hence have a lower probability of default. We further expect sales growth and firm profitability to be negatively related to the cost of debt financing because more profitable firms have a lower probability of default. Security-specific controls include credit ratings, bond maturity, and bond age. We expect credit ratings to be negatively associated with yield spreads because firms with better ratings have a lower probability of default, and therefore a lower cost of debt. We expect bond age and bond maturity to be positively related to yield spreads because bonds that are less liquid and those with higher maturities require a higher rate of return. Lastly, we also control for firm institutional ownership to account for firm governance structure. We expect this variable to be associated with a lower cost of debt due to the monitoring effects of institutional ownership.

Table 2.3 reports the results of our regressions on the effect of the inattention measures on the cost of debt. Model 1, our primary specification, employs KMS institutional distraction measure. Models 2 and 3 focus on distraction when industry returns are extreme (positive or negative). Models 4 and 5 are similar to Model 1 but segment the sample into investment-grade debt (greater than or equal to credit ratings of BBB-) and non-investment-grade debt (below credit ratings of BBB-). Model 6 is similar to Model 1 but replaces institutional shareholder distraction with the retail investor inattention based on Google's SVI.

In Models 1–5, we find a positive and significant (at the 1% level) relation between shareholder distraction and bond yield spreads. Across models, the coefficient varies from 0.159 for the extreme positive industry returns sample to 0.284 for the non-investment-grade sample. In terms of economic significance, a one-standard-deviation increase in shareholder distraction is associated with an increase in yield spreads of about 11 to 27 basis points annually. Models 2 and 3 show that the observed effect of distraction on the cost of debt comes from both extreme positive and extreme negative industry returns. Models 4 and 5 report that distraction is positively related to the cost of debt in both the investment and non-investment grade samples, but is slightly larger for the high-yield bond sample. A *t*-test rejects the null hypothesis of equality of coefficients between the two groups. In Model 6, we find an insignificant relation between retail investor inattention and the cost of debt, consistent with the uninformed nature of retail investors and the dominance of institutional investors in the bond market. Collectively, the results suggest that a relaxation of monitoring constraints by institutional investors is detrimental to bondholders.

The control variables take their theoretically predicted signs in all models, and in general are statistically significant. More specifically, at the firm level, our proxies for firm size, performance, and growth opportunities are negatively related to yield spreads, while firm leverage and cash flow volatility are positively related to yield spreads. At the bond level, bond maturity, bond age, and callability, are all positively related to spreads, while credit rating is negatively related to yield spreads. Institutional ownership is negatively related to yield spreads, evidence consistent with the monitoring effectiveness of institutional shareholders (Bhojraj and Sengupta 2003).

To check the generalizability of our main results, we conduct several robustness tests. Appendix G reports the estimation results. Model 1 controls for retail investor attention using *Advertising Intensity*, or the change in log advertising spending. Lou (2014) documents that managers adjust firm advertising to attract investor attention and influence short-term stock returns. The results are similar to those obtained in our primary specification (Model 1 in Table 2.3). Models 2 and 3 control for analyst following and Big 4 auditor as alternative external firm monitors. Gao et al. (2020) document that analyst following can constrain managerial opportunism. Mansi et al. (2004) show that auditor quality provides both insurance and information roles that can be beneficial to security claimants. We compute *Analyst Following* as the log of the number of analysts following the firm, and *Big 4 Auditor* as an indicator variable that equals 1 if one of the Big 4 accounting firms is the firm's auditor. In both specifications, we continue to find a positive and significant relation between institutional shareholder distraction and yield spreads. However, only the coefficient on analyst following in Model 2 is negative and significant (Mansi et al. 2011).

We next control for two governance factors that are known to influence the cost of debt: Bebchuk et al.'s (2009) entrenchment index (*EIndex*), and CEO compensation pay mix (*CEO Pay Mix*). Prior literature documents that bondholders are interested in governance mechanisms that constrain managerial incentives. Klock et al. (2005), for example, find that takeover defenses that limit shareholders' interests relative to those of managers are beneficial to bondholders. Bebchuk et al. (2009) construct an entrenchment index using a subset of 24 antitakeover provisions, namely classified boards, golden parachutes, limits to amend charter, limits to amend bylaws, supermajority, and poison pill, and find that these provisions are associated with lower firm value. Accordingly, in Model 4 of Table A2 we control for managerial entrenchment using the *EIndex*. In addition, Ortiz-Molina (2006) finds a positive relation between managerial ownership and the cost of debt, albeit only for smaller ownership. In Model 5 we control for CEO compensation pay mix, *CEO Pay Mix*, which is the pay of the top five managers in the form of stock option grants (SOG), divided by the sum of SOG, salary, and bonus compensation. In both specifications, we continue to find a positive and significant relation between shareholder distraction and yield spreads. In Model 6, we also control for a firm's relatedness to the shock industries using the measure by Hoberg and Phillips's (2010) 10-K text-based 50 industry classifications. Our results continue to hold.

For completeness, we conduct two additional but unreported tests. First, we control for two significant crisis events including the internet technology bubble in 2000 and the global financial crisis in 2009. The rationale is that while KMS distraction measure is based on "extreme" industry return periods, it is not necessary for the distraction event to stretch over a longer term for it to have an impact on monitoring capacity. The results corroborate our main findings and are not sensitive to excluding either of these crisis event periods. Second, we investigate whether the relation between shareholder distraction and the cost of debt differs when we control for the different types of institutional investors. Using Bushee's (1998) classification of institutional investors into transient, quasi-indexers, and dedicated investors, we find that our main evidence continues to hold. We also segment institutional investors based on their horizons (short- and long-term) following Harford et al. (2018) and find similar results. Overall, these results provide additional support for the view that distracted institutional shareholders are costly to bondholders.

Distraction, Firm Heterogeneity, and the Cost of Debt

The results so far suggest that firm-level temporal variation in monitoring intensity driven by shareholder distraction affects bond pricing. In this section, we investigate how firm heterogeneity affects the association between distraction and the cost of debt. In particular, we are interested in whether certain firm characteristics including CEO power, information asymmetry, and product market competition exacerbate the adverse consequences of distraction. We expect the costs of distraction to be higher under firm characteristics that are more conducive to managerial opportunism. For ease of exposition, we standardize the interaction variables to have a mean of zero and a standard deviation of one in all specifications.

We begin this analysis by examining the effect of managerial opportunism, proxied by *CEO Power*, on the relation between institutional shareholder distraction and the cost of debt. KMS argue that, in the absence of shareholder monitoring, CEOs have an incentive to maximize private benefits at the expense of shareholder value. KMS further show that more powerful CEOs can exploit an increase in shareholder distraction by engaging in privately optimal corporate actions, such as value-destroying acquisitions. Accordingly, we expect distraction to have a stronger effect on firms with more powerful CEOs. We measure *CEO Power* as a function of four firm-related variables: co-optionality of independent directors, CEO pay slice, CEO tenure, and CEO-chairman duality (Coles et al. 2014, KMS). *Board Co-Option*, a proxy for lax monitoring, is computed as the fraction of independent directors appointed after the CEO assumed office in a given year. *CEO Pay Slice*, a proxy for CEO influence, is computed as the fraction of the aggregate compensation of the top five executives that is captured by the CEO. *CEO Tenure*, a proxy for entrenchment, is computed as the number of years the CEO has been in office. *CEO-Chairman Duality*, a proxy for CEO control power, is an indicator variable that equals 1 if the CEO also assumes the chair of the board in a given year. In the spirit of Abernethy et al. (2015), we aggregate these four factors using principal component analysis to obtain our proxy for *CEO Power*. Data on board co-option come from the website of Coles et al. (2014), CEO pay slice comes from ExecuComp, and CEO tenure, CEO age, and director variables come from Institutional Shareholder Services (ISS).

To test our prediction, we add the proxy for CEO power and its interaction with the shareholder distraction to our main regression. Model 1 of Table 2.4 reports the results. We find a positive and significant coefficient on distraction, a negative but insignificant coefficient on CEO power, and a positive and significant coefficient on the interaction between distraction and CEO power. Economically, moving CEO power from the first to the third quartile augments the effect of a one-standard-deviation increase in shareholder distraction on yield spreads by about 17 basis points annually. This suggests that more powerful CEOs pursue private benefits when institutional investors are distracted. Recognizing the increased potential for expropriation, bondholders react to the weakening of monitoring by increasing the cost of debt.

We next examine whether the effect of shareholder distraction is heterogeneous with respect to various measures of information asymmetry. Recent research shows that effective governance lowers firms' cost of debt by increasing monitoring of management and reducing information asymmetry (Derrien et al. 2016, Gao et al. 2020). To the extent that institutional ownership can provide effective oversight from a bondholder perspective, the value of monitoring should be greater for firms that are more difficult to monitor and price. Accordingly, we expect the positive relation between institutional investor distraction and yield spreads to be stronger for firms with higher information asymmetry.

To test this prediction, we measure information asymmetry using asset intangibility, analyst forecast dispersion, and organizational complexity (Kang et al. 2018). *Asset Intangibility* is (-1) × [(0.715 × Receivables + 0.547 × Inventory + 0.535 × Capital) + Cash] scaled by total assets. A higher value indicates greater intangibility. *Analyst Forecast Dispersion* is the standard deviation in analysts' quarterly earnings per share forecasts, deflated by stock price (Mansi et al. 2011). *Organizational Complexity* is the number of segments in which the firm operates. In Models 2–4 of Table 2.4 we re-run our baseline distraction model after including the respective measure of information asymmetry and its interaction with distraction. The results are in line with our prediction. Across all proxies for information asymmetry, the coefficients on the interaction terms are positive and significant at either the 5% or 10% levels. Economically, moving the information asymmetry proxies from the first to the third quartile augments the effect of a one-standard-deviation increase in shareholder distraction on yield spreads by about 2 to 16 basis points annually. These findings are largely consistent with our prediction that distraction is costlier for firms that suffer greater information asymmetry problems, and hence are more difficult for bondholders to value.

We also consider firm heterogeneity with respect to industry competition. Prior research has argued that a high level of product market competition can induce management to avoid wasting corporate resources (Alchian 1950, Stigler 1958, Hart 1983, Schmidt 1997, Aghion et al. 1999). The idea is that, in a competitive market, if management inefficiently uses firm resources, companies will be unable to compete and will ultimately become insolvent (Chhaochharia et al. 2017).[21] Several empirical studies show that industry competition plays an important role in aligning incentives within firms (Karuna 2007). However, Chhaochharia et al. (2017) also find that corporate governance is more important when firms face weak product market competition. Accordingly, we expect managers to be more likely to exploit shareholder distraction, and investor inattention to have a more pronounced effect on the cost of debt, in firms in less competitive industries.

[21] Prior theoretical studies do not uniformly agree that product market competition increases efficiency. For example, Scharfstein (1988) argues that managers' incentives to exert effort will be lower because profits are lower in competitive industries. Raith (2003) helps reconcile the conflicting results by endogenizing entry into the product market. He finds that, once entry is endogenized, stronger competition implies a better alignment of incentives.

We capture market structure by using the Herfindahl–Hirschman Index (HHI), computed as the sum of squared market shares within a 3-digit SIC industry (Giroud and Mueller 2010). A higher index indicates that an industry is more concentrated or less competitive. Similar results are obtained when we use HHI based on assets (unreported). We also compute a measure of market concentration (C4) by summing the market shares of the largest four firms in a given 3-digit SIC industry (Hou and Robinson 2006). In Models 5 and 6 of Table 2.4 we re-run our main regression after controlling for industry competition and its interaction with our investor distraction measure using two proxies for industry competition. Consistent with the disciplinary role of product market competition, we find that the positive relation between distraction and the cost of debt is more pronounced for firms operating in a weaker product market environment. Economically, moving the product competition proxies from the first to the third quartile augments the effect of a one-standard-deviation increase in shareholder distraction on yield spreads by about 7 to 20 basis points annually. Overall, the results suggest that weaker monitoring by institutional shareholders is costly for bondholders when firms have more powerful CEOs, lower information asymmetry, and weaker product market competition.

Do Bond Covenants Mitigate the Effect of Inattention?

The results above demonstrate that firms with distracted shareholders have a higher cost of debt. It also shows that the findings remain robust when we control for the agency conflicts associated with the manager-stakeholder conflicts. In our next set of tests, we examine whether mechanisms designed to reduce the bondholder-shareholder conflicts, in particular, bond covenants, attenuate the relation between distraction and the cost of debt. As a governance mechanism designed to address the agency problem inherent in lending, bond covenants can help reduce the effect of agency conflicts of debt on yield spreads. Therefore, we examine whether covenants can help mitigate the relation between distraction and yield spreads. Our primary data source for information on covenants is the FISD. For each bond issue, the FISD reports over 50 variables on bondholder protection, issuer restriction, and subsidiary restriction–related covenants. Because multiple covenants often restrict the same activity, we group the covenant variables into 22 dummies that indicate whether a specific type of activity is restricted. The construction of these covenant dummies is similar to that in Mansi et al. (2021).

We focus our attention on the covenant indicators that limit the agency costs of debt, in particular those related to asset sales and investment, borrowing, and payment. Asset sales and investment restrictions include dummies for covenants that limit asset sales, restrict the issuer in certain business dealings with its subsidiaries, and restrict subsidiaries' investments. Borrowing restrictions include dummies for different types of covenants that restrict the firm from additional debt activities. Payment restrictions include covenant dummies for dividend-related payments and other restricted payments. We create indices for each category by summing the covenant dummy variables within each category. A higher index score indicates stronger creditor protection with respect to the given type of activity. In addition to the three covenant categories, we create an overall covenant index of bondholder protection by summing the 14 covenant indicators for each bond. Appendix H provides definitions for all bond covenants and lists the categories to which they are assigned.

Table 2.5 presents the results for the overall covenant index and the different covenant categories. Again, for ease of exposition we standardize all interaction variables to have a mean of zero and a standard deviation of one. All models include firm fixed effects and industry × quarter fixed effects. Model 1 examines the relation between shareholder distraction and the cost of debt while controlling for the overall covenant index. Models 2–4 are similar to Model 1, but control for each of the three broad covenant sub-indices separately. Focusing on Model 1, we find that the effect of overall covenant use on yield spreads is positive and significant when evaluated at the sample mean of distracted shareholders. This is consistent with the presence of bond covenants signaling a response to agency conflicts (Bradley and Roberts 2015). The negative interaction between distraction and total covenants indicates that the effect of distraction on yield spreads is decreasing in the number of covenants. The direct effect of distraction on yield spreads is positive, which suggests that, with zero covenants, greater distraction can intensify agency problems, and is thus associated with higher yield spreads. Setting the overall index to zero, a one-standard-deviation increase in shareholder distraction is associated with an increase in yield spreads of about 24 basis points annually. However, the incremental effect of distraction is reduced by covenants, as indicated by the negative interaction term. Setting the overall index to 1, a one-standard-deviation increase in shareholder distraction is associated with an increase in bond yield spreads of about 10 basis points annually. Thus, for the average firm, moving the overall index by just one covenant lowers the effect of a one-standard-deviation increase in shareholder distraction on yield spreads by about 14 basis points annually.

In general, the results for the sub-indices are similar to those in Model 1. Specifically, we find that the covenant sub-indices related to payment (Model 2), borrowing (Model 3), and asset transfer (Model 4) all have negative and significant interaction terms with distracted shareholders. The economic significance varies from 7 to 17 basis points annually. Overall, our evidence implies that covenants designed to reduce the bondholder-shareholder conflicts help mitigate the effect of intensified agency conflicts associated with increasing distraction on yield spreads but do not completely eliminate it.

Distraction, Dual Holders, and the Cost of Debt

Our findings suggest that distracted shareholders have an adverse effect on the cost of debt. Prior literature documents that institutional dual (equity *and* debt) ownership is a widespread phenomenon (Bodnaruk and Rossi, 2016). These dual holders play an important role in mitigating shareholder-creditor conflicts. Jiang et al. (2010), for example, examine the effect of dual holder participation on the cost of syndicated loans for commercial and non-commercial financial institutions and find that syndicated loans with dual holder participation have lower yield spreads. Chu (2018) finds that mergers between shareholders and creditors of the same firms reduces corporate payout. More recently, Bodnaruk and Rossi (2021) show that dual holders have higher demand for firms' initial bond IPOs. Accordingly, we investigate whether distraction by dual versus non-dual holders has a differential effect on the cost of debt. To the extent that dual holders have greater incentives and better ability to monitor managers and protect creditors' interests, we expect distracted dual holders to matter more for the cost of debt compared to distracted non-dual holders.

To empirically test this conjecture, we separately examine the inattention-cost of debt relation for distracted dual and non-dual holders. Following Jiang et al. (2010) and Chu (2018), we identify firms with dual holders using data from the Thomson Reuters Financial Institutional Ownership (13F) database and the DealScan database from 1989 to

2015. Similar to Jiang et al. (2010) we further classify dual holders as either commercial banking institutions or non-commercial financial institutions. We identify a commercial banking institution dual holder if the financial institution type in the Thomson Reuters data set is classified as a bank (type code=1), or the primary SIC code in DealScan is 6712 or 6011 to 6082. In either case, the dual holder is classified as a commercial bank or as a non-commercial financial institution. To measure distraction for dual and non-dual holders, we compute dual holder ownership as the fraction of firm total shares outstanding held by dual holders, commercial bank dual holder ownership as the fraction of firm total shares outstanding held by commercial dual holders, and non-commercial bank dual holder ownership as the fraction of firm total shares outstanding held by non-commercial dual holders.

Table 2.6 reports the results. Model 1 examines the relation between distracted dual holders and the cost of debt. Models 2 and 3 are similar to Model 1 but considers commercial and non-commercial dual holders, respectively. Model 4 tests the inattention-cost of debt relation for distracted non-dual holders only. All models include firm fixed effects and industry × quarter fixed effects. We find that the effect of distracted dual holders, and especially that of distracted commercial dual holders, is associated with an increase in the cost of debt. The effect is similar albeit weaker when we consider distracted non-dual holders. A one-standard-deviation increase in distracted dual holders (non-dual holders) increases the yield spreads by about 21 (14) basis points annually. Overall, we find that firms facing institutional shareholder distraction are associated with higher cost of debt regardless of whether the institution is a dual holder or not. Moreover, consistent with our expectation, we find that the effect of distracted dual holders is stronger than that for non-dual holders, reflecting the role that dual holders play in reducing shareholder-creditor conflicts.

Distraction and the Cost of Debt: Channels

Our findings suggest that bondholders price shareholder distraction. To ensure that our results reflect a loosening monitoring constraint caused by inattention instead of bad management behavior unrelated to distraction, we provide evidence on the channels through which shareholder distraction could lead to a higher cost of debt.[22] Building on the debt pricing literature (see e.g., Bhojraj and Sengupta 2003, Mansi et al. 2004, Ashbaugh-Skaife et al. 2006, El Ghoul et al. 2016, Harford et al. 2018), we examine the effect of distraction on corporate outcome variables relevant to bondholders. Prior literature suggests that shareholders can expropriate creditors by increasing firm risk (Myers 1977, Smith and Warner 1979). Accordingly, we consider the effects of distraction on three relevant proxies related to firm risk, namely credit ratings, firm default risk, and firm-specific risk.

Table 2.7 reports the results. All models include firm fixed effects and industry × quarter fixed effects. Panel A tests the effect of distraction on credit ratings. The rating agencies play a pivotal role in assessing firm credit risk and in providing information to investors, and are also used to regulate institutional investors (Opp et al. 2013). These firms must update, in a timely manner, their forecasts using a myriad of financial information related to firm performance and management behavior. Thus, we expect the rating agencies to update their prior predictions about a firm's credit ratings for those with distracted

[22] We thank anonymous reviewers for suggesting this analysis.

institutional shareholders. We find a negative and significant coefficient on distraction, indicating that higher shareholder inattention is associated with lower credit ratings.

Panel B captures default risk using Bharath and Shumway's (2008) commonly used measure of expected default frequency (EDF). This measure provides better out-of-sample performance at forecasting bankruptcies. We find an inverse relation between distraction and the EDF measure, suggesting that higher inattention is associated with a higher probability of financial distress. The results are also robust to using alternative measures of default risk derived from the competing models of Hillegeist et al. (2004) and Vassalou and Xing (2004). Panel C examines the effect of distraction on firm-level risk (Mansi et al. 2011), computed using the standard deviation of the residual from the Carhart (1997) four-factor model estimated over the quarter.[23] We find that distracted shareholders are associated with higher firm-level idiosyncratic risk. Collectively, these findings indicate that firms increase risk when shareholders are distracted, which reduces firms' credit creditworthiness. It also lend support to the idea that bondholders price the consequences of adverse managerial decisions in response to a temporary relaxation of the monitoring constraints due to shareholder distraction.

2.5. CONCLUSION

In this paper, we explore how investor inattention in the equity market affects security prices in the bond market. Drawing on a newly constructed measure of institutional shareholder distraction, we examine the effect of exogenous changes in monitoring

[23] KMS find that firms with distracted shareholders are more likely to announce diversifying acquisitions. To mitigate the concern that diversifying acquisitions may benefit the bondholders, in unreported tests we exclude firm-quarter observations with acquisitions. We continue to find that shareholder distraction increases idiosyncratic risks.

intensity on the cost of debt. Using a large sample of publicly traded bonds, we find a strong positive and significant relation between institutional shareholder distraction and yield spreads. The effect of inattention on yield spreads continues to hold when we measure distraction using extreme positive and extreme negative industry returns, and is pronounced in both the non-investment-grade and the investment-grade bond samples. The inattention-cost of debt relation is also robust to controlling for retail investor inattention, advertising intensity, analyst coverage, and Big 4 auditors. Our results extend the prior findings that managers are more likely to engage in value-destroying activities when institutional shareholders are distracted. More importantly, we show that the effect of distraction is not limited to equity valuation—it also has a significant negative effect on bond pricing.

In additional analyses, we examine how firm-level heterogeneity affects the relation between distraction and the cost of debt. We find that the effect of distraction on bond yield spreads is stronger when the firm has a more powerful CEO, firms with greater information asymmetry, or those facing weak product market competition. We also find that bond covenants mitigate, but do not eliminate, the effect of distraction. In further tests we show that while the relation between distraction and the cost of debt is driven by distraction of institutional dual holders and non-dual holders, distracted dual holders have a greater economic impact when compared to distracted non-dual holders. In our final set of tests, we find that shareholder distraction is associated with an increase in firm-credit risk, consistent with creditors pricing the consequences of value-reducing corporate actions resulting from shareholder distraction. Collectively, our findings suggest that a temporary weakening of monitoring constraints by institutional investors has a distinct negative incremental effect on bondholders.

Table 2.1 Variable Definitions

Variable	Description	Data Source(s)
Yield Spread	The difference between the weighted-average yield to maturity of the firm's outstanding publicly traded debt and the yield to maturity on a duration-matched Treasury security. Weight is defined as the amount outstanding for each issue as a fraction of all outstanding traded debt for the firm.	LBFI, TRACE
Distraction	A measure of institutional shareholder distraction, as in Kempf, Manconi, and Spalt (2017).	Elisabeth Kempf
Distraction (Positive)	A measure of institutional shareholder distraction using positive distraction events.	Estimated
Distraction (Negative)	A measure of institutional shareholder distraction using negative distraction events.	Estimated
Retail Inattention	Measure of retail investor inattention, as in Da, Engelberg, and Gao (2011).	Hand Collection
	Firm-Specific Variables	
Firm Size	Natural logarithm of total assets.	Compustat
Leverage	Long-term debt plus debt in current liabilities, deflated by total assets.	Compustat
Performance	Operating income before depreciation, deflated by total assets.	Compustat
Sales Growth	Sales growth rate, defined as the ratio of the change in sales to lagged sales.	Compustat
Cash Flow Volatility	Standard deviation of performance over the past 10 years (t-1 to t-10).	Compustat
Market-to-Book	Market value of equity, computed as the number of common stocks outstanding multiplied by price divided by balance sheet book equity.	Compustat
Asset Intangibility	Building on Berger, Ofek, and Swary (1996) and Almeida and Campello (2007), –(1)×[(0.715× Receivables + 0.547×Inventory + 0.535×Capital) + Cash]/Assets, where Receivables is Compustat item 2, Inventory is item 3, Capital is item 8, Cash is the value of cash holdings (item 1), and Assets is the book value of total assets (item 6).	Compustat
Organizational Complexity	Number of segments within a firm.	Compustat
	Bond-Specific Variables	
Credit Rating	Average of Moody's and S&P bond ratings, computed using a conversion process whereby AAA-rated bonds are assigned a value of 22, and D-rated bonds a value of 1.	LBFI, TRACE

Bond Maturity	Bond issue maturity remaining in years.	LBFI, TRACE
Bond Age	Number of years a bond has been outstanding.	LBFI, TRACE
High Yield	Indicator variable that equals 1 when the weighted-average rating is below BBB.	LBFI, TRACE
Callability	Indicator variable that equals 1 when the bond is callable.	LBFI, TRACE
Overall Covenant Index	Summation of Payment, Asset, and Borrowing covenant indices for 14 covenants.	FISD
Asset Covenant Index	Summation of four covenants related to Transaction, Investment, Asset Sales, and Asset Transfer.	FISD
Borrowing Covenant Index	Summation of eight covenants related to Funded Debt, Subordinated Debt, Senior Debt, Secured Debt, Indebtedness, Leaseback, Liens, and Guarantee.	FISD
Payment Covenant Index	Summation of two covenants related to Dividends and Other Payments.	FISD
	Governance Variables	
Institutional Ownership	Ratio of shares owned by institutions divided by the total number of shares outstanding.	Thomson 13-F
Dual Holder Distraction	A measure of institutional dual holder distraction.	Estimated
Commercial DH Distraction	A measure of institutional commercial dual holder distraction.	Estimated
Non-Com. DH Distraction	A measure of institutional non-commercial dual holder distraction.	Estimated
Non-DH Distraction	A measure of institutional non-dual holder distraction.	Estimated
Board Co-Option	Fraction of independent directors appointed after the CEO assumed office.	Coles et al. (2014)
CEO Duality	Dummy variable that equals 1 if the CEO is also the chairperson of the board in a given year.	ISS
CEO Pay Slice	Fraction of the aggregate compensation of the top five executives captured by the CEO.	ExecuComp
CEO Tenure	Number of years the CEO has been employed by the firm.	ISS
CEO Power	Principal component of CEO pay slice, CEO tenure, CEO duality, and board co-option.	Computed
CEO Age	Natural logarithm of CEO age.	ISS
CEO Pay Mix	Top management pay mix, or the fraction of pay for the top five managers received in the form of stock option grants (SOG), divided by the sum of SOG, salary, and bonus compensation.	ExecuComp

EIndex	Bebchuk, Cohen, and Ferrell (2009) entrenchment index. It varies from 1 to 6 and is constructed by subtracting 1 point from each anti-takeover provision in place (classified boards, golden parachutes, limits to amend charter, limits to amend bylaws, supermajority, and poison pill).	ISS
	Other Variables	
Analyst Following	Number of analysts following the firm in a given year.	I/B/E/S
Analyst Forecast Dispersion	Dispersion in analysts' quarterly earnings per share forecasts, deflated by stock price.	I/B/E/S
HHI Sale	Herfindahl–Hirschman index of market competition, computed by squaring each firm's share of sales revenue and summing the resulting numbers in a given competitive market as defined by 3-digit SIC industry code. A higher index indicates a more concentrated (less competitive) market.	Compustat
C4 Sale	Measure of market concentration computed by summing the share of sales revenue captured by the largest four firms in a given 3-digit SIC industry.	Compustat
Advertising Intensity	Change in log advertising spending, as in Lou (2014).	Compustat
Big 4 Auditor	Indicator variable that equals 1 if the firm is audited by a Big 4 auditor, 0 otherwise.	Compustat
Distance to Default	Measure of market-based default risk estimated using Bharath and Shumway (2008) model. Higher value indicates lower probability of default.	Bharath & Shumway (2008)
Idiosyncratic Risk	Standard deviation of the residuals for a given quarter using Carhart's (1997) four factor model.	CRSP

Notes: This table gives definitions for the variables used in the analysis, along with their data sources. LBFI is the Lehman Brothers Fixed Income database, TRACE is the Trade Reporting and Compliance Engine database provided by the National Association of Securities Dealers, FISD is the Mergent Fixed Income Securities Database, CRSP is the Center for Research in Security Prices database, SDC is the Securities Data Company's financial transaction database (primarily for mergers and acquisitions), Compustat is the financial information database, ExecuComp is the executive compensation database, ISS is the Institutional Shareholder Services database, 13-F is the Thomson Reuters Institutional Shareholder database, LPC is the Loan Pricing Corporation database, and RiskMetrics is the IRRC/ISS database.

Table 2.2 Descriptive Statistics

Panel A: Summary Statistics

	Mean	Median	Std.dev	Q1	Q3
Yield Spread (in basis points)	289	192	304	107	359
Distraction	0.156	0.141	0.080	0.095	0.215
Retail Inattention	3.653	3.827	0.638	3.321	4.116
Distraction (Positive)	0.085	0.065	0.060	0.035	0.139
Distraction (Negative)	0.076	0.060	0.057	0.032	0.105
			Firm-Specific Variables		
Total Assets ($Million)	11,006	4,410	18,067	1,970	11,352
Leverage	0.331	0.300	0.167	0.214	0.411
Performance	0.036	0.035	0.021	0.024	0.047
Sales Growth	0.028	0.017	0.161	-0.040	0.082
Cash Flow Volatility	0.043	0.031	0.039	0.020	0.051
Market-to-Book	3.124	2.304	4.929	1.468	3.644
Asset Intangibility	-0.421	-0.434	0.121	-0.508	-0.344
Cash Flow Volatility	0.043	0.031	0.039	0.020	0.051
Organizational Complexity	2.463	2.000	1.481	1.000	3.000
			Bond-Specific Variables		
Credit Rating	BB+	BBB-	A/B-	B+	A–
Bond Maturity	9.142	7.750	5.436	5.417	11.600
Bond Age	3.396	2.888	2.455	1.583	4.564
High Yield	0.422	0.000	0.494	0.000	1.000
Callability	0.726	1.000	0.446	0.000	1.000
Overall Covenant Index	3.505	3.000	2.058	2.400	4.068
Asset Covenant Index	1.153	1.000	0.584	1.000	1.333
Borrowing Covenant Index	1.894	2.000	0.988	1.496	2.285
Payment Covenant Index	0.459	0.000	0.793	0.000	0.863
			Governance and Other Variables		
Institutional Ownership	0.714	0.733	0.188	0.608	0.839
Analyst Forecast Dispersion	0.005	0.002	0.016	0.001	0.005
Board Co-Option	0.432	0.400	0.318	0.143	0.700
CEO Pay Slice	0.407	0.412	0.108	0.342	0.470
CEO Tenure (years)	7.179	5.000	7.332	1.000	10.000
CEO Duality	0.724	1.000	0.447	0.000	1.000
CEO Power	0.000	-0.031	1.249	-0.912	0.969
CEO Age	57.543	58.000	6.382	53.000	61.000
HHI Sale	0.243	0.193	0.195	0.106	0.301
C4 Sale	0.716	0.736	0.184	0.570	0.852
Distance to Default	5.516	5.274	3.249	3.205	7.685
Idiosyncratic Risk	0.019	0.016	0.012	0.011	0.022

Notes: Variable definitions are provided in Table 2.1. Panel A provides descriptive statistics for the key variables used in our analyses. The overall sample contains 21,403 firm-quarter observations from 1,097 firms over the 1993–2015 period.

Panel B: Industry Classifications

FF-12 Codes	Description	Observations	Percentage (%)	Cumulative (%)
1	Consumer Non-Durables	2,066	9.65	9.65
2	Consumer Durables	332	1.55	11.20
3	Manufacturing	5,263	24.59	35.79
4	Energy	1,381	6.45	42.25
5	Chemicals and Allied Products	1,532	7.16	49.40
6	Business Equipment	1,957	9.14	58.55
7	Telecommunications	922	4.31	62.86
8	Utilities	6	0.03	62.88
9	Wholesale, retail and Services	3,232	15.10	77.98
10	Healthcare	1,495	6.99	84.97
11	Money and Finance	52	0.24	85.21
12	Other	3,165	14.79	100.00
Total		21,403	100	

Notes: Panel B reports descriptive statistics using Fama–French 12 industry classification codes. The overall sample contains 21,403 firm-quarter observations from 1,097 firms over the 1993–2015 period. Other industries include Mines, Construction, Building Material, Transportation, Hotels, Business Services, and Entertainment.

Panel C: Selected Correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. Yield Spread	1.00															
2. Distraction	**0.05**	1.00														
3. Firm Size	**-0.28**	**-0.04**	1.00													
4. Leverage	**0.29**	**0.05**	**-0.16**	1.00												
5. Performance	**-0.28**	0.00	**0.02**	**-0.05**	1.00											
6. Cash Flow Vol	**0.20**	**-0.03**	**-0.12**	**0.13**	-0.01	1.00										
7. Market-to-Book	**-0.13**	-0.01	**0.04**	-0.02	**0.15**	**0.07**	1.00									
8. Credit Rating	**-0.60**	**0.05**	**0.38**	**-0.35**	**0.33**	**-0.35**	**0.07**	1.00								
9. Bond Maturity	**-0.17**	**0.06**	**0.18**	**-0.11**	**0.04**	**-0.11**	-0.02	**0.24**	1.00							
10. Bond Age	**-0.05**	-0.01	**0.19**	**-0.16**	0.01	**-0.13**	**0.03**	**0.19**	**0.12**	1.00						
11. Inst Ownership	**0.12**	**-0.04**	**-0.12**	**-0.13**	**-0.06**	**0.06**	**-0.03**	**-0.23**	**-0.07**	**0.02**	1.00					
12. CEO Power	**0.04**	**0.05**	-0.02	**-0.06**	0.00	0.01	**-0.05**	-0.02	-0.02	**-0.05**	0.02	1.00				
13. Intangibility	**-0.03**	0.01	**0.11**	**0.10**	**-0.04**	**-0.22**	**-0.04**	**0.07**	**-0.04**	**-0.04**	**0.03**	-0.01	1.00			
14. Org Complexity	**-0.13**	**0.02**	**0.23**	**-0.16**	**-0.07**	**-0.19**	-0.02	**0.24**	**0.06**	**0.18**	**0.03**	-0.01	**0.21**	1.00		
15. Analyst Disp.	**0.16**	0.00	**-0.04**	**0.11**	**-0.12**	**0.10**	**-0.06**	**-0.16**	**-0.03**	-0.01	**-0.03**	-0.02	**-0.08**	**-0.05**	1.00	
16. HHI Sale	**-0.05**	0.00	**0.06**	**-0.08**	**0.03**	**-0.11**	0.00	**0.11**	**0.06**	**0.14**	**0.07**	-0.02	**0.03**	**0.29**	**-0.03**	1.00
17. C4 Sale	**-0.07**	0.01	**0.07**	**-0.08**	**0.05**	**-0.17**	-0.01	**0.19**	**0.07**	**0.16**	**0.04**	**-0.05**	**0.11**	**0.31**	**-0.05**	**0.73**

Notes: Variable definitions are provided in Table 2.1. Panel C provides data on the correlations between select variables. The dataset consists of 21,403 quarter-year observations from 1,097 firms over the 1993–2015 period. Correlation coefficients in bold indicate significance at the 1% level.

Table 2.3 Inattention and the Cost of Debt

	Primary Specification	Extreme Positive Returns	Extreme Negative Returns	Investment Grade	Non-Investment Grade	Retail Investor Inattention
	(1)	(2)	(3)	(4)	(5)	(6)
Distraction	0.257***			0.274***	0.284**	
	(4.843)			(6.612)	(2.369)	
Distraction (Positive)		0.159**				
		(2.318)				
Distraction (Negative)			0.249***			
			(2.593)			
Retail Inattention						-0.001
						(-0.607)
Firm Size	-0.054**	-0.053**	-0.051*	-0.114***	0.078*	0.068
	(-2.072)	(-2.022)	(-1.956)	(-3.230)	(1.847)	(0.935)
Leverage	0.523***	0.519***	0.519***	0.247***	0.474***	0.666***
	(5.319)	(5.272)	(5.308)	(2.895)	(2.958)	(2.672)
Performance	-3.185***	-3.229***	-3.198***	-3.006***	-2.914***	-1.268
	(-7.329)	(-7.396)	(-7.248)	(-6.137)	(-4.344)	(-0.897)
Sales Growth	0.042*	0.041*	0.049**	0.039	0.022	-0.056
	(1.852)	(1.784)	(2.108)	(1.566)	(0.563)	(-0.606)
Cash Flow Volatility	0.306	0.284	0.375	-0.219	1.316	4.944**
	(0.551)	(0.508)	(0.668)	(-0.368)	(1.466)	(2.499)
Market-to-Book	-0.003***	-0.003***	-0.003***	-0.002**	-0.004*	-0.001
	(-2.614)	(-2.651)	(-2.797)	(-2.208)	(-1.796)	(-0.496)
Credit Rating	-0.034***	-0.033***	-0.034***	-0.101***	-0.016	-0.006
	(-3.458)	(-3.416)	(-3.463)	(-10.741)	(-1.360)	(-0.214)

Bond Maturity	0.009***	0.009***	0.009***	0.017***	-0.015	0.016**
	(3.260)	(3.259)	(3.335)	(8.503)	(-1.639)	(2.500)
Bond Age	0.031***	0.031***	0.030***	0.027***	0.030***	0.053***
	(6.895)	(6.943)	(6.847)	(5.796)	(2.840)	(3.771)
High Yield	0.373***	0.377***	0.373***			0.382***
	(9.329)	(9.430)	(9.285)			(5.045)
Callability	0.135***	0.135***	0.134***	0.143***	0.216***	0.171
	(4.436)	(4.391)	(4.399)	(3.619)	(2.985)	(1.592)
Institutional Ownership	-0.376***	-0.376***	-0.382***	-0.141	-0.549***	-0.220
	(-4.975)	(-4.941)	(-5.087)	(-1.591)	(-5.018)	(-0.907)
Industry × Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,403	21,036	20,959	12,329	8,944	3,103
Adjusted R-squared	0.743	0.742	0.745	0.783	0.487	0.740

Notes: Variable definitions are provided in Table 2.1. This table provides coefficient estimates from regressing the log of corporate yield spreads on inattention—distraction, distraction (positive shock), distraction (negative shock), and retail inattention—and various firm- and debt-specific controls. The data cover the 1993–2015 period. t-statistics based on standard errors adjusted for clustering by firm are in parentheses. All specifications include firm and industry × quarter fixed effects. Industry dummies are based on Fama–French 12-industry classification codes.

***p<0.01, **p<0.05, *p<0.10

Table 2.4 Distraction, Firm Heterogeneity, and the Cost of Debt

	CEO Power	Information Asymmetry			Product Market Competition	
	Principal Component	Asset Intangibility	Analyst Forecast Dispersion	Organizational Complexity	Herfindahl Hirschman Index Sale	Market Concentration Four Largest Firms
	(1)	(2)	(3)	(4)	(5)	(6)
Distraction	0.015***	0.022***	0.021***	0.018***	0.024***	0.024***
	(2.703)	(4.975)	(4.934)	(3.749)	(8.117)	(7.743)
CEO Power	-0.004	0.013				
	(-0.399)					
Distraction × CEO Power	0.010**					
	(2.426)					
Asset Intangibility		0.013				
		(0.799)				
Distraction × Intangibility		0.010***				
		(2.596)				
Analyst Forecast Dispersion			0.024			
			(1.517)			
Distraction × Forecast Disp.			0.007**			
			(2.560)			
Organizational Complexity				0.026*		
				(1.752)		
Distraction × Complexity				0.007**		
				(2.045)		
HHI Sale					0.009	
					(0.433)	
Distraction × HHI Sale					0.006*	
					(1.961)	
C4 Sale						0.043**

						(2.219)
Distraction × C4 Sale						0.011***
						(3.205)
Firm Size	-0.021	-0.062**	-0.052**	-0.052*	-0.038	-0.034
	(-0.522)	(-2.335)	(-1.963)	(-1.721)	(-1.526)	(-1.370)
Leverage	0.575***	0.511***	0.510***	0.524***	0.556***	0.556***
	(4.077)	(5.086)	(5.062)	(4.824)	(5.707)	(5.607)
Performance	-3.155***	-3.134***	-3.046***	-3.017***	-3.253***	-3.143***
	(-5.397)	(-7.063)	(-6.959)	(-6.029)	(-7.308)	(-6.913)
Sales Growth	0.060*	0.047**	0.037	0.036	-0.017	-0.012
	(1.879)	(2.046)	(1.601)	(1.421)	(-0.713)	(-0.494)
Cash Flow Volatility	0.353	0.396	0.331	0.552	0.227	0.211
	(0.410)	(0.692)	(0.590)	(0.884)	(0.428)	(0.388)
Market-to-Book	-0.002	-0.003**	-0.003***	-0.003***	-0.004***	-0.004***
	(-1.323)	(-2.425)	(-2.820)	(-2.640)	(-3.301)	(-3.258)
Credit Rating	-0.022*	-0.035***	-0.035***	-0.028***	-0.033***	-0.031***
	(-1.667)	(-3.549)	(-3.547)	(-2.684)	(-3.336)	(-2.993)
Bond Maturity	0.012***	0.009***	0.009***	0.009***	0.009***	0.009***
	(3.602)	(3.377)	(3.366)	(3.130)	(3.223)	(3.230)
Bond Age	0.031***	0.030***	0.031***	0.031***	0.032***	0.033***
	(4.617)	(6.752)	(6.972)	(6.458)	(7.379)	(7.322)
High Yield	0.396***	0.367***	0.371***	0.379***	0.378***	0.385***
	(7.344)	(9.140)	(9.189)	(8.464)	(9.432)	(9.203)
Callability	0.087*	0.131***	0.135***	0.134***	0.143***	0.137***
	(1.767)	(4.264)	(4.331)	(4.069)	(4.895)	(4.520)
Institutional Ownership	-0.043	-0.406***	-0.362***	-0.433***	-0.368***	-0.375***
	(-0.365)	(-5.376)	(-4.708)	(-5.233)	(-4.975)	(-4.951)
CEO Age	-0.043*					
	(-1.789)					
Industry × Quarter FE	Yes	Yes	Yes	Yes	No	No
Quarter FE	No	No	No	No	Yes	Yes

Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,071	20,804	20,928	18,596	21,403	20,426
Adjusted R-Squared	0.716	0.746	0.742	0.737	0.718	0.713

Notes: Variable definitions are provided in Table 2.1. This table provides coefficient estimates from regressing the log of corporate yield spreads on shareholder distraction based on firm heterogeneity—CEO power, information asymmetry, and product market competition—and various control variables. Interaction terms are standardized to have a mean of zero and a standard deviation of one. The data cover the 1993–2015 period. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. Models 1–4 include firm and industry × quarter fixed effects. Models 5 and 6 include firm and quarter fixed effects. Industry dummies are based on Fama–French 12-industry classification codes.

$^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$

Table 2.5 Bond Covenants

	Overall Covenant Index	Payment Covenant Index	Borrowing Covenant Index	Asset Covenant Index
	(1)	(2)	(3)	(4)
Distraction	0.021***	0.021***	0.022***	0.021***
	(5.261)	(5.067)	(5.301)	(5.224)
Covenant Index	0.026*	0.055***	0.004	0.025*
	(1.650)	(3.103)	(0.292)	(1.669)
Distraction × Overall Index	-0.012***			
	(-3.884)			
Distraction × Payment Index		-0.013***		
		(-4.839)		
Distraction × Borrowing Index			-0.006	
			(-1.631)	
Distraction × Asset Index				-0.015***
				(-4.974)
Firm Size	-0.052**	-0.049**	-0.056**	-0.052**
	(-2.096)	(-1.971)	(-2.246)	(-2.081)
Leverage	0.459***	0.462***	0.468***	0.460***
	(4.756)	(4.818)	(4.808)	(4.790)
Performance	-3.248***	-3.270***	-3.228***	-3.237***
	(-7.636)	(-7.656)	(-7.609)	(-7.601)
Sales Growth	0.046**	0.047**	0.045**	0.045**
	(2.085)	(2.126)	(2.046)	(2.036)
Cash Flow Volatility	0.577	0.647	0.536	0.568
	(1.067)	(1.201)	(0.990)	(1.051)
Market-to-Book	-0.003**	-0.003**	-0.003**	-0.003**
	(-2.458)	(-2.446)	(-2.457)	(-2.505)
Credit Rating	-0.044***	-0.044***	-0.044***	-0.044***
	(-5.210)	(-5.216)	(-5.080)	(-5.098)
Maturity	0.011***	0.011***	0.011***	0.011***
	(4.828)	(4.953)	(4.740)	(4.595)
Bond Age	0.029***	0.029***	0.029***	0.029***
	(6.961)	(7.082)	(6.850)	(6.860)
High Yield	0.337***	0.318***	0.348***	0.336***
	(9.330)	(8.952)	(9.418)	(9.274)
Callability	0.134***	0.123***	0.139***	0.138***
	(4.444)	(3.980)	(4.657)	(4.611)
Institutional Ownership	-0.363***	-0.362***	-0.364***	-0.364***

	(-5.210)	(-5.202)	(-5.177)	(-5.211)
Industry × Quarter FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Observations	20,640	20,640	20,640	20,640
Adjusted R-Squared	0.763	0.764	0.763	0.763

Notes: Variable definitions are provided in Table 2.1. This table provides coefficient estimates from regressing the log of yield spreads on institutional shareholder distraction based on interactions with bond covenant indexes—overall, payment, borrowing, and asset. Interaction terms are standardized to have a mean of zero and a standard deviation of one. The data cover the 1993–2015 period. Definitions for covenant indices are provided in Appendix H. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications include firm and industry × quarter fixed effects. Industry dummies are based on Fama–French 12-industry classification codes.

$^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$

Table 2.6 Distracted Dual Holders, Distracted Non-Dual Holders, and the Cost of Debt

	Dual Holders	Comm. Dual Holders	Non-Comm. Dual Holders	Non-Dual Holders
	(1)	(2)	(3)	(4)
Distracted DHs	2.560***			
	(2.740)			
Distracted Comm. DHs		2.949**		
		(2.358)		
Distracted Non-Comm. DHs			2.785	
			(1.274)	
Distracted Non- DHs				0.160***
				(2.790)
Firm Size	-0.059**	-0.062**	-0.038	-0.053**
	(-2.179)	(-2.311)	(-1.254)	(-2.070)
Leverage	0.618***	0.616***	0.700***	0.524***
	(6.609)	(6.476)	(6.568)	(5.333)
Performance	-3.378***	-3.387***	-3.287***	-3.186***
	(-8.431)	(-8.375)	(-6.682)	(-7.331)
Sales Growth	0.058***	0.060***	0.056**	0.043*
	(2.679)	(2.726)	(2.117)	(1.889)
Cash Flow Volatility	-0.055	0.125	0.108	0.308
	(-0.114)	(0.262)	(0.195)	(0.556)
Market-to-Book	-0.002*	-0.002*	-0.001	-0.003***
	(-1.764)	(-1.765)	(-0.596)	(-2.611)
Credit Rating	-0.038***	-0.038***	-0.046***	-0.034***
	(-3.762)	(-3.686)	(-4.442)	(-3.471)
Maturity	0.009***	0.010***	0.011***	0.009***
	(3.301)	(3.527)	(4.190)	(3.259)
Bond Age	0.029***	0.029***	0.030***	0.031***
	(6.684)	(6.717)	(6.602)	(6.890)
High Yield	0.344***	0.345***	0.324***	0.373***
	(8.210)	(8.123)	(7.178)	(9.335)
Callability	0.113***	0.120***	0.086***	0.135***
	(4.083)	(4.394)	(2.829)	(4.438)
Institutional Ownership	-0.409***	-0.360***	-0.394***	-0.376***
	(-5.247)	(-5.578)	(-4.713)	(-4.964)
Industry × Quarter FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Observations	19,126	18,849	14,340	21,401
Adjusted R-Squared	0.764	0.763	0.786	0.743

Notes: Variable definitions are provided in Table 2.1. This table provides coefficient estimates from regressing the log of yield spreads on institutional shareholder distraction for dual holders, commercial dual holders, non-commercial dual holders, and non-dual holders. The data cover the 1993–2015 period. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications include firm and industry × quarter fixed effects. Industry dummies are based on Fama–French 12-industry classification codes.

$^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.1$

Table 2.7 Distraction and the Cost of Debt: Channels

Panel A: Credit Ratings		Panel B: Distance to Default		Panel C: Idiosyncratic Volatility	
Distraction	-0.335**	Distraction	-1.017***	Distraction	0.007***
	(-2.236)		(-5.153)		(8.583)
Firm Size	1.452***	Firm Size	-0.475***	Firm Size	-0.001**
	(8.529)		(-4.621)		(-2.515)
Leverage	-4.492***	Leverage	-4.243***	Leverage	0.008***
	(-8.026)		(-11.575)		(7.789)
Performance	15.544***	Performance	9.824***	Performance	-0.003***
	(6.628)		(4.011)		(-4.539)
Sales Growth	-0.713***	MTB	0.008	ROE Vol	0.001**
	(-6.817)		(1.284)		(2.389)
CF Volatility	-5.926*	Op. Margin	0.242	MTB	<0.000
	(-1.838)		(0.592)		(-0.299)
MTB	-0.001	Coverage	0.027***	Div Dum.	-0.002***
	(-0.165)		(6.523)		(-4.310)
Inst. Own	-0.386	Loss	0.436**	Firm Age	-0.002**
	(-0.733)		(2.520)		(-2.458)
		Beta	-0.480***	Diversif.	-0.000
			(-10.048)		(-0.205)
		Idio. Risk	-53.126***	Tangibility	-0.001
			(-14.541)		(-0.630)
Ind × Qrt FE	Yes	Ind × Qrt FE	Yes	Ind × Qrt FE	Yes
Firm FE	Yes	Firm FE	Yes	Firm FE	Yes
Observations	21,403	Observations	20,932	Observations	21,403
Adj. R-squared	0.910	Adj. R-squared	0.787	Adj. R-squared	0.696

Notes: Variable definitions are provided in Table 2.1. This table provides coefficient estimates from regressing credit ratings, distance-to-default (higher values indicate lower probability of default), and idiosyncratic risk on institutional shareholder distraction and several controls. The data cover the 1993–2015 period. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications include firm and industry × quarter fixed effects. Industry dummies are based on Fama–French 12-industry classification codes.

***p<0.01, **p<0.05, *p<0.10

CHAPTER 3

BOARDS DURING BAD TIMES:

EVIDENCE FROM THE BOND MARKET

"*People often question whether corporate boards matter because their day-to-day impact is difficult to observe. But when things go wrong, they can become the center of attention.*"

- Adams, Hermalin, and Weisbach (2010)

3.1. INTRODUCTION

A substantial body of research emphasizes the role that boards of directors play in monitoring the managerial decision-making.[24] While this literature largely investigates how variations in different board structures affect corporate policies and mitigate managerial misconduct, little is known on how valuable directors' monitoring is in bad times.[25] In this study, I address this gap by examining whether and how cultural diversity stemming from directors' ancestral origins affects firm performance during bad times.

Because there are greater variations in economic outcomes across firms and over time under increased uncertainty (e.g. Bloom 2009), there are good reasons to believe that

[24] See, for instance, Dechow, Sloan, and Sweeney (1996), Klein (2002a, 2002b), Xie, Davidson, and DaDalt (2003), Anderson, Mansi, and Reeb (2004), and Ashbaugh-Skaife, Collins, and LaFond (2006).
[25] In a similar manner as in Loh and Stulz (2018), I define bad times as periods of increased macroeconomic uncertainty.

the effectiveness of corporate governance mechanisms varies under different states of the economic environment (Loh and Stulz 2018). In particular, an effective board may influence firm performance during high-uncertainty periods through monitoring activities.

Heightened economy-wide uncertainty hinders the information environment (Kim, Pandit, and Wasley 2016; Nagar, Schoenfeld, and Wellman 2019) and presents opportunities for insiders to extract rents at the expense of other stakeholders (e.g. Johnson, Boone, Breach, and Friedman 2000; Lemmon and Lins 2003; Djankov, La Porta, Lopez-de-Silanes, and Shleifer 2008). To the extent that boards play an important role in monitoring and disciplining managerial decisions, corporations with preexisting board structures that allow managers to commit to a more transparent financial reporting amidst increased uncertainty may benefit from minimizing expected contracting costs (Armstrong, Guay, and Weber 2010). Firms with preexisting weaknesses, however, are more visible during economic downturns because the quality of their board structures may attract more market discipline (Johnson, Boone, Breach, and Friedman 2000; Francis, Hasan, and Wu 2012). Therefore, focusing on board attributes that are under a firm's control is valuable because by managing them, the firm can mitigate *ex ante* the adverse effects of increased uncertainty.

A priori, it is unclear whether cultural diversity contributes to more effective board monitoring during bad times. Although a vast literature emphasizes culture as a set of beliefs and values that guides individuals' cognitive and psychological processes (e.g. Hofstede 2001; Schwartz 2012), cultural diversity is a unique dimension of board diversity that has received little attention to date in the finance literature.[26] A natural null hypothesis for the effect of cultural diversity on board monitoring is that cultural diversity does not matter. Cultural diversity may not affect board effectiveness since directors are rational and sophisticated professionals, and their decision-making is largely a cognitive process that is immune to social and psychological biases. However, behavioral biases have been found to significantly affect decision-making process (e.g. Shiller 1999; Hirshleifer, 2015), suggesting that cultural backgrounds of directors may influence the effectiveness of board monitoring. On one hand, board cultural diversity can adversely impact board monitoring effectiveness by disrupting the board's decision-making process. Arrow (1951) has demonstrated that groups with a more diverse set of individual preferences and perspectives may have greater source of conflicts and misunderstandings, which pose obstacles in reaching consensus. Consequently, the decision-making process is difficult to predict and resulting outcomes are more erratic under a diverse group. This view suggests that board cultural diversity may obstruct the monitoring process.

On the other hand, cultural diversity may improve board monitoring by widening the scope of abilities and facilitating more rapid knowledge accumulation (e.g. Terjesen, Sealy, and Singh 2009; Adams and Ferreira 2009; Adams, Gray, and Nowland 2010). In particular, Ljungqvist and Raff (2020) analytically shows that greater diversity within the

[26] Although different forms and/or sources of diversity may share some aspects that yield similar outcomes in parallel (Van Knippenberg and Schippers 2007), not all sources of diversity affect group outcomes in the same way (Milliken and Martins 1996; Horwitz and Horwitz 2007; Rao and Tilt 2016; Giannetti and Zhao 2019). In particular, the effects of cultural diversity may be distinct and stronger than other sources of diversity because culture is a fundamental representation of group categorization and stereotyping that occurs below the surface of consciousness (Lane, Maznevski, DiStefano, and Dietz 2009; Stahl, Maznevski, Voigt, and Jonsen 2010).

boardroom may strengthen directors' incentives to gather high-quality information, resulting in an increase in the equilibrium monitoring efforts and firm value. Boards with diverse opinions anticipate disagreement in the future, which makes deadlocks more likely (Donaldson, Malenko, and Piacentino 2020). However, because deadlock is costly, the threat of deadlock in a diverse board serves as a commitment device for directors to disregard their personal biases and converge on the firm's optimal strategy by gathering and responding only to persuasive and precise information. Directors responding to high-quality information collected through closer evaluation of alternatives translates into greater monitoring efforts. Increased ambiguity about the optimal course of action in heightened uncertainty periods may lead to higher threat of deadlock, which further motivates the diverse board to improve monitoring *ex ante*. This argument predicts an increase in monitoring incentives for a board with greater cultural diversity.

In sum, the relation between board cultural diversity and monitoring effectiveness is an open empirical question.[27] Under increased information asymmetry during bad times, disagreements and possibilities of deadlocks in decision-making process are more likely, which suggests that both the costs and benefits of board cultural diversity may become particularly acute. In this paper, I test these competing hypotheses by examining the monitoring role of board cultural diversity during bad times. I focus on a class of stakeholders, namely creditors, based on the prior literature that finds monitoring intensity

[27] The effect of cultural diversity on a board's advisory role is less clear. On one hand, cultural diversity may improve communication and facilitate information exchange within a board, leading to more effective advising. On the other hand, the frictions in communication in a diverse board may make advising less effective, and to the extent that monitoring and advising are complementary (Brickley and Zimmerman 2010), less monitoring may indicate less advising.

is most important to bondholders, because: (i) bonds have downside risk but no upside potential (e.g. Hong and Sraer 2013; Bai, Bali, and Wen 2019), (ii) monitoring by external actors (institutional investors, credit rating agencies, analysts, and Big 4 auditors) is also important and therefore any evidence from this research should be incremental, and (iii) bond prices are more precise than equity prices and are less subject to endogeneity (Fleming and Remolona 1997). From a creditor's perspective, the benefits of board monitoring are more pertinent when there is a greater uncertainty about the likelihood of future default (Sengupta 1998). Thus, the disciplinary role of the board, as one of the most important factors influencing bond prices (Anderson, Mansi, and Reeb 2004), should be more important during periods increased uncertainty.

My empirical strategy involves two steps. First, I validate my context of bad times by confirming the relation between economic policy uncertainty (EPU) [28] [29] and the cost of debt. My main proxy for EPU is the widely used policy uncertainty index of Baker, Bloom, and Davis (2016) (henceforth BBD) which focuses on the political and regulatory system as a source of aggregate uncertainty that potentially affects all economic actors. Using a sample of 33,225 firm-quarter observations of publicly traded bonds over the period 1993–

[28] The benefits of board cultural diversity may depend on different episodes of policy uncertainty, which is an important source of macroeconomic uncertainty that creditors price. EPU refers broadly to uncertainty about government and policy actions that influence the general macroeconomic conditions. To the extent that investors cannot fully anticipate "who will make the policy decisions, what policy actions will be undertaken and when, and the economic effects of policy actions" (Baker, Bloom, and Davis 2016, p.1598), they face uncertainty over how regulatory decisions will affect their profitability. Kaviani, Kryzanowski, Maleki, and Savor (2020) show that policy uncertainty adversely affects the bond market by documenting a positive relation between EPU and corporate credit spreads.

[29] My main conclusions on the effect of cultural diversity remain qualitatively similar if I define bad times as periods of heightened macroeconomic uncertainty that relates to real activity, as measured by Jurado, Ludvigson, and Ng (2015).

2015, I show that the relation between policy-induced economic uncertainty and yield spreads is positive and significant. Economically, a 1% increase in EPU increases yield spreads by 2.53% per annum with respect to the sample mean. Decomposing the overall EPU into its four constituent components, I find that the positive relation is largely supported across different EPU components. The results are robust to controlling for other micro- and macro-economic sources of uncertainty and the effect of elections, and controlling for the confounding effects of macroeconomic conditions, the level of capital investment, and securities issuance. This suggests that the evidence is not driven by other macroeconomic effects coinciding with EPU or decline in investment or financing activities under high EPU (Gulen and Ion 2016). The results are also robust to controlling for endogeneity using an instrumental variables approach and placebo test.

My main focus in this paper is on whether and how board cultural diversity affects performance during bad times. Thus, in a second step of my analysis, I investigate the role of board cultural diversity in moderating the adverse impact of EPU on yield spreads. My measure of the cultural diversity encompasses diversity arising *within* the board that incorporates differences in cultural backgrounds between all director pairs. I also examine whether the effect of diversity extends to the heterogeneity in the cultural values *between* the CEO and the board (hereafter board-CEO cultural distance).[30] Consistent with the benefits of cultural diversity in facilitating monitoring, I find that boards with greater cultural diversity and greater cultural distance from the CEO have lower cost of debt during high policy uncertainty periods. In particular, the results suggest the effect of board cultural

[30] A CEO typically sits on a board. Here, I refer to CEOs as distinct from boards and define CEO-board cultural distance as the extent to which the cultural backgrounds of directors diverge from that of the CEO.

diversity is concentrated among independent directors, but diversity within inside directors does not have a significant role. These findings provide support that cultural diversity is associated with monitoring function and contributes to lower yield spreads during bad times. Similarly, I find that the effect of board-CEO cultural distance is concentrated among audit committee members. These results are robust to using alternative measures of culture and alternative sample countries in defining CEO and director ancestry.

In additional tests, I find that boards with greater proportion of independent directors, female participation, and director engagements, and less proportion of interlocking directors, moderate the adverse impact of policy uncertainty, which provides corroborative evidence of the role of board monitoring during bad times. More importantly, I find that the effects of board cultural diversity and board-CEO cultural distance extend above and beyond the presence of other information intermediaries including auditors, financial analysts, and institutional investors.

I supplement my analysis with placebo tests to mitigate the concern that potential endogeneity associated with board cultural diversity may spuriously drive the results. It is possible, for instance, that the effect I document might simply be driven by a false correlation that reflects the effectiveness of board diversity structures throughout different time periods that is not necessarily related to the fluctuations of policy uncertainty. To address this concern, I create a placebo EPU variable from 100 random samplings of EPU and rerun my analyses. I do not find any significant evidence that bond pricing experiences systematic change with the fluctuations in the placebo EPU variable. These results provide support for my findings that the effectiveness of board diversity upon different episodes of policy uncertainty drives the changes in debt financing costs.

This paper makes several contributions. First, I add to the literature by providing evidence that the quality of board monitoring depends not only on the structure of the board captured by traditional attributes (e.g. size, independence, proportion of interlocking directors), but also on the interaction between directors. I find that board cultural diversity and board-CEO cultural distance, measured based on ancestral origins, are important attributes related to monitoring that extend beyond the effect of other information intermediaries. While a number of studies have focused on various aspects of board diversity such as gender, nationality, experience, education, tenure, and independence (e.g. Adams and Ferreira 2009; Anderson, Reeb, Upadhyay, and Zhao 2011; Frijns, Dodd, and Cimerova 2016; Bernile, Bhagwat, and Yonker 2018), there is limited empirical evidence on how cultural diversity in directors' ancestral origins affects the economic decisions of corporations. In addition, extant research examining the effect of cultural differences on corporate outcomes is largely limited in its ability to isolate culture from other institutional effects (Aggarwal, Faccio, Guedhami, and Kwok 2016). I extend the literature by focusing directly on the cultural diversity stemming from directors' ancestral roots within the boardroom, which eliminates the confounding effect of other institutional factors. My findings complement the nascent literature exploring top management's ancestral origins as an important dimension of corporate governance (e.g. Liu 2016; Giannetti and Zhao 2019).

Second, I add to the literature on boards of directors by providing evidence on how board characteristics help moderate the adverse impact of policy uncertainty on the cost of debt. A vast literature has explored the role of board characteristics in reducing corporate credit spreads. While existing research has found that effective board structures provide value to creditors by ensuring the reliability of financial reporting, they largely preclude the possibility of a differential impact of the board under different states of the economic environment. However, a board's monitoring function that safeguards the assets of the firm and ensures that creditors' interests are well enforced may be especially pertinent during a period of high uncertainty when firms' governance structure is the most visible and needed. I show that board characteristics influence creditors' assessment of a firm's prospects during periods of high policy uncertainty.

Third, I contribute to the growing literature on the economic consequences of policy uncertainty by presenting an early attempt at examining how corporate characteristics can alleviate the adverse impact of policy uncertainty. My study is related to that of Loh and Stulz (2018), who provide evidence that analysts have greater stock price impact as policy uncertainty increases because they exert more effort and investors, in turn, rely more on analysts during bad times. While they focus on external governance as measured by analysts' performance, however, I examine the internal governance mechanisms and firm characteristics, specifically the board, that the firm can control and change. In particular, I highlight the monitoring role of the board and show that the effects of director cultural diversity and board-CEO cultural distance reach above and beyond the effect of other external information intermediaries. My study also complements the findings in Nagar, Schoenfeld, and Wellman (2019) who show that by improving disclosure, managers can moderate the increase in information asymmetry during periods of high policy uncertainty. I extend the existing research by evaluating a broader set of governance variables and providing evidence of the relevance of director monitoring from creditors' perspective.

The rest of the paper is organized as follows. In Section 2, I develop my main hypotheses. In Section 3, I discuss the data and sample constructions, and present summary statistics. Empirical results are shown in Section 4. I conclude in Section 5.

3.2. HYPOTHESIS DEVELOPMENT

EPU and cost of debt

Recent empirical evidence suggests that policy uncertainty is associated with significant reductions in investment (Gulen and Ion 2016) and distortion of the investment decisions (Drobetz, El Ghoul, Guedhami, and Janzen 2018). The volatility of cashflow associated with an inefficient investment decision may lead to a higher risk of default (Durnev 2010; Pástor and Veronesi 2013). In addition, firms face higher default losses during times of macroeconomic shocks as multiple firms suffer bad performance at the same time and liquidating assets may become particularly costly (Chen 2010). Taken together, as policy uncertainty increases, the fluctuations in default likelihood and default losses may lead to an increase in the present value of expected default losses, which points to a positive relation between policy uncertainty and debt financing costs. Theories of tunneling also suggest that as policy uncertainty increases, the expected fall on investment returns may incentivize managers to extract rents and pursue private benefits (Johnson, Boone, Breach, and Friedman 2000; Friedman, Johnson, and Mitton 2003). Bondholders, anticipating this increased risk of expropriation, command a higher cost of debt. Formally, I state my hypothesis as follows:

H1: EPU is positively related to the cost of debt.

The role of board monitoring

My investigation is motivated by prior works that show that the board is an important element in affecting the integrity of financial accounting reports. Bondholders find the monitoring role by the board highly relevant in pricing bond yields (e.g. Anderson, Mansi, and Reeb 2004; Bhojraj and Sengupta 2003). From the creditors' perspective, board monitoring may be especially valuable during periods of high EPU because the degree of expected default losses and the likelihood of managerial opportunism significantly increases (Johnson, Boone, Breach, and Friedman 2000; Djankov, La Porta, Lopez-de-Silanes, and Shleifer 2008). Corporations with effective board monitoring structure in place may be able to credibly commit to a higher reporting quality, the value of which is increasing under conditions of market uncertainty through allowing bondholders to more accurately assess default risk (Sengupta 1998). Thus, I posit that an increase in policy uncertainty motivates creditors to price reliable information signals provided by effective monitoring of the board. Below, I discuss board cultural diversity and board-CEO cultural distance as important dimensions influencing board monitoring.

Board cultural diversity

In addition to the traditional observable structures of the board as documented in prior literature (e.g. size, independence, interlocking director proportion), the effectiveness of board monitoring depends on the interactions between directors in the decision-making processes (Giannetti and Zhao 2019). I focus on the heterogeneity in cultural values within the boardroom that stems from the ancestral representations of each director. I examine the cultural variation within the board based on the stream of research that emphasizes the differences in individuals' cultural values as representative of the fundamental differences between one group's and others' perceptions, and therefore shapes the collective economic behavior of the group (Hofstede 2001).

I focus on the monitoring effectiveness of a culturally diverse board, which may be dependent on the firm's information environment under greater macroeconomic uncertainty. On one hand, the benefits of board cultural diversity may be more important during bad times when there is greater uncertainty about the quality of information and the firm's future profitability (Nagar, Schoenfeld, and Wellman 2019). Ljungqvist and Raff (2020) show analytically that the threat of deadlock incentivizes directors on a diverse board to gather high-quality information, raising their *ex ante* monitoring efforts. A board with homogenous perspectives cannot commit to a high information standard in that directors may find it optimal to use all available information. In contrast, directors in a diverse board have different personal biases, which motivates them to collect and respond only to precise information, or otherwise be deadlocked. Because deadlock is costly, the threat of deadlock allows a diverse board to increase monitoring efforts and dominate a homogeneous board in terms of monitoring quality. They show that diversity is more desirable under poorer information environment because directors' monitoring efforts are more sensitive to the threat of deadlock. To the extent that there is greater informational ambiguity about the optimal course of action during bad times (Kim, Pandit, and Wasley 2016; Nagar, Schoenfeld, and Wellman 2019), and a diverse board increases its monitoring efforts under a poor information environment (Ljungqvist and Raff 2020), I expect greater cultural diversity contributes to higher-quality board monitoring during high-EPU periods, which benefits creditors.

On the other hand, greater cultural diversity may also suggest more difficulties in coordination and communication breakdowns, which compromise the monitoring functions of the board (Arrow 1951). To the extent that information quality becomes more difficult to assess under increased uncertainty, coordination problems may become more severe in bad times and deteriorate monitoring effectiveness of a culturally diverse board. This argument is in line with the findings in Giannetti and Zhao (2019) which suggest that diversity may lead to more conflicts in the boardroom and greater inefficiencies in decision-making process.

I present my hypothesis in an alternative form and turn to data to find out which of the two effects dominates during heightened EPU periods.

H2a: The effect of EPU on the cost of debt is influenced by cultural diversity.

CEO-board cultural distance

In addition to cultural diversity *within* the board, I also examine whether the effect of cultural diversity extends to the relation *between* the CEO and the board by evaluating the role of cultural distance between the CEO and directors. Directors with greater cultural distance from the CEO may have greater divergence of personal biases from the CEO that can induce disagreements. Building on the previous argument that cultural diversity can improve board monitoring, a higher likelihood of disagreements may incentivize the director to collect and evaluate the quality of information more closely, which leads to higher monitoring effectiveness. This argument can be linked to the findings in the literature in the context of cross-border acquisitions, which suggests that the positive relation between post-acquisition performance and acquirer–target cultural distance can be explained by the expansion of business routines and learning advantages (e.g. Morosini, Shane, and Singh 1998). To the extent that the ability to elaborate on existing information leads to greater monitoring effectiveness (Terjesen, Sealy, and Singh 2009), a larger cultural distance between the board and the CEO may facilitate board monitoring.

Alternatively, greater cultural distance may also induce communication frictions and conflicts. Consistent with this argument, in the context of cross-border acquisition, prior literature documents a dark side of cultural distance in increasing the costs of integration and introducing coordination frictions derived from a lack of understanding of the values and norms of the counterparty (e.g. Gomez-Mejia and Palich 1997; Jemison and Sitkin 1986). Similarly, greater cultural distance between the CEO and the board may compromise the monitoring function of the board by obstructing the information exchange between the CEO and the board, which is essential for the functioning of an effective board (Adams and Ferreira 2007; Harris and Raviv 2008). Additionally, to the extent that similar culture facilitates trust (Guiso, Sapienza, and Zingales 2009), a lack of trust associated with greater cultural distance may introduce competitive behaviors and conflicts (Dirks and Ferrin 2001) which hinders communication between the CEO and directors and leads to inefficiencies in decision-making processes.

I present my hypothesis in an alternative form and turn to data to find out which of the two effects dominates during increased EPU periods:

H2b: The effect of EPU on the cost of debt is influenced by the cultural distance between the CEO and the board.

3.3. DATA, VARIABLES, AND SUMMARY STATISTICS

Data sources and sample construction

I obtain data on board characteristics from Institutional Shareholder Services (ISS), which contains director-level information including name, gender, age, tenure, independence, outside directorships, and membership to the audit committee. My board cultural diversity and distance data are constructed from combining the ISS, ExecuComp, and Ancestry.com[31] datasets. I identify each directors' family names to match across these datasets.

Information on bonds is collected from the LBFI and the TRACE fixed income databases. The LBFI provides month-end security-specific information on bonds for the years 1993–2006 based on firm size, liquidity, credit ratings, and trading frequency, and contains information such as bid price, issue date, coupon, yields, maturities, durations, and Moody's and S&P credit ratings. The TRACE database covers the years 2007 and afterward. Because the TRACE database only contains pricing and yield information, I merge it with the FISD database to obtain the debt-specific information. Data on EPU come from Baker, Bloom, and Davis (2016).

I first combine the three bond data sets, and merge with firm accounting data obtained from the Compustat Industrial quarterly database. I then merge the combined data with ISS, my board cultural diversity data, and Baker, Bloom, and Davis's (2016) EPU index. For all variables, I take the earliest available data before the observation date of the bond pricing and yield information. Because various accounting rules and regulations

[31] Ancestry.com provides information on the country of origins of passengers of ships from foreign ports arriving to the port of New York between 1820 and 1957.

affect bond yields, I exclude heavily regulated and financial firms with SIC codes from 4900 to 4999 and 6000 to 6999. I also omit observations if the data necessary for my baseline empirical model are missing. To reduce the impact of outliers, I winsorize all continuous variables at the 1% level from both tails. My full sample consists of 33,225 firm-quarter observations representing 1,410 unique firms over the 1993–2015 period.

Measuring the cost of debt financing

My dependent variable, the log of the yield spread or the bond risk premium, is defined as the difference between the weighted-average yield to maturity on a corporate debt and the yield to maturity on a Treasury security with a corresponding duration. The yield on the corporate debt is the discount rate that equates the present value of all future cash flows to the price. As in Mansi, Maxwell, and Wald (2009), if a firm has multiple debt securities outstanding in a given time period, I give weights to each debt security equal to the amount outstanding for that particular security divided by the total amount outstanding for all available publicly traded bonds. In cases where there is no equivalent Treasury maturity, I calculate the Treasury yield spread using the Svensson (1994) interpolation exponential functional model.

Measuring economic policy uncertainty

I employ the EPU index developed by Baker, Bloom, and Davis (2016) to proxy for policy uncertainty, my key explanatory variable. BBD measure the monthly policy uncertainty index as the weighted sum of the four key components: news-based policy uncertainty index, the federal tax code provisions uncertainty index, the Consumer Price Index (CPI) forecast dispersion index, and the federal, state, and local government expenditure forecasts dispersion index. The first component, the news-based EPU, is constructed using a computer-automated search of ten major newspapers in the United States. The authors count the number of articles that contain the terms "uncertain" or "uncertainty," "economic" or "economy," and at least one policy-relevant term such as "Congress," "deficit," "Federal Reserve," "legislation," "regulation," or "White House". To account for the differences in the volume of articles, for each of the ten newspapers, the counts are scaled by the total number of articles and standardized to have unit standard deviation. The normalized values are summed over each month to have one representative multi-paper index, then renormalized to have an average of 100 from January 1985 to December 2009.

The other component indices capture uncertainty related to specific policy categories. The tax uncertainty measure is the weighted sum of tax provision revenues expiring in the next ten years. Higher weights are given to dollar amount of tax provisions expiring in the nearer future. The CPI forecast dispersion index and the government expenditure dispersion index are measured as the four-quarter-ahead interquartile ranges of CPI and the federal, state, and local government spending forecasts. BBD normalize each component and construct a composite EPU index (EPU Overall) that assigns a weight of 1/2 for the news-based component (EPU News) and weights of 1/6 for the other three components: EPU Tax, EPU Cpi, and EPU Fsl.

BBD show that the composite index captures uncertainty spikes around important policy-relevant events such as the financial crises and wars but does not necessarily correlate with all political events that have few economic ramifications. Given that the main component of the index is based on the news-based component, BBD conduct various validation tests to address the concern that the measure may be biased in terms of accuracy and reliability. The validation exercises include human audits and testing for political slants, as well as comparison to other measures of economic uncertainty. BBD confirm that their index effectively captures the overall policy-related uncertainty without significant biases and is distinct in scope from other measures of macroeconomic uncertainty.

Following Gulen and Ion (2016), I define EPU as the natural logarithm of the arithmetic average of the BBD index over the three months of a given firm's calendar quarter. For robustness, I also consider other specifications of EPU.

Measuring board cultural diversity

Although culture is not directly observed, the systematic differences between one group's beliefs and values and others' affect financial decision-making and economic outcome (e.g. Guiso, Sapienza, and Zingales 2006). These differences can be quantified to allow for comparison across different groups. Hofstede's (2001) work was one of the earlier attempts to quantify cultural values into different dimension scores. His original surveys focus on the four dimensions of culture: individualism-collectivism, masculinity-femininity, power distance, and uncertainty avoidance. I construct my diversity measure based on these initial four dimensions, as they have been used most extensively (Frijns, Dodd, and Cimerova 2016; Kirkman, Lowe, and Gibson 2016).[32] The individualism dimension measures the degree to which members of a society value independent construal of self. The masculinity score indicates how much value societies' members place on the traditional masculine values, such as achieving something visible and showing

[32] The fifth and sixth dimensions, namely long-term orientation and indulgence, were introduced *ex-post* using different samples of participant surveys. My main inference remains qualitatively similar if I include these additional dimensions to construct cultural diversity measure.

assertiveness. The power distance score reflects the way in which society deals with unequal distribution of power. Lastly, the uncertainty avoidance score captures the extent to which people in a society tolerate uncertainty and ambiguity.

To capture board cultural diversity, I proceed in three steps. I first collect the family names of directors from the ISS director database. Then, I identify the ancestral countries of origins of each director. After establishing each director's family name with countries of origins, I associate each director with Hofstede's culture dimensions based on director's countries of origin.[33]

To identify directors' ancestral countries of origin I follow the process used in Liu (2016), Pan, Siegel, and Wang (2017; 2019), and Giannetti and Zhao (2019). Specifically, I match directors' family names with their ancestral countries of origin using data from Ancestry.com, which provides comprehensive information on the ethnicity and nationality of the passengers who arrived at the port of New York from foreign ports between 1820 and 1957. I use the country associated with the passenger's ethnicity to identify her country of origin, because ancestry has been shown to influence the culture of individuals even after several generations (Guiso, Sapienza, and Zingales 2006).

When the same family name points to different countries of origin, I take the weighted average of the culture scores where the weights are given by the frequency of immigrants with the same last name.34 For example, the family name "Ferrari" appears 9,304 times, which implies that a total of 9,304 passengers with the same family name

[33] I yield similar results on my main inference when I use alternative dimensions of culture derived from Schwartz (1994), Tang and Koveos (2008), and the GLOBE project.

[34] Using all countries of origin is likely to add noise. My results remain qualitatively similar if I use the three most frequent countries for each family name.

arrived at the port of New York between 1820 and 1957. Countries of origins can be identified for 7,567 passengers, with 6,724 (88.9%) from Italy, 251 (3.3%) from the U.S. (i.e., re-entering U.S. citizens), and 127 (1.7%) from the U.K. The remaining 465 are from 32 other countries. I exclude any passengers for whom a country of origin cannot be identified.

After identifying the cultural background associated with the ancestry of directors, I construct the composite cultural diversity score of the board. I first follow Kogut and Singh (1988) and compute the cultural distance (CD_{ij}) of the cultural dimension scores (k) between all pairs of two directors (i, j) on a board:

$$\mathrm{CD}_{ij} = \sqrt{\sum_{k=1}^{4}\{(I_{ki} - I_{kj})^2/V_k\}} \qquad \forall\ i \neq j, \qquad (1')$$

where V_k is the sample variance of each cultural dimension scores. Based on this cultural distance measure, I construct the cultural diversity scores for each firm (l) in year (t), calculated as the average of cultural distances of all director pairs in a given board:

$$\text{Board Diversity}_{lt} = \frac{\sum_{i,j} CD_{ij,lt}}{n(n-1)/2} \qquad \forall\ i < j, \qquad (2')$$

To allow for comparison across boards with different numbers of board members (n), as shown in the denominator, I scale by the number of board member pairs. By summing cultural distance across the four dimensions in equation (1'), Board Diversity_{lt} captures the composite cultural diversity on the board in a given firm-year.[35] I also estimate cultural

[35] I also consider diversity scores with respect to individual cultural dimensions.

diversity separately for board subsets, which include independent directors, audit committee members, insiders, and female directors.

Measuring CEO-board diversity distance

Cultural distance between the CEO and the board is computed based on the cultural distance (CD_{ij}) measure defined above. I modify equation (1') and fix director i to equal to the CEO. Doing so allows me to calculate the cultural distance between the CEO and the directors instead of computing cultural distance between directors. To allow for comparability across firms with different board size, I scale the cultural distance by the number of director pairs on the board. As previously, I construct the composite cultural distance measure that comprehensively captures all four cultural dimensions, and individual cultural distance scores reflecting each dimension. My primary measure of cultural distance is the average cultural distance between the CEO and all directors. I employ as alternative specifications the cultural distance between the CEO and independent directors, audit committee members, insiders, and female directors.

Control variables

To isolate the impact of policy uncertainty on the cost of debt, in the multivariate analysis I control for a comprehensive set of firm- and security-specific variables that are previously documented to affect yield spreads. Firm-specific measures include firm size, leverage, profitability, market-to-book, sales growth, and cash flow volatility. Given evidence that larger firms tend to have a smaller default risk and greater benefits from economies of scale, I include *Firm Size*, measured as the natural log of total assets. *Leverage*, measured as the ratio of long-term debt to total capital, is included because higher leverage corresponds to higher default risk. I also control for *Performance*, computed as the ratio of long-term debt to total capital, and *Sales Growth*, measured as the firm's annual growth in sales revenue. *Market-to-Book* proxies for growth opportunity and is defined as the market value of assets (equal to the sum of book value of debt and number of shares outstanding times share price) divided by the book value of assets. I additionally control for *Cash Flow Volatility*, measured as the standard deviation of performance over the past ten years. Finally, I control for shareholder monitoring using *Institutional Ownership*, computed as the percentage of common shares held by institutions scaled by the total number of common shares outstanding.

Bond-specific variables include credit rating, maturity, liquidity, callability, and a high-yield dummy. Credit ratings are used to control for firms' differences in default risk. I calculate firm credit rating for a given date of the yield observation by averaging the Moody's and S&P bond ratings. Bond ratings are numerically converted to have a value of 22 to 1 for AAA- to D-rated bonds. The conversion process to numerical numbers is shown in the Appendix. Given that credit ratings may already incorporate the effect of policy uncertainty, my main variable of interest, I orthogonalize credit ratings to EPU and purge the rating information of the impact of policy uncertainty. Specifically, I label the error term from regressing the rating variable on EPU as *Credit Ratings* and use it as my primary measure of credit ratings in my baseline model.

At the individual security level, I control for the effect of term structure using *Maturity*, defined as the number of years remaining until the bond reaches maturity. *Bond Age* reflects liquidity of the bond and is defined as the number of years that a bond has been outstanding. Following the literature (e.g. Mansi, Maxwell, and Wald 2009), in case the firm has multiple bonds at a given time, I construct the weighted-average maturity, bond age, and credit ratings by assigning weights to each security according to the amount outstanding for each debt divided by the total amount outstanding for publicly traded debt of the firm. I include as additional controls *Callability*, an indicator variable that equals 1 if the issue is callable. Finally, to control for the non-linearity between yield spreads and credit ratings (e.g. Mansi, Maxwell, and Miller 2004), I employ *High Yield*, an indicator variable that equals 1 when the debt is high yield/non-investment grade. Table 3.1 provides definitions and data sources for all variables used in my analyses.

Descriptive statistics

Panel A of Table 3.2 reports descriptive statistics for my key variables of interest. On average, the securities in my sample have a yield spread of 360 basis points, which deviates substantially from the median at 232 basis points. Because these numbers suggest that the yield spread is highly skewed, I take the natural logarithm of the yield spread in my regression results.

The mean and median firm size in my sample is $8.2 billion, with a standard deviation of $1.4 billion. Firms in my sample have a large portion of liabilities in their capital structure, as indicated by the median leverage ratio of 32% and the standard deviation of 19%. My sample firms have a mean profitability ratio of 3%, a market-to-book ratio of 2.8, and cash flow volatility of 5%. On average, institutional owners hold 69% of shares outstanding in my sample firms. The average Moody's bond rating is BB and S&P's is BB+, suggesting that, on average, firms in my sample have outstanding debt with high yield ratings. Turning to maturity, traded debt has a mean maturity of 8.7 years with a standard deviation of 5.2 years. On average, traded debt has a maturity of 8.7 years and a standard deviation of 5.2 years. The sample is balanced between non-investment-grade debt, with 51%, and investment-grade debt with 49%.

In Panel B of Table 3.2 I provide the industry distribution of the sample using one-digit SIC codes. Most of the firms in the overall sample are in manufacturing (53%). My sample firms are also distributed across wholesale and retail trade (13%), and services, including business and other (13%), mining and construction (10%), and transportation and communications (10%) sectors. I find the fewest sample companies in the public administration and agriculture and forestry industries.

Panel C of Table 3.2 provides the Pearson correlation coefficients for the yield spread, policy uncertainty, and control variables in my baseline analysis. I find that yield spread is positively correlated with the policy uncertainty measure, firm leverage, cash flow volatility, and high yield dummy, and negatively correlated with firm size, institutional ownership, profitability, credit ratings, maturity, and bond age. The correlation analyses suggest that higher policy uncertainty is associated with a higher cost of debt financing.

3.4. RESULTS

EPU and the cost of debt

I start my analysis by confirming the positive relation between the log of yield spreads and *EPU* using a multivariate method that controls for other factors known to influence the cost of debt. To account for problems arising from potentially unobservable firm heterogeneity, in all specifications I include firm fixed effects as well as a set of calendar- and fiscal-quarter fixed effects that controls for seasonality. Following Gulen and

Ion (2016), I cluster standard errors at the firm and year-quarter level to correct for potential cross-sectional and serial correlation in the error term (Petersen 2009). My baseline regression model is as follows:

$$Log(Spread_{i,t}) = \alpha_i + \beta_1\, Log(EPU_{i,t}) + \beta_{2\text{-}7}\, Firm\ Controls + \beta_{8\text{-}12}\, Debt\ Controls + QRT_t + \varepsilon_{i,t}\,, \qquad (4')$$

where $Log(Spread_{i,t})$ stands for the natural logarithm of difference between the yield to maturity and the treasury bond rate with similar maturity. Index i represents the firm, index t represents the quarter, and $\beta_{2\text{-}7}$ and $\beta_{8\text{-}12}$ represent vectors of control variables. All control variables are lagged with respect to the yield spread. The α_i's are firm fixed effects and QRT_t stands for a set of calendar- and fiscal-quarter dummy variables. For each firm i, *Log(EPU)* is the natural logarithm of the arithmetic average of the BBD index over the three months ending in the calendar month at which the yield spread is observed. Note that a positive and significant coefficient on EPU, β_1, supports the hypothesis that an increase in policy uncertainty is value-decreasing for bondholders. I control for both firm- and security-level factors that are known to influence yield spread, including firm size, leverage, profitability, sales growth, credit ratings, bond age, and institutional ownership.

Table 3.3 reports the results from examining the effect of policy-induced economic uncertainty on the cost of debt. I present results for the news-based economic policy uncertainty (*Log EPU News)*) in Model 1. To accommodate the possibility that bond pricing may be more sensitive to more recent information, in additional tests (unreported) I also confirm the results from using the weighted-average policy uncertainty index, such that the more recent months get more weight. In Models 2 and 3, I reexamine my main specifications separately for investment-grade debt (greater than or equal to credit ratings of BBB-) and non-investment-grade debt (below credit ratings of BBB-), respectively.

Table 3.3 results consistently provide evidence that an increase in policy uncertainty is associated with higher debt financing costs. Model 1 indicates that a 1% increase in the *EPU News* is associated with a 2.528% annual increase in yield spread with respect to the sample mean. Across Models 2 and 3, the coefficient varies from 0.640 for the investment-grade debt sample to 0.620 for the non-investment-grade subsample, which translates into an increase in yield spreads of about 2.560% to 2.480% annually as *EPU News* increases by 1%. In unreported tests, results indicate that increases in the separate components of *EPU* as well as the overall *EPU* contribute to the positive relation between policy uncertainty and cost of debt. Overall, the results suggest that uncertainty related to economic policy is detrimental to bondholders, as reflected in higher yield spreads.

Consistent with Gulen and Ion (2016), my baseline results reveal that much of the explanatory power of *EPU* is captured by the news-based component. This is expected because the news index, by design, includes uncertainty of all policy decisions without discriminating by specific policy topics. For this reason, and in the interest of brevity, I use the news-based component as the main variable throughout my analyses. My results remain qualitatively similar if I use the overall EPU index.

In Appendix I, I report the results of various robustness tests. First, I examine whether my results are sensitive to the inclusion of election years. Although election timing may be a good exogenous indicator of heightened policy uncertainty, analyses based on election indicator implicitly assume that policy uncertainty remains constant during non-election years (Gulen and Ion 2016). In addition, using an indicator variable renders it difficult to quantify how much effect election may have on bond pricing. Model 1 presents the results when I control for election years (*ELECTION*). As shown, the coefficient on the election indicator is positive but statistically indistinguishable from zero, while the coefficient on EPU remains positive and significant. This result suggests that my results are not driven by uncertainty during election years.

Next, to account for the possibility that different types of uncertainty may influence bond pricing, I include additional controls for firm-, industry-, and macroeconomic-level uncertainty in Models 2 to 5. To capture firm-level uncertainty, I use earnings volatility (*Earnvol*) and return volatility (*Return Volatility*) following Kim, Pandit, and Wasley (2016). As in Harford (2005), I measure industry-level uncertainty using the first principal component from the industry-year medians of seven industry-level economic shock variables (*Industry Shock*). Lastly, I follow Bonaime, Gulen, and Ion (2018) and measure the general macroeconomic uncertainty using the cross-sectional standard deviation of sales growth (*CS sale*) and the cross-sectional standard deviation of cumulative returns (*CS Return*) in the concurrent fiscal year. I use additional macroeconomic uncertainty measures, namely Jurado, Ludvigson, and Ng's (2015) overall macroeconomic uncertainty (*JLN*) and implied volatility of equity options (*VIX*). The results in Models 2 to 7 indicate that even after controlling for different types of uncertainty, whether individually or altogether, the effect of policy uncertainty on yield spread remains distinct and singular.

Lastly, to the extent that uncertainty is countercyclical (Bloom, Floetotto, Jaimovich, Saporta-Eksten, and Terry 2018), the relation between yield spread and policy uncertainty could be confounded by the effects of macroeconomic conditions. It may be the case, for instance, that the positive effect of policy uncertainty on yield spread may spuriously reflect the decrease in investment opportunities and investors' reluctance to provide financing when economic prospects are poor. To address this concern, in Model 8 I control for several proxies for macroeconomic conditions that capture market participants' expectations on economic outlooks: GDP growth rate (*GDP growth*), the consumer confidence index (*CCI*), composite leading indicators (*CLI*), and forecasted real GDP growth rate (*RealGDP forecast*). Additionally, to further mitigate the concern that the change in bond pricing may simply reflect lower investment, I include capital investment (*Capinv*) and research and development intensity (*R&D*), as well as an indicator for missing R&D (*R&D Dummy*) as additional controls. The results confirm that the effect of policy uncertainty on yield spread is distinct from the confounding effects of macroeconomic conditions and decreasing investment opportunities.

Although I test the sensitivity of my results to an extensive list of control variables and robustness tests, potential endogeneity could still drive my results. First, bias from reverse causality may arise where a significant increase in the cost of debt could create uncertainty among policymakers and regulators. Similarly, other sources of economic uncertainty unrelated to policy may drive both EPU and yield spread, creating potential bias problems arising from omitted explanatory variables. In addition, although Baker, Bloom, and Davis (2016) take extensive precautions to mitigate the measurement concerns of EPU, the index is still measured and could still be prone to unknown measurement errors. To address potential endogeneity problems remaining in my analysis, in Models 4 to 8 of Table 3.3 I conduct an instrumental variable analysis approach as well as placebo tests.

I first employ an instrumental variables approach. The variables include the U.S. Senate polarization index of McCarty, Poole, and Rosenthal (1997) and the partisan conflict index of Azzimonti (2018). Prior research suggests that increased polarization can cause the politicians to enter a gridlock state, which leads to increased variation in policy (McCarty 2012). In addition, government dysfunction created by partisan conflict can induce policy uncertainty (Azzimonti 2018). These lines of research indicate that my instruments are strongly correlated with the policy uncertainty measure from both a theoretical and a statistical perspective (relevance restriction). However, it is unlikely that U.S. Senate polarization or the partisan conflict would have a direct relation to any of the firm-level or security-level variables (exclusion restriction) other than through its impact on policy uncertainty.

One concern in my analysis is that both the policy uncertainty variable and the instruments are constant for all firms within each time period. In this case, using the usual two-stage least squares methodology is problematic because the correlation between policy uncertainty and its instruments would be automatically inflated. As a remedy for this problem, I follow Gulen and Ion (2016) and run a time-series regression in the first stage and a panel regression in the second stage. The *t*-statistics are based on bootstrapped standard errors to mitigate the biases from using estimated regressors. In the first-stage regression model, I regress the monthly news-based EPU on the corresponding instrumental variables along with the collapsed mean of the control variables (***z***) by each time period. I also control for quarter fixed effects. Then, in the second-stage model, I regress the yield spread on the fitted value of the news-based EPU ($\widetilde{EPU\ News}$) from the first stage. I include the same control variables as well as quarter fixed effects. My first- and second-stage models are as follows:

$$\text{(First) } epu_t = \alpha + \gamma_1 instrument_t + \vartheta z + QRT_t + \varepsilon_t \qquad (5')$$

$$\text{(Second) } Log(Spread)_{i,t} = \alpha_i + \pi_1 \widetilde{EPU\ News}_t + \theta z + QRT_t + \delta_i + \varepsilon_t.,$$

The results are reported in Models 4–7 of Table 3.3. Consistent with expectations, the first-stage regressions in Models 4 and 5 show positive coefficients on Senate polarization (*Polarization*) and partisan conflict (*PCI*) indices, suggesting that the relevance condition of my instruments is satisfied. In the second-stage regressions, I use the fitted value from the first-stage regression to replace the original value of EPU and report the results in Models 6 and 7. I find that the coefficient estimates on $\widetilde{EPU\ News}$ are positive and significant at the 1% level, which confirms the positive effect of policy uncertainty on yield spreads. These results help alleviate endogeneity concerns.

I attempt to further rule out the possibility of spurious correlation between the EPU index and yield spread by performing placebo tests in Model 8 of Table 3.3. I first create 100 different random samples of the news-based EPU index that follows the sample distribution and denote the randomly sampled variable placebo EPU ($\widetilde{Placebo\ EPU}$). Then, I estimate the regression coefficients from replacing the true EPU values with $\widetilde{Placebo\ EPU}$ and report the average coefficient estimates in Model 5. If policy uncertainty is what causes yield spread to increase, then I should find that a random variable that simply mimics the sample distribution of EPU would have no impact on the cost of debt. Consistent with expectation, I find that $\widetilde{Placebo\ EPU}$ loads statistically insignificantly.

Overall, the positive relation between *EPU* and yield spreads is robust to controlling for potential endogeneity through the instrumental variables and placebo test approaches.

The role of board monitoring

The results above indicate that increase in policy uncertainty poses an additional risk to bondholders as reflected in higher bond yield spreads. In this section, I examine whether board cultural diversity can influence this relation.

Board cultural diversity is associated with board effectiveness either because it facilitates monitoring (the positive view) or because it induces less effective monitoring (the negative view). These two views have different implications for the effectiveness of the board and in turn on firm performance. I distinguish between these two views by examining the moderating effect of board cultural diversity on the cost of debt financing–EPU relation.

The role of board cultural diversity

To test the effect of board cultural diversity, I re-estimate my baseline model in Equation (4') with cultural diversity, EPU, and an interaction between the two. To make interpreting the coefficient on the interaction term easier, I replace cultural diversity and EPU with standardized values that have a mean of 0 and standard deviation of 1. The results are presented in Table 3.4. In Models 1–5 I first report the results from using cultural diversity of all board members. In Models 6 and 7 I separately focus on the cultural diversity within independent directors and audit committee members. Models 8 and 9 examine the cultural diversity of insiders and female directors. For brevity, I report both the composite and the individual cultural diversity scores when I consider all board members but present only the results from employing composite diversity when examining subsets of board.

The negative and significant coefficient on interaction term between policy uncertainty and composite cultural diversity in Model 1 suggests that board cultural diversity can alleviate the adverse impact of policy uncertainty on bond yield spreads. Economically, moving cultural diversity from the first to the third quartile reduces the effect of a 1% increase in yield spreads by about 0.441% per annum with respect to the sample mean. This result is consistent with the argument that cultural diversity is associated with greater monitoring effectiveness, which may be highly important under increased uncertainty when managerial opportunism increases substantially. Higher monitoring quality of a diverse board mitigates the adverse impact of EPU, as reflected by lower yield spreads. Turning to the individual dimension scores, the results in Models 2–5 indicate that individualism and power distance dimensions are mainly responsible for the effect of board cultural diversity.

Importantly, I find that the effect of cultural diversity is driven by the diversity among independent directors, as shown by the negative and significant interaction in Model 6. This finding adds support to the argument that cultural diversity is associated with greater board monitoring. Economically, moving cultural diversity among independent directors from the first to the third quartile reduces the effect of a 1% increase in yield spreads by about 0.355% annually. In Model 7, I find that diversity of directors classified as insiders does not affect the yield spread–policy uncertainty relation, which further suggests that cultural diversity is associated with the monitoring, rather than the advising, function of the board. Overall, the evidence in Table 3.4 suggests that board cultural diversity can significantly insulate the effects of policy uncertainty on yield spreads.

The role of CEO-board cultural distance

I also investigate whether board-CEO cultural distance affects the EPU–cost of debt relation by augmenting my baseline model in Equation (4') with cultural distance, EPU, and an interaction between the two As previously, I separately test the effect of cultural distance of all board members, independent directors, audit committee members, insiders, and female directors, from the CEO. To make interpreting the coefficient on the interaction term easier, I replace board-CEO cultural distance and EPU with standardized values that have a mean of 0 and standard deviation of 1.

The results are reported in Table 3.5. Model 1 suggests that a greater cultural distance between the CEO and the board mitigates the adverse effect of policy uncertainty on yield spreads. Economically, the effect of moving cultural distance from the first to the third quartile reduces the adverse effect of a 1% increase in EPU by 0.372% annually with respect to the sample mean. Results in Models 2–5 indicate that most of the benefit of cultural distance is concentrated in the individualism dimension.

In Model 7 I find that the effect of cultural distance is driven by the cultural distance between the CEO and audit committee members, which is consistent with the monitoring function of cultural distance. The results in Models 8 and 9 provide little evidence of the role of inside director-CEO and female director-CEO cultural distance. Overall, the results show that greater board-CEO cultural distance, especially between the audit committee members and the CEO, can mitigate the adverse consequences of EPU.

The role of other board structures

In additional analyses, I validate the role of the board monitoring during bad times by testing the effects of traditional observable board structures. These include board independence, busyness, female representation on the board, and average tenure and age of the board. *Board Independence*, a proxy for monitoring effectiveness of the board, is defined as the percentage of independent directors divided by the total number of directors in a given year. As in Ferris, Jagannathan, and Pritchard (2003), *Board Business* is computed as the percentage of directors on a board who hold three or more directorships. *Female Board Representation* is defined as the percentage of female directors on the board. *Board average Tenure* and *Board average Age* is the average of the tenure of service and age across the board members, respectively. To test the role of board monitoring during high-EPU periods, I augment my baseline model with the board characteristics and their interactions with EPU. To make interpreting the coefficient on the interaction terms easier, I replace all board variables and EPU with standardized values that have a mean of 0 and standard deviation of 1.

Table 3.6 presents the findings. In Model 1 I report the results from using board independence. Models 2 and 3 show results from using board busyness and female representation as the variables of interest. In Model 1, I find a negative and significant interaction coefficient of *Board Independence* with *EPU*. The results imply that effective monitoring by the board can mitigate the adverse impact of policy uncertainty. Specifically, as policy uncertainty increases by 1%, moving board independence from the first to the third quarter results in a decrease in yield spread of 0.513% per annum. In Model 2, consistent with the prediction that having busier boards leads to less effective monitoring, I find a positive and significant coefficient on the interaction term between *Board Busyness* and *EPU*. This result indicates that serving on multiple boards overcommits an individual and the consequences during periods of policy uncertainty are detrimental to bondholders. In terms of magnitude, the estimated coefficients imply that moving board busyness from the first to the third quarter, the effect of a 1% increase in EPU increases the yield spread by 0.904% per annum with respect to the sample mean. Interestingly, the direct effect of busyness on yield spread is negative, which suggests that during normal times greater board busyness translates to directors using their expertise from serving on multiple boards to reduce the cost of debt.

Turning to *Female Representation* in Model 3, I find that higher female presence on the board is beneficial to the bondholders during periods of high policy uncertainty, as shown by the significant and negative coefficient of the interaction. Moving female representation from the first to the third quarter, the effect of a 1% increase in EPU on yield spread gives annual reductions of 0.645% in spreads with respect to the sample mean. In Models 4 and 5, I further find evidence consistent with the prediction that long-term director engagement and greater experience help mitigate the adverse impact of policy uncertainty. Moving from the first to the third quarter board average tenure and age, the effect of a 1% increase of EPU on yield spreads is associated with the annual reductions in spreads of 0.361% and 0.554% with respect to the sample mean, respectively. Overall, these findings provide corroborative evidence that effective board monitoring during periods of heightened EPU is valuable to creditors.

The role of other information intermediaries

In my final set of tests, I investigate whether the role of board cultural diversity and board-CEO cultural distance extends beyond the monitoring of other information intermediaries including auditors, financial analysts, and institutional investors. Accordingly, I include board cultural diversity and its interaction with *EPU*, as well as each of the other information intermediaries interacted with *EPU* in the same regression in Table 3.7. I follow a similar approach to test the effect of board-CEO cultural distance in Table 3.8. All variables used in the interaction terms are replaced with standardized values that have a mean of 0 and standard deviation of 1. In Model 1 of Tables 8 and 9, *Big 4 Auditor* is an indicator variable that equals 1 if one of the Big 4 accounting firms is the firm's auditor. In Model 2, I replace auditor dummy with the number of analysts following, computed as the log of the number of analysts following the firm. In Model 3, I use institutional ownership and its interaction term with EPU. Throughout Models 1–3, the results show that although having effective external monitors partly mitigates the adverse impact of policy uncertainty, cultural diversity and board-CEO cultural distance have singular impact that goes above and beyond the monitoring role played by these information intermediaries.

In Models 4–8 I consider the monitoring and information quality effects associated with different investment horizons of institutional investors. Model 4 presents results from employing churn rate in association with *EPU*. Models 5 and 6 each use long-term and short-term institutional ownership, and Model 7 reports the results from including both in the same regression. Finally, in Model 8 I present the result using an indicator variable that equals 1 if the long-term institutional ownership stake is greater than that of the short-term, and 0 otherwise. The results in Models 4–8 of Tables 7 and 8 suggest the role of cultural diversity and distance from the CEO has a singular impact on the cost of debt–EPU relation that extends above and beyond the monitoring roles of institutional investors. Interestingly, most of the benefit during periods of high uncertainty comes from monitoring by long-term institutional investors. Although I find little evidence that short-term institutional investors affect the relation between EPU and yield spread, in Model 3 I find a positive and significant interaction coefficient between churn rate and policy uncertainty, suggesting that high turnover and shorter commitment by institutional investors exacerbates the impact of EPU. These results are largely consistent with the findings in prior literature that the stability and diversification of the long-term investors' shareholdings make monitoring and governance commitments increasingly desirable (Hirschman 1970; Gaspar, Massa, and Matos 2005).

3.5. Endogeneity of Board

Board characteristics, like most observed outcomes in corporate finance, are endogenously determined over time. Although I include firm and time fixed effects to control for unobservable heterogeneity across firm and time, a major endogeneity concern still remains because the results may spuriously be driven by the effectiveness of board structures in reducing yield spreads that is unrelated to the difference in policy uncertainty episodes.

To alleviate the concern that my design fails to capture the effect of board cultural diversity during periods of high EPU and may merely reflect a false correlation over time of implementing effective governance policies unrelated to the policy uncertainty, I conduct a placebo (falsification) test. Specifically, I randomly assign a placebo EPU index

($\widetilde{Placebo}\ EPU$) that follows the sample distribution of the true EPU. Then I re-estimate all models in Tables 4–6 by replacing the policy uncertainty variable with ($\widetilde{Placebo}\ EPU$). I repeat this process 100 times and report the average coefficient estimates. The results, presented in Table 3.9, show that the coefficients on the interaction term between $\widetilde{Placebo}\ EPU$ and the board characteristics are neither statistically nor economically insignificant. These results suggest that my findings are not driven by the spurious correlations.

3.6. Conclusion

In light of the recent global economic crisis triggered by the COVID-19 pandemic, corporate governance has received renewed attention as one of the sources of resilience that enable firms to navigate through adverse conditions. While corporate boards are one of the most important internal corporate governance mechanisms that protects firm value, there is little understanding of what makes an effective board during bad times. In this paper, I use a novel approach to identify directors' cultural backgrounds based on their ancestral origins and examine whether and how cultural diversity affects performance of firms during bad times. I provide evidence that greater cultural diversity within the board membership and cultural distance between the board and the CEO attenuate the adverse effect of economic policy uncertainty on yield spreads. Overall, the study shows that cultural diversity of the top management is an important determinant of performance during bad times. This finding echoes the growing focus of regulators in promoting diversity within the boardroom.

Table 3.1 Variable Definitions

Variable	Description	Data Source(s)
Yield Spread	The difference between the weighted-average yield to maturity of the firm's outstanding publicly traded debt and the yield to maturity on a duration-matched Treasury security. Weight is defined as the amount outstanding for each issue as a fraction of all outstanding traded debt for the firm.	LBFI, TRACE
EPU	A measure of economic policy uncertainty.	Baker, Bloom, and Davis (2016)
	Firm-Specific Variables	
Firm Size	Natural logarithm of total assets.	Compustat
Firm Leverage	Long-term debt plus debt in current liabilities, deflated by total assets.	
Firm Performance	Operating income before depreciation, deflated by total assets.	
Sales Growth	Sales growth rate, defined as the ratio of the change in sales to lagged sales.	
Cash Flow Volatility	Standard deviation of performance over the past ten years (*t*-1 to *t*-10).	
Market-to-Book	Market value of equity, computed as the number of common stocks outstanding multiplied by price divided by balance sheet book equity.	
	Bond-Specific Variables	
Credit Rating	Average of Moody's and S&P bond ratings, computed using a conversion process whereby AAA-rated bonds are assigned a value of 22, and D-rated bonds a value of 1.	LBFI, TRACE
Bond Maturity	Bond issue maturity remaining in years.	
Bond Age	Number of years a bond has been outstanding.	
High Yield	Indicator variable that equals 1 when the weighted-average rating is below BBB.	
Callability	Indicator variable that equals 1 when the bond is callable.	
	Governance and Firm Variables	
Board Independence	Fraction of independent directors divided by the total number of directors in a given year.	ISS
Board Busyness	Percentage of directors who hold three or more directorships in a given year.	

Female %	Fraction of female directors on the board in a given year.	
Board Avg Tenure	Average of director tenure in a given year.	
Board Avg Age	Average of director age in a given year.	
Board Diversity	Composite cultural diversity score of the board in a given year, calculated as the average of cultural distances in all pairs of board members. Cultural distance is computed following the approach in Kogut and Singh (1988). I consider the initial four dimensions based on the original surveys conducted by Hofstede.	ISS, Ancestry of Names, Hofstede (2001)
PDI Diversity	Diversity of board members with respect to Hofstede's power distance dimension.	
IDV Diversity	Diversity of board members with respect to Hofstede's individualism dimension.	
MAS Diversity	Diversity of board members with respect to Hofstede's masculinity dimension.	
UAI Diversity	Diversity of board members with respect to Hofstede's uncertainty avoidance dimension.	
Indep. Board Diversity	Composite cultural diversity score of independent directors.	
AuditCom Diversity	Composite cultural diversity score of audit committee members.	
Insider Diversity	Composite cultural diversity score of insiders	
Insider Diversity	Composite cultural diversity score of female directors.	
CEO-Board Distance	Composite measure of cultural distance between the board and the CEO, calculated as the average of all director-CEO pair cultural distance in a given year. Cultural distance is computed following the approach in Kogut and Singh (1988) and focuses on the initial four dimensions based on the original surveys conducted by Hofstede.	
PDI Distance	Distance of board members from the CEO with respect to Hofstede's power distance dimension	
IDV Distance	Distance of board members from the CEO with respect to Hofstede's individualism dimension	
MAS Distance	Distance of board members from the CEO with respect to Hofstede's masculinity dimension	
UAI Distance	Distance of board members from the CEO with respect to Hofstede's uncertainty avoidance dimension	
Indep. Board Distance	Composite cultural distance score of independent directors.	
AuditCom Distance	Composite cultural distance score of audit committee members.	

Insider Distance	Composite cultural distance score of insiders.	
Female Distance	Composite cultural distance score of female directors.	
Big 4 Auditor	Indicator variable that equals 1 if the firm is audited by a Big 4 auditor, and 0 otherwise.	Compustat
Analysts	Number of analysts following the firm in a given year	I/B/E/S
InstOwn	Ratio of shares owned by institutions divided by the total number of shares outstanding.	Thomson 13-F
Churn Rate	Weighted sum of institutional investors' turnover in firm i's stock, where the weight is given by each institutional investors' ownership of the firm's stock.	
LT InstOwn	Sum of ownership by investors that have average churn rates over the prior four quarters in the bottom tercile.	
ST InstOwn	Sum of ownership by investors that have average churn rates over the prior four quarters in the top tercile.	
Dummy (LT>ST)	Indicator variable that equals 1 if the ratio of shares owned by long-term institutional owners exceeds that of short-term institutional owners, and 0 otherwise.	

Notes: This table gives definitions for the variables used in the analysis, along with their data sources. LBFI is the Lehman Brothers Fixed Income database, TRACE is the Trade Reporting and Compliance Engine database provided by the National Association of Securities Dealers, FISD is the Mergent Fixed Income Securities Database, CRSP is the Center for Research in Security Prices database, SDC is the Securities Data Company's financial transaction database (primarily for mergers and acquisitions), Compustat is the financial information database, ExecuComp is the executive compensation database, Thomson 13-F is the Thomson Financial 13F database, and RiskMetrics is the IRRC/ISS database.

Table 3.2 Descriptive Statistics

Panel A: Summary Statistics

	Mean	Median	Std.dev	Q1	Q3
Yield Spread (in basis points)	360	232	415	117	433
EPU Overall	95	84	38	65	120
EPU News	113	104	39	83	144
EPU FSL	85	82	32	58	105
EPU CPI	93	84	25	75	109
EPU Tax	409	224	499	19	621
			Firm-Specific Variables		
Total Assets ($Million)	8,223	8,152	1,390	7,231	9,161
Firm Leverage	0.36	0.32	0.19	0.23	0.46
Firm Performance	0.03	0.03	0.02	0.02	0.05
Sales Growth	0.03	0.02	0.17	-0.04	0.08
Cash Flow Volatility	0.05	0.03	0.05	0.02	0.05
Market-to-Book	2.83	2.13	4.96	1.29	3.46
			Bond-Specific Variables		
Credit Rating	BB	BB+	A-/CCC+	B	BBB+
Bond Maturity	8.69	7.42	5.21	5.17	10.60
Bond Age	3.23	2.74	2.38	1.46	4.38
High Yield	0.51	1.00	0.50	0.00	1.00
Callability	0.76	1.00	0.43	1.00	1.00
			Governance and Other Variables		
Board Independence	0.75	0.80	0.16	0.67	0.88
Board Busyness	0.03	0.00	0.05	0.00	0.08
Female Director %	0.13	0.13	0.10	0.07	0.20
Board Avg Tenure	8.15	7.86	3.19	6.00	10.00
Board Avg Age	61.69	61.82	3.69	59.38	64.14
Board Diversity	2.20	2.16	0.73	1.70	2.67
Independent Diversity	2.21	2.16	0.82	1.67	2.75
AuditCom Diversity	2.20	2.12	1.10	1.49	2.92
Insider Diversity	1.96	1.85	1.27	1.02	2.66
Female Diversity	2.10	1.99	1.53	0.75	3.03
Board-CEO Distance	0.47	0.41	0.25	0.29	0.57
Independent Distance	0.83	0.64	0.62	0.45	0.98
AuditCom Distance	1.82	1.42	1.36	0.93	2.26
Insider Distance	1.43	0.99	1.24	0.52	2.04
Female Distance	3.63	3.16	2.43	1.70	5.09
Big 4 Auditor	0.97	1.00	0.17	1.00	1.00
Analyst Following	12	11	8	6	17
Institutional Ownership	0.69	0.73	0.23	0.57	0.85
LT InstOwn	0.17	0.16	0.10	0.10	0.24
ST InstOwn	0.29	0.28	0.14	0.19	0.38
Churn Rate	0.06	0.06	0.01	0.05	0.07

Notes: Panel A provides descriptive statistics for the key variables used in my analyses. The overall sample contains 33,225 firm-quarter observations from 1,410 firms over the 1993–2015 period. Variable definitions and sources are in Table 3.1.

Panel B: By Industry

SIC Codes	Description	Observations	Percentage (%)	Cumulative (%)
0	Agriculture and Forestry	136	0.41	0.41
1	Mining and Construction	3,462	10.42	10.83
2	Light Manufacturing	8,108	24.4	35.23
3	Heavy Manufacturing	9,591	28.87	64.10
4	Communications and Electronics	3,290	9.90	74.00
5	Wholesale and Retail Trade	4,350	13.09	87.09
7	Business Service	3,074	9.25	96.35
8	Other Service	1,138	3.43	99.77
9	Public Administration	76	0.23	100
Total		33,225	100	

Notes: Panel B reports descriptive statistics using one-digit SIC industry classification codes. The overall sample contains 33,252 firm-quarter observations from 1,410 firms over the 1993–2015 period. Variable definitions and sources are in Table 3.1.

Panel C. Pearson Correlation

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Spread															
2. Rating	**-0.51**														
3. EPU	**0.20**	**-0.08**													
4. InstOwn	**-0.12**	**-0.04**	**0.12**												
5. Size	**-0.33**	**0.61**	**0.08**	**0.15**											
6. Leverage	**0.32**	**-0.41**	**-0.04**	**-0.28**	**-0.41**										
7. Perform	**-0.29**	**0.37**	**-0.06**	**0.02**	**0.13**	**-0.12**									
8. Sale Gr	**-0.03**	**-0.03**	**-0.06**	-0.00	**-0.03**	**0.03**	**0.22**								
9. CF Vol	**0.21**	**-0.38**	**0.04**	**-0.03**	**-0.25**	**0.16**	**-0.13**	**0.04**							
10. MTB	**-0.12**	**0.12**	**-0.02**	**0.03**	**0.09**	**-0.08**	**0.14**	**0.02**	**0.02**						
11. Maturity	**-0.20**	**0.26**	**-0.06**	**-0.02**	**0.26**	**-0.15**	**0.06**	-0.00	**-0.12**	**0.02**					
12. Age	**-0.04**	**0.21**	**0.05**	**0.06**	**0.29**	**-0.18**	**0.03**	**-0.05**	**-0.13**	**0.03**	**0.11**				
13. HighYield	**0.47**	**-0.81**	**0.03**	**-0.03**	**-0.57**	**0.44**	**-0.28**	**0.04**	**0.26**	**-0.13**	**-0.29**	**-0.22**			
14. Call	**0.13**	**-0.17**	**0.05**	**0.05**	-0.00	**0.15**	**-0.05**	-0.00	0.00	**-0.05**	**-0.04**	**0.04**	**0.27**		
15. Diversity	**0.02**	**-0.03**	**0.06**	**0.06**	**0.02**	**-0.04**	-0.01	0.01	-0.02	0.01	-0.01	-0.02	**-0.03**	**0.04**	
16. Distance	**0.11**	**-0.20**	**0.04**	**0.12**	**-0.15**	**-0.02**	**-0.06**	0.00	**0.10**	**-0.02**	**-0.10**	**-0.10**	**0.14**	**0.04**	**0.34**

Notes: Panel C provides Pearson correlation for the key variables used in my analyses. The overall sample contains 33,225 firm-quarter observations from 1,410 firms over the 1993–2015 period. Variable definitions and sources are in Table 3.1. Correlation coefficients in bold indicate significance at the 1% level.

Table 3.3 Economic Policy Uncertainty and Cost of Debt

	Primary	Invest. Grade	Non-Invest. Grade	Instrumental Variable Analysis				Placebo Test
				First Stage		Second Stage		
				Polariz.	PCI	Polariz.	PCI	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPU	0.632[a]	0.640[a]	0.620[a]					
	(7.025)	(5.883)	(7.631)					
Instrument				1.020[b]	0.307[a]			
				(2.08)	(3.00)			
$\widetilde{EPU}$						0.647[a]	0.433[a]	
						(4.51)	(3.02)	
$\widetilde{Placebo\ EPU}$								-0.009
								(-0.087)
Institutional Ownership	-0.271[a]	-0.041	-0.410[a]	-0.956	-0.304[a]	-0.348	-0.306[a]	-0.317[a]
	(-3.680)	(-0.369)	(-4.628)	(-1.60)	(-4.98)	(-0.60)	(-5.07)	(-43.649)
Firm Size	-0.015	-0.072[b]	0.054[c]	0.377[a]	-0.017	0.348[a]	0.016	0.067[a]
	(-0.562)	(-2.023)	(1.785)	(3.49)	(-0.76)	(3.14)	(0.74)	(22.90)
Firm Leverage	0.812[a]	0.470[a]	0.863[a]	-2.014[c]	0.858[a]	-1.392	0.895[a]	0.931[a]
	(8.098)	(2.789)	(7.528)	(-1.88)	(17.88)	(-1.33)	(16.71)	(112.34)
Firm Performance	-4.284[a]	-3.473[a]	-4.211[a]	-13.069[b]	-4.738[a]	-12.474[b]	-4.792[a]	-4.785[a]
	(-9.575)	(-4.727)	(-7.889)	(-2.09)	(-13.40)	(-2.03)	(-13.06)	(-131.385)
Sales Growth	0.002	-0.017	-0.011	-0.117	-0.028	-0.191	-0.041	-0.047[a]
	(0.044)	(-0.254)	(-0.291)	(-0.24)	(-0.55)	(-0.39)	(-0.77)	(-12.35)
Cash Flow Volatility	1.095[b]	1.738b	1.270b	11.486[a]	1.155[a]	11.480[a]	1.124[a]	1.202[a]
	(2.146)	(2.412)	(2.179)	(3.33)	(4.80)	(3.37)	(4.65)	(55.62)
Market-to-Book	-0.006[a]	-0.005[b]	-0.007[a]	-0.060[c]	-0.007[a]	-0.050	-0.007[a]	-0.007[a]
	(-4.579)	(-2.314)	(-4.606)	(-1.81)	(-7.19)	(-1.53)	(-7.32)	(-59.71)
Credit Rating	-0.039[a]	-0.112[a]	-0.028[a]	0.243[a]	-0.035[a]	0.241[a]	-0.035[a]	-0.033[a]
	(-4.156)	(-10.024)	(-3.236)	(3.14)	(-6.89)	(3.22)	(-6.75)	(-62.62)

Bond Maturity	0.006	0.019a	-0.022[b]	-0.037	0.007[a]	-0.039	0.007[a]	0.005[a]
	(1.624)	(6.719)	(-2.252)	(-1.55)	(2.89)	(-1.60)	(2.67)	(39.84)
Bond Age	0.045[a]	0.039[a]	0.032[a]	-0.028	0.047[a]	-0.005	0.050[a]	0.055[a]
	(8.130)	(6.469)	(2.776)	(-0.54)	(14.48)	(-0.11)	(15.30)	(159.89)
High Yield	0.361[a]			0.210	0.411[a]	0.033	0.413[a]	0.424[a]
	(8.366)			(0.61)	(19.60)	(0.10)	(19.31)	(186.162)
Callability	0.126[b]	0.099	0.174[b]	-0.293[c]	0.085[c]	-0.274[b]	0.090[c]	0.095[a]
	(2.485)	(1.623)	(2.582)	(-1.85)	(1.81)	(-2.00)	(1.82)	(18.43)
Firm FE	Yes	Yes	Yes			Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,225	16,247	16,960					
Pseudo/Adj. R^2	0.688	0.555	0.474					
F-Statistic				4.87		5.70		

Notes: Variable definitions are in Table 3.1. This table provides coefficient estimates from regressing the log of corporate yield spreads on economic policy uncertainty and various control variables. Models 1–3 provide regression results for my main, investment grade, and non-investment grade debt specifications. The data cover the 1993–2015 period. Quarter and firm fixed effects are included in all regressions. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm and calendar quarters are in parentheses. I also provide results of regressions addressing endogeneity of policy uncertainty using instrumental variable analysis. Models 4 and 5 report results of the first-stage regression using *Polarization* and *Partisan Conflict* indices as instruments. Specifically, I regress monthly news-based *EPU* on each instrumental variables with the collapsed means of all control variables by each time period, controlling for quarter fixed effects. Models 6 and 7 report results of the second-stage regression, which uses the predicted estimates from the first-stage regressions. Model 8 shows the results from placebo test where I replace the true *EPU* values with *Placebo EPU* and report the average coefficient estimates. The notations *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.4 EPU, Board Cultural Diversity, and Cost of Debt

	Dependent Variable = Log (Yield Spread)								
	All Board Members					Indep. Board	Audit Com	Insiders	Females
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
EPU	0.204***	0.203***	0.204***	0.204***	0.204***	0.204***	0.164***	0.213***	0.196***
	(6.331)	(6.311)	(6.311)	(6.328)	(6.328)	(6.305)	(3.584)	(7.371)	(5.253)
Diversity	-0.018					-0.015	-0.026	-0.013	-0.002
	(-1.225)					(-1.105)	(-1.058)	(-0.636)	(-0.080)
EPU × Diversity	-0.018**					-0.014**	-0.013	0.005	-0.006
	(-2.626)					(-2.142)	(-1.327)	(0.487)	(-0.717)
IDV Diversity		-0.002							
		(-0.133)							
EPU × IDV Div.		-0.023***							
		(-3.194)							
UAI Diversity			-0.004						
			(-0.283)						
EPU × UAI Div.			-0.005						
			(-0.824)						
PDI Diversity				-0.017					
				(-1.121)					
EPU × PDI Div.				-0.019**					
				(-2.521)					
MAS Diversity					-0.027**				
					(-2.098)				
EPU × MAS Div.					-0.007				
					(-1.144)				
InstOwn.	-0.129	-0.128	-0.128	-0.130	-0.126	-0.120	0.121	-0.092	-0.109
	(-1.276)	(-1.258)	(-1.266)	(-1.292)	(-1.239)	(-1.186)	(1.041)	(-0.624)	(-0.826)

Firm Size	-0.057	-0.058	-0.057	-0.055	-0.057	-0.058	-0.368***	0.053	-0.199***
	(-1.533)	(-1.575)	(-1.534)	(-1.501)	(-1.534)	(-1.563)	(-4.162)	(1.066)	(-3.429)
Leverage	0.908***	0.896***	0.899***	0.906***	0.900***	0.912***	0.584**	1.015***	0.846***
	(6.741)	(6.675)	(6.668)	(6.761)	(6.663)	(6.670)	(2.357)	(5.742)	(4.057)
Performance	-4.034***	-4.039***	-4.049***	-4.041***	-4.037***	-4.013***	-3.140***	-3.197***	-4.146***
	(-7.191)	(-7.204)	(-7.204)	(-7.188)	(-7.185)	(-7.050)	(-3.634)	(-4.944)	(-4.614)
Sales Gr	-0.006	-0.005	-0.007	-0.006	-0.007	-0.006	-0.036	-0.039	0.034
	(-0.104)	(-0.088)	(-0.119)	(-0.106)	(-0.126)	(-0.105)	(-0.403)	(-0.983)	(0.539)
CF Vol	1.361*	1.380*	1.415*	1.399*	1.380*	1.404*	1.831*	-0.486	2.667**
	(1.856)	(1.867)	(1.905)	(1.893)	(1.865)	(1.908)	(1.745)	(-0.461)	(2.005)
MTB	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.006**	-0.004	-0.005**
	(-2.883)	(-2.859)	(-2.849)	(-2.878)	(-2.879)	(-2.827)	(-2.051)	(-1.575)	(-2.388)
Rating	-0.035***	-0.035***	-0.035***	-0.035***	-0.036***	-0.035***	0.011	-0.086***	-0.055***
	(-3.132)	(-3.103)	(-3.104)	(-3.117)	(-3.176)	(-3.102)	(0.728)	(-4.723)	(-2.870)
Maturity	0.011**	0.011**	0.011**	0.011**	0.011**	0.011**	0.009	0.019***	0.018***
	(2.529)	(2.533)	(2.532)	(2.545)	(2.560)	(2.552)	(1.096)	(3.168)	(3.778)
Bond Age	0.041***	0.041***	0.041***	0.041***	0.042***	0.042***	0.042***	0.033***	0.034***
	(6.694)	(6.665)	(6.671)	(6.667)	(6.751)	(6.806)	(3.647)	(3.105)	(3.522)
High Yield	0.361***	0.364***	0.363***	0.361***	0.359***	0.360***	0.370***	0.283***	0.225***
	(7.261)	(7.292)	(7.294)	(7.290)	(7.195)	(7.205)	(4.970)	(3.436)	(2.804)
Callability	0.119**	0.118**	0.116**	0.120**	0.118**	0.116**	0.038	0.102	0.147**
	(2.083)	(2.067)	(2.038)	(2.096)	(2.064)	(2.022)	(0.271)	(1.452)	(2.111)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646	20,646	20,447	11,001	7,706	7,760
Adj. R^2	0.649	0.650	0.649	0.649	0.649	0.648	0.582	0.756	0.667

Notes: This table provides coefficient estimates from regressing the log of corporate yield spreads on economic policy uncertainty. Column 1 examines the interaction of economic policy uncertainty with composite cultural diversity within the board. Columns 2–5 present the results from interacting economic policy uncertainty with board diversity regarding each of the cultural dimensions. Columns

6 and 7 report the results from using the interaction of diversity within the independent board members and audit committee members. Columns 8 and 9 report the results from using the interaction of diversity with respect to insider directors and female directors. I replace all diversity variables and EPU with standardized values that have a mean of 0 and standard deviation of 1 to make interpreting the coefficient on the interaction term easier. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.5 EPU, CEO-Board Cultural Distance, and Cost of Debt

	Dependent Variable = Log (Yield Spread)								
	All Board Members					Indep. Board	Audit Com	Insiders	Females
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
EPU	0.203***	0.203***	0.204***	0.204***	0.203***	0.204***	0.161***	0.216***	0.195***
	(6.315)	(6.302)	(6.325)	(6.315)	(6.321)	(6.333)	(3.551)	(7.102)	(5.268)
Cultural Distance	-0.009					-0.006	-0.029	-0.001	0.010
	(-0.617)					(-0.410)	(-1.267)	(-0.058)	(0.445)
EPU × CD	-0.018**					-0.002	-0.041***	0.001	0.014
	(-2.214)					(-0.198)	(-3.390)	(0.061)	(1.520)
IDV CD		-0.003							
		(-0.186)							
EPU × IDV CD		-0.018**							
		(-2.214)							
UAI CD			-0.021						
			(-1.336)						
EPU × UAI CD			-0.011						
			(-1.565)						
PDI CD				-0.016					
				(-1.060)					
EPU × PDI CD				-0.016**					
				(-2.012)					
MAS CD					-0.007				
					(-0.621)				
EPU × MAS CD					-0.011				
					(-1.447)				
InstOwn.	-0.130	-0.129	-0.126	-0.128	-0.130	-0.128	0.110	-0.075	-0.117
	(-1.293)	(-1.269)	(-1.242)	(-1.272)	(-1.288)	(-1.242)	(0.941)	(-0.619)	(-0.873)

Firm Size	-0.059	-0.059	-0.059	-0.057	-0.058	-0.060	-0.370***	0.002	-0.200***
	(-1.576)	(-1.585)	(-1.598)	(-1.545)	(-1.555)	(-1.610)	(-4.172)	(0.046)	(-3.489)
Leverage	0.895***	0.897***	0.893***	0.896***	0.895***	0.907***	0.552**	0.920***	0.844***
	(6.625)	(6.654)	(6.630)	(6.662)	(6.618)	(6.621)	(2.253)	(5.571)	(3.999)
Performance	-4.037***	-4.047***	-4.037***	-4.030***	-4.040***	-4.009***	-3.113***	-4.245***	-4.104***
	(-7.190)	(-7.182)	(-7.208)	(-7.180)	(-7.189)	(-7.078)	(-3.569)	(-6.988)	(-4.600)
Sales Gr	-0.007	-0.006	-0.007	-0.007	-0.007	-0.006	-0.036	0.018	0.034
	(-0.124)	(-0.112)	(-0.118)	(-0.128)	(-0.128)	(-0.110)	(-0.405)	(0.441)	(0.528)
CF Vol	1.409*	1.425*	1.439*	1.437*	1.402*	1.455*	1.824*	0.259	2.712**
	(1.930)	(1.921)	(1.953)	(1.946)	(1.920)	(1.951)	(1.792)	(0.283)	(2.071)
MTB	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.006**	-0.004*	-0.005**
	(-2.888)	(-2.898)	(-2.934)	(-2.877)	(-2.843)	(-2.776)	(-2.078)	(-1.790)	(-2.374)
Rating	-0.035***	-0.035***	-0.035***	-0.035***	-0.035***	-0.035***	0.012	-0.050***	-0.055***
	(-3.107)	(-3.101)	(-3.106)	(-3.106)	(-3.113)	(-3.049)	(0.809)	(-3.422)	(-2.913)
Maturity	0.011**	0.011**	0.011**	0.011**	0.011**	0.011**	0.009	0.019***	0.018***
	(2.547)	(2.559)	(2.524)	(2.527)	(2.558)	(2.539)	(1.111)	(3.968)	(3.875)
Bond Age	0.041***	0.041***	0.041***	0.041***	0.041***	0.043***	0.043***	0.040***	0.034***
	(6.621)	(6.654)	(6.629)	(6.596)	(6.662)	(6.798)	(3.650)	(4.622)	(3.586)
High Yield	0.364***	0.364***	0.362***	0.363***	0.363***	0.365***	0.378***	0.339***	0.219***
	(7.305)	(7.295)	(7.261)	(7.310)	(7.281)	(7.300)	(5.093)	(5.479)	(2.819)
Callability	0.117**	0.117**	0.118**	0.118**	0.117**	0.114*	0.019	0.109*	0.148**
	(2.052)	(2.053)	(2.067)	(2.061)	(2.046)	(1.988)	(0.134)	(1.723)	(2.096)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,646	20,646	20,646	20,646	20,646	20,444	10,963	13,219	7,741
Adj. R^2	0.649	0.649	0.649	0.649	0.649	0.647	0.584	0.694	0.668

Notes: This table provides coefficient estimates from regressing the log of corporate yield spreads on economic policy uncertainty. Column 1 examines the interaction of economic policy uncertainty with composite cultural distance between the CEO and the board members. Columns 2–5 present the results from interacting economic policy uncertainty with CEO-board distance regarding each of the cultural dimensions. Columns 6 and 7 report the results from using the interaction of distance between the CEO and independent board members, and CEO and audit committee members. Columns 8 and 9 report the results from using the interaction of distance with respect to insider directors and female directors. I replace all distance variables and EPU with standardized values that have a mean of 0 and standard deviation of 1 to make interpreting the coefficient on the interaction term easier. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.6 EPU, Board Characteristics, and Cost of Debt

	Dependent Variable = Log (Yield Spread)				
	(1)	(2)	(3)	(4)	(5)
EPU	0.204***	0.190***	0.202***	0.182***	0.204***
	(6.422)	(6.065)	(6.317)	(5.541)	(6.394)
Board Independence	-0.012				
	(-0.775)				
EPU × Independence	-0.022*				
	(-1.846)				
Board Busyness		-0.064***			
		(-4.161)			
EPU × Busyness		0.027***			
		(3.221)			
Female Director %			0.021		
			(1.223)		
EPU × Female %			-0.027***		
			(-2.991)		
Board Avg Tenure				-0.031*	
				(-1.757)	
EPU × Avg Tenure				-0.014**	
				(-2.177)	
Board Avg Age					-0.044**
					(-2.210)
EPU × Avg Age					-0.022*
					(-1.729)
InstOwn.	-0.133	-0.175	-0.149	-0.217*	-0.135
	(-1.299)	(-1.612)	(-1.444)	(-1.924)	(-1.350)
Firm Size	-0.058	-0.114***	-0.073**	-0.121***	-0.044
	(-1.602)	(-3.120)	(-2.054)	(-3.127)	(-1.229)
Leverage	0.878***	0.887***	0.868***	0.866***	0.874***
	(6.547)	(6.557)	(6.481)	(6.194)	(6.504)
Performance	-3.985***	-4.132***	-3.945***	-3.794***	-4.025***
	(-7.087)	(-6.816)	(-7.049)	(-6.521)	(-7.182)
Sales Gr	-0.012	-0.016	-0.007	-0.033	-0.012
	(-0.211)	(-0.247)	(-0.126)	(-0.537)	(-0.213)
CF Vol	1.416*	1.259*	1.447*	1.534**	1.433*
	(1.920)	(1.747)	(1.936)	(2.114)	(1.947)
MTB	-0.005***	-0.005***	-0.005***	-0.005***	-0.004***
	(-2.826)	(-2.742)	(-2.964)	(-3.025)	(-2.764)
Rating	-0.034***	-0.026**	-0.033***	-0.021*	-0.034***
	(-3.042)	(-2.239)	(-2.959)	(-1.866)	(-3.077)
Maturity	0.012**	0.010**	0.012**	0.012**	0.012**
	(2.601)	(2.143)	(2.627)	(2.412)	(2.606)
Bond Age	0.042***	0.036***	0.041***	0.041***	0.043***
	(6.804)	(5.443)	(6.561)	(6.256)	(6.935)

High Yield	0.367***	0.363***	0.371***	0.373***	0.369***
	(7.327)	(7.147)	(7.354)	(7.513)	(7.362)
Callability	0.123**	0.107*	0.115**	0.109*	0.132**
	(2.195)	(1.794)	(2.008)	(1.792)	(2.290)
Firm FE	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes
Observations	22,218	19,271	22,218	20,543	22,218
Adj. R^2	0.645	0.646	0.645	0.632	0.646

Notes: This table provides coefficient estimates from regressing the log of corporate yield spreads on economic policy uncertainty. Column 1 examines the interaction of economic policy uncertainty with board busyness. Column 2 presents the results from interacting economic policy uncertainty and board independence. Column 3 provides the interaction of economic policy uncertainty with the proportion of female directors on the board, and columns 4–5 examines the interactions of economic policy uncertainty and director experience as proxied by average age and tenure. I replace all board variables and EPU with standardized values that have a mean of 0 and standard deviation of 1 to make interpreting the coefficient on the interaction term easier. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.7 Board Diversity and Other Information Intermediaries

	Dependent Variable = Log (Yield Spread)							
	Auditor	Analysts	Institutional Ownership	Churn Rate	LT IO	ST IO	LT&ST IO	Dummy (LT > ST)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPU	0.204***	0.195***	0.204***	0.190***	0.207***	0.204***	0.207***	0.223***
	(6.334)	(6.241)	(6.348)	(8.089)	(6.691)	(6.413)	(6.723)	(7.052)
Diversity	-0.019	-0.013	-0.018	-0.009	-0.015	-0.018	-0.015	-0.018
	(-1.258)	(-0.827)	(-1.212)	(-0.657)	(-1.056)	(-1.229)	(-1.057)	(-1.200)
EPU × Diversity	-0.018**	-0.018**	-0.017**	-0.017**	-0.017**	-0.018***	-0.018***	-0.018**
	(-2.592)	(-2.584)	(-2.546)	(-2.574)	(-2.606)	(-2.651)	(-2.672)	(-2.637)
Auditor	0.015							
	(0.640)							
EPU × Auditor	-0.005							
	(-0.521)							
Analysts		-0.122***						
		(-4.581)						
EPU × Analysts		-0.033***						
		(-3.366)						
Inst.Own			-0.024					
			(-1.205)					
EPU × InstOwn			-0.012					
			(-1.038)					
Churn Rate				0.154***				
				(7.251)				
EPU × Churn Rate				0.043***				
				(3.132)				
LT IO					-0.044**		-0.046**	
					(-2.075)		(-2.203)	
EPU × LT IO					-0.047***		-0.046***	

					(-3.123)		(-3.075)	
ST IO						-0.000	-0.186	
						(-0.016)	(-1.357)	
EPU × ST IO						0.017*	0.039	
						(1.689)	(1.358)	
Dummy (LT > ST)								-0.063**
								(-2.030)
EPU × Dum.(LT > ST)								-0.063**
								(-2.604)
InstOwn.	-0.127	-0.098		-0.180*				
	(-1.265)	(-0.806)		(-1.799)				
Firm Size	-0.057	0.021	-0.059	0.036	-0.045	-0.063*	-0.045	-0.055
	(-1.545)	(0.522)	(-1.596)	(1.101)	(-1.290)	(-1.781)	(-1.307)	(-1.581)
Leverage	0.909***	1.057***	0.906***	1.015***	0.924***	0.916***	0.922***	0.940***
	(6.738)	(6.636)	(6.724)	(7.839)	(6.895)	(6.910)	(6.999)	(7.031)
Performance	-4.046***	-3.823***	-4.029***	-4.061***	-4.017***	-4.063***	-4.012***	-4.052***
	(-7.227)	(-6.089)	(-7.187)	(-8.149)	(-7.245)	(-7.395)	(-7.367)	(-7.324)
Sales Gr	-0.007	-0.024	-0.007	-0.007	-0.012	-0.005	-0.011	-0.008
	(-0.116)	(-0.388)	(-0.114)	(-0.155)	(-0.203)	(-0.081)	(-0.190)	(-0.146)
CF Vol	1.343*	1.108	1.362*	0.792	1.246*	1.387*	1.235*	1.322*
	(1.819)	(1.365)	(1.866)	(1.128)	(1.748)	(1.890)	(1.717)	(1.832)
MTB	-0.005***	-0.004***	-0.005***	-0.003*	-0.004***	-0.005***	-0.004***	-0.004***
	(-2.877)	(-2.951)	(-2.899)	(-1.982)	(-2.779)	(-2.911)	(-2.752)	(-2.839)
Rating	-0.035***	-0.033**	-0.035***	-0.032***	-0.035***	-0.035***	-0.035***	-0.035***
	(-3.102)	(-2.503)	(-3.131)	(-2.703)	(-3.057)	(-3.053)	(-3.048)	(-3.071)
Maturity	0.011**	0.013***	0.011**	0.010**	0.011**	0.012**	0.011**	0.012**
	(2.555)	(2.772)	(2.540)	(2.278)	(2.523)	(2.571)	(2.537)	(2.563)
Bond Age	0.042***	0.044***	0.041***	0.044***	0.042***	0.041***	0.042***	0.042***
	(6.748)	(6.575)	(6.692)	(7.586)	(6.771)	(6.581)	(6.778)	(6.696)
High Yield	0.362***	0.338***	0.362***	0.371***	0.366***	0.361***	0.365***	0.363***
	(7.263)	(6.250)	(7.325)	(7.475)	(7.363)	(7.255)	(7.335)	(7.278)

Callability	0.119**	0.116**	0.119**	0.114**	0.129**	0.115**	0.131**	0.119**
	(2.094)	(2.010)	(2.075)	(2.318)	(2.197)	(1.994)	(2.257)	(2.053)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,625	17,818	20,646	20,646	20,646	20,646	20,646	20,646
Adj. R^2	0.649	0.657	0.650	0.670	0.653	0.649	0.653	0.651

Notes: This table provides coefficient estimates from regressing the log of corporate yield spreads on economic policy uncertainty. Columns 1–8 examine the interaction of economic policy uncertainty with alternative information intermediaries. I replace all variables used in the interaction terms with standardized values that have a mean of 0 and standard deviation of 1 to make interpreting the coefficient on the interaction term easier. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.8 CEO-Board Distance and Other Information Intermediaries

	Dependent Variable = Log (Yield Spread)							
	Auditor	Analysts	Institutional Ownership	Churn Rate	LT IO	ST IO	LT & ST IO	Dummy (LT > ST)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPU	0.203***	0.195***	0.203***	0.189***	0.207***	0.204***	0.207***	0.223***
	(6.317)	(6.238)	(6.335)	(8.084)	(6.678)	(6.397)	(6.708)	(7.043)
Cultural Distance	-0.009	-0.011	-0.009	0.001	-0.007	-0.009	-0.006	-0.008
	(-0.603)	(-0.672)	(-0.613)	(0.070)	(-0.450)	(-0.617)	(-0.435)	(-0.548)
EPU × Distance	-0.018**	-0.016**	-0.017**	-0.020**	-0.017**	-0.020**	-0.018**	-0.019**
	(-2.223)	(-2.028)	(-2.068)	(-2.400)	(-2.133)	(-2.413)	(-2.361)	(-2.335)
Auditor	0.015							
	(0.637)							
EPU × Auditor	-0.005							
	(-0.569)							
Analysts		-0.121***						
		(-4.572)						
EPU × Analysts		-0.035***						
		(-3.494)						
Inst.Own			-0.024					
			(-1.226)					
EPU × InstOwn			-0.011					
			(-0.966)					
Churn Rate				0.153***				
				(7.249)				
EPU × Churn Rate				0.044***				
				(3.230)				
LT IO					-0.044**		-0.045**	
					(-2.061)		(-2.192)	

EPU × LT IO					-0.048***		-0.046***	
					(-3.159)		(-3.106)	
ST IO						-0.001	-0.204	
						(-0.025)	(-1.508)	
EPU × ST IO						0.018*	0.043	
						(1.836)	(1.507)	
Dummy (LT > ST)								-0.062**
								(-2.022)
EPU × Dum.(LT > ST)								-0.065***
								(-2.679)
InstOwn.	-0.129	-0.099		-0.182*				
	(-1.283)	(-0.811)		(-1.818)				
Firm Size	-0.059	0.019	-0.060	0.034	-0.047	-0.065*	-0.047	-0.058
	(-1.588)	(0.468)	(-1.632)	(1.064)	(-1.341)	(-1.833)	(-1.361)	(-1.633)
Leverage	0.897***	1.043***	0.894***	1.007***	0.913***	0.904***	0.911***	0.928***
	(6.622)	(6.517)	(6.612)	(7.739)	(6.792)	(6.792)	(6.896)	(6.918)
Performance	-4.049***	-3.825***	-4.032***	-4.067***	-4.021***	-4.066***	-4.017***	-4.055***
	(-7.226)	(-6.086)	(-7.186)	(-8.163)	(-7.250)	(-7.402)	(-7.380)	(-7.328)
Sales Gr	-0.008	-0.025	-0.008	-0.008	-0.013	-0.006	-0.012	-0.009
	(-0.137)	(-0.398)	(-0.133)	(-0.173)	(-0.221)	(-0.100)	(-0.207)	(-0.165)
CF Vol	1.392*	1.164	1.410*	0.827	1.292*	1.435*	1.280*	1.369*
	(1.894)	(1.441)	(1.938)	(1.185)	(1.819)	(1.966)	(1.788)	(1.909)
MTB	-0.005***	-0.004***	-0.005***	-0.003**	-0.004***	-0.005***	-0.004***	-0.004***
	(-2.883)	(-2.979)	(-2.900)	(-2.017)	(-2.794)	(-2.920)	(-2.769)	(-2.857)
Rating	-0.035***	-0.032**	-0.035***	-0.032***	-0.034***	-0.034***	-0.034***	-0.035***
	(-3.076)	(-2.497)	(-3.108)	(-2.678)	(-3.033)	(-3.026)	(-3.023)	(-3.043)
Maturity	0.011**	0.013***	0.011**	0.010**	0.011**	0.012**	0.012**	0.012**
	(2.574)	(2.773)	(2.557)	(2.307)	(2.544)	(2.594)	(2.561)	(2.584)
Bond Age	0.041***	0.044***	0.041***	0.044***	0.042***	0.041***	0.042***	0.041***
	(6.674)	(6.498)	(6.622)	(7.546)	(6.712)	(6.504)	(6.716)	(6.623)
High Yield	0.365***	0.339***	0.365***	0.374***	0.369***	0.364***	0.367***	0.366***

	(7.306)	(6.267)	(7.362)	(7.503)	(7.398)	(7.300)	(7.373)	(7.319)
Callability	0.118**	0.115*	0.117**	0.113**	0.127**	0.114*	0.129**	0.118**
	(2.063)	(1.988)	(2.045)	(2.288)	(2.168)	(1.965)	(2.230)	(2.023)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,625	17,818	20,646	20,646	20,646	20,646	20,646	20,646
Adj. R^2	0.649	0.657	0.649	0.670	0.653	0.649	0.653	0.651

Notes: This table provides coefficient estimates from regressing the log of corporate yield spreads on economic policy uncertainty. Columns 1–8 examine the interaction of economic policy uncertainty with alternative information intermediaries. I replace all variables used in the interaction terms with standardized values that have a mean of 0 and standard deviation of 1 to make interpreting the coefficient on the interaction term easier. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3.9 Placebo Tests

Board Characteristic =	Diversity Composite	Diversity Independent	Distance Composite	Distance AuditCom
Dependent Variable = Log (Yield Spread)				
	(1)	(2)	(3)	(4)
$\widetilde{Placebo}\ EPU$	-0.008	-0.006	-0.011	-0.012
	(-0.062)	(-0.050)	(-0.087)	(-0.065)
Board Characteristic	-0.008	-0.002	-0.010	-0.036
	(-0.128)	(-0.034)	(-0.037)	(-0.381)
$\widetilde{Placebo}\ EPU$ × Board	0.000	-0.000	0.004	0.001
	(0.017)	(0.019)	(0.063)	(0.036)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes
Observations	20,646	20,447	20,646	10,963

Board Characteristic =	Board Independence	Board Busyness	Female %	Board Tenure	Board Age
Dependent Variable = Log (Yield Spread)					
	(5)	(6)	(7)	(8)	(9)
$\widetilde{Placebo}\ EPU$	-0.002	-0.007	-0.006	-0.005	0.007
	(-0.010)	(-0.069)	(-0.057)	(-0.041)	(0.009)
Board Characteristic	0.287	-1.248	0.533	-0.006	-0.003
	(0.253)	(-0.412)	(0.351)	(-0.261)	(-0.054)
$\widetilde{Placebo}\ EPU$ × Board	-0.009	0.001	-0.012	-0.000	-0.000
	(-0.036)	(0.002)	(-0.036)	(-0.077)	(-0.024)
Controls	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes
Observations	22,218	19,271	22,218	20,543	22,218

Notes: This table provides coefficient estimates from implementing placebo tests for all the board characteristic variables used in Tables 4–6. Average coefficients from a hundred estimations of coefficients from replacing *EPU* with *Placebo EPU* are reported. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

CHAPTER 4

CONCLUSION

This dissertation investigates the role of corporate governance in ensuring the reliability of financial reporting, from equity investors' as well as creditors' perspectives. In particular, I employ a cross-country setting and cultural components to reveal that monitoring and governance by various actors contribute to higher reporting quality. The robust findings of three essays add to the literature of corporate governance, financial transparency, and international finance.

Extant research identifies significant improvements in reporting quality resulting from monitoring constraints by governance mechanisms. However, there is limited empirical evidence on how industry- and economy-wide factors influence financial reporting quality, and what role governance mechanisms play in this relation. In Chapter 1, I fill this gap in the literature by examining the relation between policy-induced economic uncertainty and accounting quality in a cross-country setting. In response to an increase in policy-induced economic uncertainty, investors may increase their attention to and acquisition of firm-specific information. Facing greater investor attention and tightened monitoring of corporate actions, managers should reduce earnings management and report more informative earnings. To empirically test the relation between policy uncertainty and accounting quality, we employ a large sample of firms from 19 countries over the 1990–2015 period and find strong evidence that accounting quality is positively related to policy uncertainty. Moreover, we find that the increased attention to firm-specific information and increased demand for transparency during periods of high policy uncertainty, driven by the presence of short-term institutional investors, induces managers to improve accounting quality. We further find evidence that high accounting quality can mitigate the negative effects of policy uncertainty on corporate investment and valuation. Moreover, we find that the relation between policy uncertainty and earnings transparency is more pronounced under stronger legal institutions and financial reporting environment, and when firms are more subject to external financing needs. This study is important because it provides new evidence on the economic outcomes of policy uncertainty and offers new insights into undertaking a comprehensive analysis of accounting quality.

Chapter 2 explores the topic of shareholder inattention and shows that investor inattention in the equity market adversely affects security prices in the bond market. Because bondholders have limited upside potential but bear downside risk in their investment, bond yields are determined by the inability of firms to meet their debt obligations and are sensitive to institutional monitoring. In line with this observation, we find that the effect of institutional investor inattention on the cost of debt is stronger under firm characteristics more conducive to managerial opportunism. In addition, we find that while institutional dual holders and bond covenants attenuate the effect of distraction, they do not eliminate it. Taken together, these findings provide evidence that a temporary loosening of monitoring constraints by institutional investors has a distinct, negative incremental effect on bondholders. While a large strand of the literature has explored the effect of investor inattention on stock prices and corporate outcomes, no prior research has examined the effects of limited shareholder attention at the retail and institutional levels on bond pricing. This paper extends the literature by showing that shareholder inattention contains information beyond the previously identified determinants of debt pricing.

Chapter 3 examines whether director characteristics mitigate the adverse effect of policy-induced uncertainty on the cost of debt financing. Boards of directors serve the interests of different stakeholders and are consequential to the integrity of the financial accounting process. However, while the existing research investigates how boards of directors respond to managerial misconduct at the firm level, it overlooks the question of how valuable directors' monitoring is in bad times, and especially in periods of macroeconomic uncertainty. Using periods of high policy uncertainty as a setting, I extend the literature and find novel evidence that more culturally diverse boards and boards with larger cultural distance from the CEO can alleviate the adverse impact of policy uncertainty on debt financing costs. Using my hand-collected measures of board cultural diversity and distance from tracing cultural backgrounds and ancestral roots at the director level, I broaden our understanding of how board diversity affects firms' performance.

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APPENDIX A

CHAPTER 1 ECONOMIC POLICY UNCERTAINTY INDEX

Measuring economic uncertainty induced by regulatory and political systems is a challenge for two primary reasons. First, it is not clear which events should be classified as causing policy-induced uncertainty, or how to measure the degree an event may cause. Second, it is difficult to disentangle policy-induced uncertainty from general macroeconomic uncertainty. To overcome these challenges, we employ BBD's (2016) index of aggregate policy uncertainty.[36]

Using a computer-automated search of newspapers, BBD (2016) measure policy uncertainty by counting the number of articles in a country's major newspapers that contain the terms "uncertain" or "uncertainty" and "economic" or "economy," as well as at least one policy-relevant term, such as "Congress," "deficit," "Federal Reserve," "legislation," "regulation," or "White House" in the newspaper's native language. Differences in the supervising agency's name (e.g., "Bank of Japan" for Japan), as well as terms specific to a nation (e.g., "customs duties" for India) are accounted for, as well as abbreviations and term variants such as "uncertainties" and "regulatory."

After obtaining raw monthly counts by newspaper, BBD (2016) scale the counts by the total number of articles in each newspaper-month to control for differences in volume

[36] We focus on the news-based aggregate BBD (2016) index as our measure of policy-induced economic uncertainty because other index components related to policy categories (e.g., monetary, fiscal) are not available for the international sample.

over time and across newspapers. Then they standardize each newspaper's monthly scaled series of counts to a unit standard deviation and take the average of the numbers across newspapers, so each country has one representative monthly series. Each country's series is normalized to have a mean of 100. BBD (2016) show that the resulting index captures clear spikes around important policy-relevant events, such as the Gulf Wars and the debt ceiling dispute in the summer of 2011. The index is not necessarily correlated with political events that have mild economic consequences.

Given concerns that their measure could be associated with potential biases in terms of accuracy and reliability, BBD (2016) conduct various validation tests, and show that their index captures the overall level of policy-induced uncertainty. First, they use human audits of newspapers under close supervision and training, and verify that their computer-automated search is strongly correlated with the results of a human-generated index. Second, they ensure that a newspaper's political slant does not significantly affect index reliability. Using the media slant index of Gentzkow and Shapiro (2010), they divide newspapers based on inclination toward a left or right viewpoint, and compare the "left" and "right" versions of the index. Regardless of newspapers' political slant, BBD (2016) find that their index does not distort variations in policy uncertainty over time. Third, they compare their index to other reasonable measures of economic uncertainty, such as the Chicago Board Options Exchange Volatility Index, and indicators based on an analysis of the Beige Book and 10-K filings. They confirm that their index is distinct in scope from other indicators, and that it contains information about policy-related economic uncertainty, as opposed to general financial uncertainty and stock market events.

Commercial data providers such as Bloomberg, Haver Analytics, and Reuters carry the BBD index, which highlights its relevance. Following Gulen and Ion (2016), we define policy-induced economic uncertainty, or economic policy uncertainty (*EPU*), as the natural logarithm of the average BBD (2016) index over the 12 months of a firm's fiscal year.

APPENDIX B

CHAPTER 1 VARIABLE DEFINITIONS

VARIABLE	DESCRIPTION	SOURCE
$\sigma_w^2/(\sigma_w^2+\sigma_v^2)$	Accounting quality estimated from Nikolaev's (2018) model.	Authors' calculation based on the Nikolaev (2018) model using Compustat
$\gamma^2\sigma_\epsilon^2/(\sigma_w^2+(\gamma^2\sigma_\epsilon^2+\sigma_{\tilde{v}}^2))$	Proportion of the variance of accruals explained by the managed error component of accruals, estimated from the income-smoothing model in Nikolaev (2018).	As above
$\theta_v^2/(\sigma_w^2+(\theta_v^2+\sigma_{\tilde{v}}^2))$	Proportion of the variance of accruals explained by the managed error component of accruals, estimated from the earnings management model in Nikolaev (2018).	As above
EPU	Natural logarithm of the average of the monthly policy uncertainty index over the 12 months ending in the month of the fiscal year-end.	Authors' calculation based on BBD (2016)
EPU_DURATION	For each firm, the number of consecutive months during the fiscal year in which the country's EPU index is above the 80th percentile for the country.	As above
Government Dependence	Industry-level share of production that is consumed by the government.	2005 OECD Structural Analysis Input-Output tables

Total Accruals	Negative sum of the decrease in accounts receivable, decrease in inventory, increase in accounts payable and accrued liabilities, net change in other assets and liabilities, and increase in accrued income taxes, scaled by total assets.	Authors' calculation based on data from Compustat
AbsDA	Absolute value of abnormal accruals, estimated based on the modified Jones model adjusted for performance as in Kothari et al. (2005).	As above
GDP_GR	Real GDP growth rate for the year.	WDI
SIZE	Natural logarithm of total assets in millions of U.S. dollars.	Authors' calculation based on data from Compustat
OPT_CYCLE	Natural logarithm of the sum of days in receivable and days in inventory.	As above
CF_VOL	5-year standard deviation of cash flow to total assets.	As above
SALES_VOL	5-year standard deviation of sales to total assets.	As above
SG_VOL	5-year standard deviation of annual sales growth rate.	As above
LEV	Ratio of long-term debt to total assets.	As above
SALES_GR	Annual sales growth rate.	As above
DAY_PAYABLE	360 divided by the ratio of average accounts payable to cost of goods sold.	As above
LOSS	Indicator equal to 1 if a firm reports a loss, and 0 otherwise.	As above
ROA	Ratio of operating income to total assets.	As above
ELECTION	Election indicator equal to 1 if national elections take place during the fiscal year, and 0 otherwise. We only include national elections associated with the selection of the chief executive for which the timing of elections is exogenously specified by electoral law.	DPI

WUI	Measure of economic uncertainty constructed based on the frequency count of the word "uncertainty" and its variants in quarterly Economist Intelligence Unit (EIU) country reports.	Ahir et al. (2018)
REPORTING_FREQ	Indicator variable equal to 1 if the firm reports at a quarterly frequency, and 0 otherwise.	Authors' calculation based on data from Compustat
EARN_VOL	5-year standard deviation of a firm's annual earnings.	As above
RET_VOL	Standard deviation of the past 12 monthly stock returns for each firm-year.	As above
INDUSTRY_SHOCK	First principal component from seven economic shock variables (profitability, asset turnover, R&D, capital expenditures, employee growth, ROA, and sales growth) calculated for each industry-year. For each year, we take the industry median of the absolute change in each variable.	As above
SD_SALES_GR	Cross-sectional standard deviation of sales growth, calculated for each country-year, using the entire Compustat universe.	As above
SD_RET	Cross-sectional standard deviation of cumulative returns over the past 12 months, calculated for each country.	As above
IFRS_DUMMY	Indicator equal to 1 for post-IFRS adoption years, and 0 otherwise.	www.ifrs.org
R_GDP_F	Real GDP growth rate forecast based on an assessment of the economic climate in individual countries and the world economy using a combination of model-based analyses and expert judgment. It is measured as a year-over-year growth rate.	OECD
CCI	Consumer confidence index based on households' plans for major purchases and economic situation, both currently and in the immediate future. Opinions compared to a "normal" state are collected, with the difference between positive and negative answers providing a qualitative index on economic conditions.	As above

CLI	Composite leading indicator of turning points in business cycles showing a fluctuation in economic activity around its long-term potential level. The index summarizes short-term economic movements in qualitative rather than quantitative terms.	As above
CAPITAL_INV	Capital expenditures scaled by lagged sales.	Authors' calculation based on data from Compustat
R&D	Research and development expenditures scaled by lagged sales. We replace missing R&D values with 0.	As above
R&D_DUMMY	Indicator equal to 1 if research and development expenditures is missing (and set to 0), and 0 otherwise.	As above
SECURITIES_ISSUE	Indicator equal to 1 if the sum of firm-level equity and debt issuance scaled by lagged total assets is greater than 1%, and 0 otherwise.	As above
IPOs	Number of primary common share issues on main markets for each country-year.	Hanselaar, Stulz, and van Dijk (2019)
Political Fractionalization	The Fractionalization index gives the probability that two deputies picked from the legislature at random will be of different parties.	DPI
Veto Player Drop %	Percentage of veto players who drop from the government in any given year.	As above
Income Smoothing	Negative value of the correlation between changes in discretionary accruals and pre-discretionary income over the current year and the past four years for each firm, based on Tucker and Zarowin (2006).	Authors' calculation based on data from Compustat
Earnings Predictability	Negative value of the square root of variance from an auto-regressive model of order 1 (AR1) for annual ROA, using rolling ten-year windows, based on Lipe (1990).	As above

Earnings Persistence	Slope coefficient estimate from an auto-regressive model of order 1 (AR1) for annual ROA, using rolling ten-year windows, based on previous research (e.g., Ali and Zarowin 1992; Francis et al. 2004).	As above
AQ	Accruals quality estimated as the standard deviation of the residuals from the Dechow and Dichev (2002) model as modified by McNichols (2002) over five years.	As above
AbsAbnCFO	Absolute value of abnormal cash flows from operations estimated following Roychowdhury (2006).	As above
Political Risk	Share of the quarterly earnings conference calls of individual firms devoted to political risks	Hassan et al. (2019)
STIO	Short-term institutional ownership, where short-term institutional investors are those who have average churn rates in the top tercile of all institutional investors.	As above
LTIO	Long-term institutional ownership, where long-term institutional investors are those who have average churn rates in the bottom tercile of all institutional investors.	As above
Revised Anti-Director Rights	Measure of legal protection of minority shareholders against expropriation by corporate insiders. The index is calculated as the sum of (1) the vote by mail index, (2) the shares not blocked or deposited index, (3) the cumulative voting index, (4) the oppressed minority index, (5) the pre-emptive rights index, and (6) the capital index.	Djankov et al. (2008)
Legal Enforcement	Measure of quality of the judicial system in enforcing the legal standards, as in Leuz et al. (2003), calculated as the arithmetic mean of the efficiency of the judicial system index, the assessment of rule of law index, and the corruption index of La Porta et al. (1998).	Leuz et al. (2003)

Ownership Concentration	The median percentage of common shares owned by the largest three shareholders in the ten largest privately owned non-financial firms.	La Porta et al. (1998)
Opacity	Index measuring the degree to which there is a lack of clear, accurate, easily discernible, and widely accepted practices governing the relationships among businesses, investors, and governments.	Kurtzman et al. (2004)
Accounting Standards	Accounting standards index of La Porta et al. (1998), rating firms' 1990 annual reports on their inclusion or omission of 90 items.	La Porta et al. (1998)
Litigation Risk	Index of auditor-specific litigation risk for each country.	Wingate (1997)
MTB	Market value of assets divided by book value of assets.	Compustat
External Finance Dependence	Capital expenditures less funds from operations, divided by capital expenditures. When funds from operations is missing, it is defined as the sum of income before extraordinary items, depreciation and amortization, deferred taxes, equity in net loss/earnings, sale of property, plant, and equipment, investment gain/loss, and other funds from operations, as in Rajan and Zingales (1998).	As above

Notes: This appendix contains variable definitions used in Chapter 1. We winsorize all continuous variables at the 1% level in both tails of the distribution.

APPENDIX C

CHAPTER 1 DESCRIPTIVE STATISTICS

	N	*AbsDA*	*EPU*	*GDP_GR*	*SIZE*	*OPT_CYCLE*	*CF_VOL*	*SALES_VOL*	*SG_VOL*	*LEV*	*SALES_GR*	*DAY_PAYABLE*	*LOSS*	*ROA*
Australia	7,615	0.27	4.55	2.92	4.35	0.21	0.23	0.27	1.96	0.12	0.28	1.93	0.33	-0.06
Brazil	2,602	0.15	4.85	2.81	6.43	0.05	0.10	0.15	0.48	0.19	0.10	0.30	0.11	0.06
Canada	9,189	0.22	4.71	2.36	5.38	0.07	0.15	0.20	0.83	0.17	0.17	0.61	0.23	-0.02
Chile	1,838	0.13	4.57	3.88	5.85	0.05	0.07	0.11	0.34	0.17	0.09	0.32	0.05	0.06
China	25,561	0.18	4.83	9.17	5.87	0.02	0.09	0.17	0.47	0.06	0.20	0.65	0.11	0.04
France	5,317	0.15	5.03	1.03	6.07	0.03	0.09	0.14	0.38	0.14	0.08	0.22	0.12	0.04
Germany	5,916	0.19	4.80	1.29	5.73	0.03	0.11	0.21	0.40	0.13	0.09	0.25	0.13	0.03
India	25,374	0.22	4.57	7.62	3.82	0.15	0.11	0.22	0.73	0.17	0.17	1.27	0.11	0.07
Ireland	371	0.15	4.73	2.68	6.59	0.05	0.09	0.18	0.51	0.20	0.11	0.30	0.13	0.04
Italy	1,917	0.13	4.65	-0.35	6.48	0.03	0.08	0.12	0.44	0.15	0.05	0.05	0.14	0.03
Japan	40,338	0.16	4.59	0.76	6.16	0.01	0.05	0.11	0.19	0.10	0.04	0.03	0.05	0.04
Korea	7,449	0.16	4.74	3.74	6.04	0.01	0.08	0.17	0.34	0.10	0.08	0.04	0.10	0.04
Netherlands	1,098	0.17	4.55	1.11	6.88	0.01	0.08	0.19	0.34	0.17	0.08	0.04	0.06	0.06
Russia	1,518	0.17	4.91	2.24	6.95	0.03	0.11	0.25	0.75	0.16	0.07	0.11	0.10	0.07
Singapore	5,472	0.16	4.65	5.66	4.74	0.05	0.13	0.23	0.62	0.08	0.14	0.34	0.19	0.02

Spain	1,084	0.15	4.57	0.71	7.17	0.02	0.07	0.11	0.31	0.21	0.07	0.09	0.09	0.05
Sweden	3,723	0.19	4.49	2.13	4.74	0.15	0.13	0.22	0.79	0.13	0.16	1.38	0.24	-0.02
U.K.	8,439	0.19	5.00	1.37	5.32	0.10	0.13	0.21	0.71	0.13	0.12	0.84	0.17	0.02
U.S.	88,733	0.17	4.64	2.60	5.28	0.06	0.13	0.23	0.52	0.20	0.13	0.53	0.20	-0.00
All countries	243,554	0.18	4.67	3.47	5.40	0.06	0.11	0.20	0.54	0.15	0.13	0.50	0.15	0.02

Notes: This table reports summary statistics for the sample used in the analysis of discretionary accruals. We report the mean values of the key variables by country. The sample comprises 243,554 firm-year observations from 19 countries over the 1990–2015 period. We winsorize all continuous variables at the 1% level in both tails of the distribution.

Appendix D

Chapter 1 Freedom of the Press, Freedom on the Internet, and Press Circulation

	Press Freedom		*Internet Freedom*		*Internet Users*		*Newspaper Circulation*	
	Low	High	Low	High	Low	High	Low	High
Dependent variable = *AbsDA*								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPU	-0.019**	-0.063***	0.014	-0.076***	-0.000	-0.059***	-0.002	-0.061***
	(-2.57)	(-7.12)	(1.31)	(-4.03)	(-0.00)	(-7.38)	(-0.18)	(-8.02)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	98,494	133,299	29,053	28,107	98,219	100,213	105,363	85,367
Adjusted R^2	16.8%	18.2%	17.9%	24.3%	17.2%	21.4%	22.4%	15.4%
Difference in the coefficients on *EPU* (High – Low)	-0.044***		-0.090***		-0.059***		-0.060***	
	(-3.81)		(-4.16)		(-4.94)		(-4.88)	

Notes: This table reports regression results of subsample analyses based on freedom of the press, freedom on the Internet, and media circulation. We divide the sample into high and low subsamples using country-level median values of each index (*Press Freedom*, *Internet Freedom*, *Internet Users*, and *Newspaper Circulation*) and examine the relation between earnings management and policy uncertainty in each subsample. *Press Freedom* is an index of country-level print, broadcast, and digital media independence, obtained from Freedom House. This index evaluates the legal environment for the media, political pressures that influence reporting, and economic factors that affect access to news and information. *Net Freedom* is an index of country-level online freedom, obtained from Freedom House. This index evaluates the obstacles to access to the Internet, limits on content, and violations of user rights online. *Internet Users* is defined as a percentage of individuals using the Internet divided by population, obtained from WDI. *Newspaper Circulation* is measured as circulation of daily newspapers divided by population, from Dyck and Zingales (2004). In columns (1), (3), (5), and (7), we report results using firm-year observations belonging to countries with low press freedom, internet freedom, internet users, and newspaper circulation, respectively. Columns (2), (4), (6), and (8) report results using firm-year observations belonging to countries with high press freedom, internet freedom, internet users, and newspaper circulation, respectively. The difference in the coefficients on *EPU* between the high and low subsamples is provided in the last row of the table. The dependent variable is accrual-based earnings management, *AbsDA*, calculated from the performance-augmented modified Jones model as in Kothari, Leone, and Wasley (2005). *EPU* is the natural logarithm of the average BBD policy uncertainty index over the 12-month period ending in the month of the firm's fiscal year-end. We winsorize all continuous variables at the 1% level in both tails of the distribution. All regressions include firm and year fixed effects. *t*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Appendix E

Chapter 1 The Role of Legal Institutions, Financial Reporting Transparency, and External Financing Needs

Panel A. Legal Institutions

	Revised Anti-Director		Legal Enforcement		Revised Anti-Director × Legal Enforcement		Ownership Concentration	
	Weak	Strong	Weak	Strong	Weak	Strong	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPU	-0.005 (-0.47)	-0.039*** (-6.38)	-0.022*** (-3.44)	-0.037*** (-3.84)	-0.002 (-0.26)	-0.048*** (-6.47)	-0.031*** (-4.69)	-0.055*** (-5.90)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	106,704	111,289	106,117	110,358	126,409	90,066	78,965	137,510
Adjusted R^2	22.2%	16.0%	15.6%	22.2%	21.2%	15.9%	17.1%	19.7%
Difference in the coefficients on *EPU* (Strong – Weak)	-0.035*** (-2.94)		-0.015 (-1.30)		-0.045*** (-3.85)		-0.024** (-2.10)	

Panel B. Financial Reporting Environment

	Opacity		Accounting Standards		Litigation Risk	
	High	Low	Weak	Strong	Weak	Strong
Dependent variable = *AbsDA*						
	(1)	(2)	(3)	(4)	(5)	(6)
EPU	-0.019***	-0.039***	0.001	-0.039***	-0.006	-0.040***
	(-2.88)	(-4.56)	(0.11)	(-4.44)	(-0.90)	(-4.09)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	119,285	124,269	92,933	123,171	102,499	113,976
Adjusted R^2	16.2%	21.5%	16.0%	21.6%	15.9%	21.9%
Difference in the coefficient on *EPU* (Low–High / Strong–Weak)	-0.020*		-0.040***		-0.034***	
	(-1.86)		(-3.59)		(-2.95)	

Panel C. Growth Opportunities and External Financing Dependence

	MTB		External Finance Dependence	
	Low	High	Low	High
Dependent variable = *AbsDA*				
	(1)	(2)	(3)	(4)
EPU	-0.000	-0.085***	-0.009	-0.064***
	(-0.13)	(-10.44)	(-1.45)	(-7.43)
Control variables	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	92,933	150,621	129,855	113,699
Adjusted R^2	26.6%	16.4%	18.9%	22.1%

Difference in the coefficient on *EPU* (High – Low)	-0.084*** (-9.72)	-0.056*** (-5.26)

Notes: This table reports regression results of subsample analyses based on the legal institutions, financial reporting environment, and growth opportunities and external finance dependence. We divide the sample into weak and strong subsamples using the median values for each variable and examine the relation between earnings management and policy uncertainty in each subsample. Differences in the coefficients on *EPU* between the strong and weak subsamples are provided in the last row of the table. We winsorize all continuous variables at the 1% level in both tails of the distribution. *t*-statistics from robust standard errors clustered at the firm level are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

APPENDIX F

CHAPTER 2 BOND RATING NUMERICAL CONVERSION

Conversion Number	Moody's Ratings	S&P Ratings
23	Aaa+	AAA+
22	Aaa	AAA
21	Aa1	AA+
20	Aa2	AA
19	Aa3	AA–
18	A1	A+
17	A2	A
16	A3	A–
15	Baa1	BBB+
14	Baa2	BBB
13	Baa3	BBB–
12	Ba1	BB+
11	Ba2	BB
10	Ba3	BB–
9	B1	B+
8	B2	B
7	B3	B–
6	Caa1	CCC+
5	Caa2	CCC
4	Caa3	CCC–
3	Ca	CC
2	C	C
1	D	D

Notes: This table provides bond rating numerical conversions for Moody's and S&P ratings.

Appendix G

Chapter 2 Descriptive Statistics and Robustness

Panel A: Summary Statistics

	Mean	Median	Standard Deviation	Q1	Q3
Advertising Intensity	1.841	1.988	2.099	0.588	3.261
Analyst Following	13.154	12.000	7.556	7.000	18.000
Big 4 Auditor	0.984	1.000	0.126	1.000	1.000
EIndex	3.959	4.000	1.126	3.000	5.000
CEO Pay Mix	0.572	0.625	0.234	0.418	0.760

Notes: Panel A provides descriptive statistics for the variables used in Panel B below. The overall sample contains 21,403 firm-quarter observations from 1,097 firms over the 1993–2015 period.

Panel B. Robustness

	Advertising Intensity	Analyst Following	Big 4 Auditor	EIndex	CEO Pay Mix	Hoberg & Phillips
	(1)	(2)	(3)	(4)	(5)	(6)
Distraction	0.257***	0.285***	0.255***	0.281***	0.277***	0.270***
	(4.847)	(5.323)	(4.791)	(3.507)	(4.836)	(4.676)
Advertising Intensity	-0.004					
	(-0.378)					

Analyst Following		-0.034*				
		(-1.730)				
Big 4 Auditor			0.046			
			(0.827)			
EIndex				0.020		
				(1.230)		
CEO Pay Mix					0.014	
					(0.393)	
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Quarter FE	Yes	Yes	Yes	Yes	Yes	No
HP Industry × Quarter FE	No	No	No	No	No	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,403	18,659	21,377	8,711	16,929	21,008
Adjusted R-Squared	0.743	0.762	0.743	0.664	0.756	0.745

Notes: Variable definitions are provided in Table 2.1. This table provides coefficient estimates from regressing the log of bond yield spreads on shareholder distraction and various alternative specifications. The data cover the 1993–2015 period. Year and two-digit SIC code dummies are included in all regressions. HP Industry × Quarter FE is computed based on the Hoberg and Phillips industry classifications. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses.
***p<0.01, **p<0.05, *p<0.10

APPENDIX H

CHAPTER 2 COVENANT DEFINITIONS

The Overall Covenant Index comprises three sub-indices related to the bondholder-shareholder conflict (i.e., dividend payout, claim dilution, risk shifting, and underinvestment): (1) Payment Index, (2) Asset Index, and (3) Borrowing Index. Below is a detailed explanation of each sub-index and the covenants (dummy variables) associated with each index. Definitions follow Mansi et al. (2018) using bond covenant data from FISD.

1. Payment Index
    a. Dividend Payment
        i. Dividends Related Payments: Flag indicating that payments made to shareholders or other entities may be limited to a certain percentage of net income or other ratio, OR
        ii. Subsidiary Dividends Related Payments: Limits the subsidiaries' payment of dividends to a certain percentage of net income or other ratio. For captive finance subsidiaries, this provision limits the amount of dividends that can be paid to the parent. This provision protects the debtholder against a parent draining assets from its subsidiaries.
    b. Other Payment
        i. Restricted Payments: Restricts issuer's freedom to make payment (other than dividend related payments) to shareholders and others.

2. Asset Index:
    a. Transaction
        i. Transaction Affiliates: Restricts issuer in certain business dealings with its subsidiaries.
    b. Investment
        i. Investments: Restricts issuer's investment policy to prevent risky investments, OR
        ii. Subsidiary Investments Unrestricted: Restricts subsidiaries' investment.
    c. Asset Sales
        i. Asset Sale Clause: Covenant requiring the issuer to use net proceeds from the sale of certain assets to redeem bonds at par or

ii. at a premium. This covenant does not limit the issuers' right to sell assets, OR
iii. Sale Assets: Restriction on the ability of an issuer to sell assets or restrictions on the issuer's use of the proceeds from the sale of assets. Such restrictions may require the issuer to apply some or all of the sales proceeds to the repurchase of debt through a tender offer or call.

d. Asset Transfer
    i. Subsidiary Sale Assets Unrestricted: Issuer must use proceeds from sale of subsidiaries' assets (either certain asset sales or all asset sales over some threshold) to reduce debt.

3. Borrowing Index
    a. Funded Debt
        i. Subsidiary Funded Debt: Restricts issuer's subsidiaries from issuing additional funded debt (debt with an initial maturity of longer than one year), OR
        ii. Funded Debt: Restricts issuer from issuing additional funded debt. Funded debt is a liability with an initial maturity of one year or longer.
    b. Subordinated Debt
        i. Subordinated Debt Issuance: Restricts issuance of junior or subordinated debt.
    c. Senior Debt
        i. Senior Debt Issuance: Restricts issuer to the amount of senior debt that can be issued in the future.
    d. Secured Debt
        i. Negative Pledge: The issuer cannot issue secured debt unless it secures the current issue on a pari passu (equal amount) basis.
    e. Indebtedness
        i. Indebtedness: Restricts user from incurring additional debt with limits on absolute dollar amount of debt outstanding or percentage total capital, OR
        ii. Subsidiary Indebtedness: Restricts total indebtedness of the subsidiaries, OR
        iii. Leverage Test: Restricts total indebtedness of the issuer, OR
        iv. Subsidiary Leverage Test: Limits subsidiaries' leverage.
    f. Leaseback
        i. Sales Leaseback: Restricts issuer to the type or amount of property used in a sale leaseback transaction (a method of raising capital in which an organization sells some specific assets to an entity that simultaneously leases the asset back to the organization for a fixed term and agreed-upon rate), and may restrict its use of the proceeds of the sale, OR
        ii. Subsidiary Sales Leaseback: Restricts subsidiaries from selling then leasing back assets that provide security for debtholder. This

provision usually requires that assets or cash equal to the property sold and leased back be applied to the retirement of debt in question or used to acquire another property to increase the debtholders' security.

g. Liens
    i. Liens: In the case of default, the debtholders have the legal right to sell mortgaged property to satisfy their unpaid obligations, OR
    ii. Subsidiary Liens: Restricts subsidiaries from acquiring liens on their property.
h. Guarantee
    i. Subsidiary Guarantee: Restricts subsidiary from issuing guarantees for the payment of interest and/or principal of certain debt obligations.

Appendix I

Chapter 3 Robustness Checks

	Dependent Variable = Log (Yield Spread)							
	Election	Firm-level	Industry-level	Macro-level	Altogether	JLN	VIX	Other controls
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (EPU_News)	0.615***	0.562***	0.626***	0.650***	0.573***	0.476***	0.357***	0.459***
	(7.543)	(6.447)	(7.976)	(7.417)	(7.691)	(8.958)	(6.030)	(5.609)
Election dummy	0.072							
	(0.909)							
Earnvol		0.000**			0.000			
		(2.156)			(0.845)			
Return volatility		2.026***			1.728***			
		(5.756)			(5.860)			
Industry Shock			0.110***		0.092***			
			(7.927)		(7.066)			
CS sale				0.000	0.000			
				(0.887)	(0.891)			
CS Return				0.022	-0.079			
				(0.261)	(-1.013)			
JLN						2.329***		
						(10.217)		
VIX							0.024***	

							(8.187)	
GDP growth								-0.149***
								(-2.673)
CCI								0.058**
								(2.260)
CLI								-0.014
								(-0.506)
RealGDP forecast								0.014
								(0.248)
Capital Investment								-0.035
								(-1.191)
R&D								-0.159
								(-0.543)
R&D Dummy								0.019
								(0.805)
Institutional Ownership	-0.272***	-0.172**	-0.243***	-0.275***	-0.190***	-0.394***	-0.284***	-0.384***
	(-3.812)	(-2.443)	(-3.577)	(-3.921)	(-2.981)	(-6.228)	(-4.246)	(-5.716)
Firm Size	-0.010	-0.007	-0.008	-0.017	-0.002	-0.017	0.011	-0.039
	(-0.366)	(-0.270)	(-0.299)	(-0.648)	(-0.085)	(-0.769)	(0.449)	(-1.446)
Firm Leverage	0.818***	0.711***	0.769***	0.804***	0.689***	0.856***	0.800***	0.755***
	(8.104)	(7.421)	(7.509)	(8.146)	(7.124)	(9.360)	(8.495)	(8.174)
Firm Performance	-4.255***	-3.939***	-3.254***	-4.284***	-3.132***	-3.613***	-4.169***	-3.841***
	(-9.699)	(-9.397)	(-7.174)	(-9.562)	(-7.077)	(-9.082)	(-9.965)	(-10.034)
Sales Growth	0.008	-0.003	-0.001	0.001	0.003	0.053***	0.024	0.057***
	(0.206)	(-0.068)	(-0.037)	(0.034)	(0.106)	(2.718)	(1.092)	(2.704)
Cash Flow Volatility	1.099**	0.746	1.018**	1.066**	0.786	0.430	0.671	0.761
	(2.160)	(1.494)	(2.002)	(2.115)	(1.585)	(0.876)	(1.364)	(1.526)
Market-to-Book	-0.005***	-0.005***	-0.006***	-0.006***	-0.005***	-0.003***	-0.005***	-0.005***
	(-4.581)	(-4.598)	(-4.516)	(-4.538)	(-4.589)	(-3.283)	(-4.829)	(-4.361)
Credit Rating	-0.039***	-0.030***	-0.041***	-0.039***	-0.033***	-0.023**	-0.037***	-0.030***
	(-4.138)	(-3.346)	(-4.006)	(-4.212)	(-3.320)	(-2.376)	(-3.637)	(-2.852)

Bond Maturity	0.006	0.008**	0.006	0.006	0.007*	0.006	0.004	0.005
	(1.605)	(2.061)	(1.505)	(1.594)	(1.860)	(1.500)	(0.887)	(1.296)
Bond Age	0.045***	0.043***	0.046***	0.044***	0.044***	0.041***	0.043***	0.039***
	(8.236)	(8.157)	(8.261)	(8.054)	(8.131)	(8.519)	(8.694)	(7.470)
High Yield	0.363***	0.351***	0.375***	0.361***	0.364***	0.388***	0.366***	0.375***
	(8.333)	(8.429)	(8.333)	(8.464)	(8.382)	(9.660)	(9.074)	(9.260)
Callability	0.121**	0.143***	0.138***	0.131***	0.133***	0.093**	0.173***	0.096***
	(2.415)	(2.998)	(2.911)	(3.119)	(3.229)	(2.324)	(4.256)	(2.747)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Seasonal FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,225	32,934	32,265	33,121	32,081	33,225	33,225	32,920
Pseudo/Adj. R^2	0.689	0.697	0.699	0.688	0.705	0.729	0.719	0.719

Notes: This table provides coefficient estimates from regressing the log of bond yield spreads on economic policy uncertainty and various alternative specifications. The data cover the 1993–2015 period. Variable definitions are in Table 3.1. Year and two-digit SIC code dummies are included in all regressions. *t*-statistics from White heteroskedasticity-consistent standard errors adjusted for clustering by firm are in parentheses. All specifications are run using firm and seasonal fixed effects. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.