Causes and Consequences of Corporate Financial Reporting

Thesis submitted to the University of London for the degree of

Doctor of Philosophy

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May, 2010

Abstract

This thesis document consists of five chapters (originally three papers) examining various issues on firms' financial reporting decisions.

In the second chapter (with original paper title "The impacts of product market competition on the quantity and quality of voluntary disclosure decisions", forthcoming at *Review of Accounting Studies*), I investigate the determinants of firms' financial disclosures. In specific, I examine how firms' voluntary disclosure decisions are influenced by the product market competition. Using separate measures to capture different dimensions of competition, I show that competition from potential entrants increases disclosure quantity while competition from existing rivals decreases disclosure quantity. I also find that competition enhances disclosure quality mainly through reducing the optimism in profit forecasts and reducing the pessimism in investment forecasts.

In the third chapter (with original paper title "Accounting conservatism and the cost of capital: international analysis"), I investigate the capital market consequences of financial reporting. In specific, I examine the contracting benefits of accounting conservatism on international debt and equity markets. I show that firms domiciled in countries with more conservative financial reporting systems have significantly lower cost of debt and equity capital, after controlling for differences in legal institutions and securities regulations.

In the fourth chapter (with original paper title "Corporate governance and restrictions in debt contracts", co-authored with Irem Tuna and Florin Vasvari both at London Business School), we investigate the interactions between corporate governance and lender governance, which have been traditionally regarded as important determinants of firms' financial reporting quality. Using a large sample of

public bond and syndicated loan contracts and exploratory Principal Component Analysis to extract indicators for the quality of board and shareholder governance, we document evidence consistent with the substitution effect between corporate governance and lender governance.

Acknowledgments

I am deeply indebted to my supervisor, Lakshmanan Shivakumar, for providing me support and guidance over the past five years. I would also like to thank my co-authors, Irem Tuna and Florin Vasvari, as well as other members of the Accounting Department at London Business School. Without their help, this thesis would not have been possible.

I would like to acknowledge the financial, academic, and technical support from the PhD Program at London Business School.

I owe special gratitude to my parents, Zisui Gao and Sheng Li, and my boyfriend, Oğuzhan Karakaş, for their understanding, endless patience, and continuous encouragement.

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Chapter 1: Introduction

Corporate financial reporting is an important aspect of current accounting research. In this thesis, I empirically examine several issues related with the causes and consequences of firms' financial reporting choices.

First, I examine the economic determinants of firms' voluntary disclosure behaviour.

In the survey by Graham, Harvey, and Rajgopal (2005), 58.8% of 306 corporate executives agree or strongly agree that the need to avoid giving away "company secrets" or otherwise harming their competitive position is a constraint on more voluntary disclosures. This disincentive for voluntary disclosure is identified as proprietary costs by previous literature. Despite the prevalence of the proprietary cost argument in accounting literature, there is relatively little empirical evidence on the role of product markets in shaping firms' voluntary disclosure decisions. I address this issue by examining how different dimensions of product market competition affect firms' forward-looking voluntary disclosure. More specifically, I investigate how two distinct dimensions of competition, competition from potential entrants and competition from existing rivals, influence the quantity and quality of profit and investment forecasts issued by a firm.

To measure competition from potential entrants and existing rivals separately, I employ two common factors extracted from several industry-level competition variables. I use the industry pervasiveness of forecasting, measured as the ratio of forecasters to total number of firms in an industry, as the proxy for disclosure quantity and use the industry average forecasting accuracy as the proxy for disclosure quality. I find that the industry pervasiveness of issuing both profit and investment forecasts is positively associated with competition from potential entrants and negatively

associated with competition from existing rivals. I also document a significant positive association between competition and forecasting accuracy, suggesting specifically that competition enhances disclosure quality. In additional analysis, I find intra-industry differences in these results. The association between disclosure and competition is found to be less pronounced for industry leaders than for industry followers, which is consistent with the argument in prior literature that firms with greater market shares, namely industry leaders, typically face lower competition (Nickell, Wadhwani, and Wall, 1992; Nickell, 1996). I also conduct analysis on competition and signed forecast errors and find that competition increases disclosure accuracy mainly through reducing the optimism in profit forecasts and reducing the pessimism in investment forecasts.

Second, I examine the contracting benefits of a conservative financial reporting system.

Although conservatism is an important attribute to accounting exhibited by firms all around the world, capital market regulators, standard setters and academics have consistently opposed it. The following paragraph appears in the FASB and IASB board meeting handouts of July 2005:

"What is the role of conservatism? Does it conflict with neutrality? If not, why not? Why keep it? [May 2005]

"Financial information needs to be neutral – free from bias intended to influence a decision or outcome. To that end, the common conceptual framework should not include conservatism or prudence among the desirable qualitative characteristics of accounting information. However, the framework should note the continuing need to be careful in the face of uncertainty."

Recent empirical research on conservatism suggests not only that actual accounting practice is conservative, but also that practice has become more conservative in the last 30 years (Watts, 2003). It is puzzling why the notion of conservatism becomes deeply ingrained in financial statements despite the efforts of standard setters over the decades to change it (*SFAC No. 2*, 1980). Enormous research effort has been made to answer this question by identifying ex ante motivations for conservative accounting. For example, Watts (2003) argues that contracting benefits, asymmetric shareholder litigation costs, taxation benefits, and political pressures for standard setters and regulators are four explanations for the existence of conservatism. Ball, Kothari, and Robin (2000) and Bushman and Piotroski (2006) find that legal origins and institutional structures, such as the effectiveness of judicial systems, the enforcement of securities laws, and the size of political economy, create incentives to shape the properties of reported accounting numbers. However, little research has been done on the capital market consequences of conservative accounting. In this study, I focus on the contracting benefits of conservatism and explore its influence on both debt and equity capital markets around the world.

I construct a country-level measure for accounting conservatism based on the pooled regression of Basu's (1997) model within each country. To examine the effect of conservatism on capital markets across countries, I further construct country-level measures of the expected cost of debt and equity capital. The expected cost of debt is measured as one-year-ahead interest rates averaged across all firms within each country and the expected cost of equity is the discount rates extracted from accounting-based valuation models averaged across all firms within each country. After controlling for other determinants of the cost of capital, I find that the conservatism level in a country's accounting system is negatively associated with

both cost of debt and cost of equity capital. I also conduct extensive analyses to address the concerns about the conservatism and the cost of capital measures, the issues associated with potentially correlated omitted variables and the potential biases introduced by sample selection. Nevertheless, the results are quite robust across various measures and specifications.

Third, I examine the interactions between corporate governance and lender governance, which have been identified by previous literature as playing an important role in determining corporate financial reporting (e.g., Ahmed, Billings, Morton, and Stanford-Harris (hereafter ABMS), 2002; Ajinkya, Bhojraj, and Sengupta, 2002; Klein, 2002).

Corporate governance has been defined as a set of mechanisms through which all capital providers are assured to receive a reasonable return on their investments (e.g., Shleifer and Vishny, 1997). However, most of the literature on this topic takes a shareholder's perspective, according to which, good governance mitigates the risk that managers make decisions not in the interests of shareholders. Although the interests of lenders overlap substantially with that of shareholders, there are potential conflicts, which suggest that shareholder-focused governance mechanisms might be detrimental to debtholders in some instances. In this chapter, we investigate the extent to which debtholders seek contractual means (via debt restrictions) to ensure that their claims are not diminished, given that the corporate governance structures the firm has in place could potentially fail to protect them.

We examine the role of corporate governance on the presence of restrictions in public bond and syndicated loan contracts using a broad array of corporate governance proxies. We find that board size and board independence are negatively associated with the restrictions in public bond contracts. Similarly, for our sample of

syndicated loan contracts, we find that board characteristics such as size, independence and expertise are negatively associated with debt restrictions. The negative association between the restrictiveness of debt contracts and the quality of board governance structures in place suggests that corporate governance mechanisms traditionally viewed as mitigating the agency conflicts between shareholders and managers also play a role in mitigating the conflicts between shareholders and creditors. We also find that the number of restrictions is positively associated with block holder governance in public bond contracts but not in syndicated bank loan contracts, consistent with the argument that strong shareholder power exacerbates the conflicts between debtholders and shareholders. However, these agency problems are resolved differently by the two sets of debtholders. Bondholders specify ex ante contractual restrictions while banks use alternative private monitoring mechanisms, beyond covenants.

The rest of the thesis proceeds as follows. Chapter 2 discusses the product market competition as a determinant for firms' voluntary disclosure decisions. Chapter 3 discusses the capital market consequences of accounting conservatism in an international context. Chapter 4 discusses the interactions between corporate governance and lender governance. Chapter 5 summarizes and concludes.

Chapter 2: Product market competition as a determinant for financial reporting

2.1 Introduction

The motivations for this paper are twofold. First, most of the theoretical studies modelling the relation between competition and voluntary disclosure are based on different assumptions about the nature of the competition, competition from potential entrants (monopoly game) or competition from existing rivals (duopoly or oligopoly games), and the predicted relation is sensitive to the nature of competition (Verrechia, 2001; Healy and Palepu, 2001). For example, Darrough and Stoughton (1990) model competition in the context of an entry game, in which one firm contemplates manufacturing a product already produced by another firm, and find that greater competition encourages more disclosures. Alternatively, Verrecchia (1983) and Clinch and Verrecchia (1997) model competition in the context of a post-entry game, in which both firms are currently producing, and find that greater competition inhibits disclosure. Although these theoretical studies emphasize different dimensions of competition, this difference has been ignored in the empirical literature on competition and disclosure.[1]

Second, empirical studies examining the relation between competition and voluntary disclosure face several limitations. They exclusively focus on the quantity of disclosure, namely firms' decisions on whether to disclose a certain type of information, while other aspects, such as the extent and the accuracy of these

[1] The only exception is Shin (2002), which differentiates capacity competition from price competition and shows that firms engaged in capacity competition disclose relatively more information than those engaged in price competition.

disclosures, have not been explored. For example, Scott (1994) examines the disclosure decisions on defined benefit pension plans; Harris (1998) and Botosan and Stanford (2005) examine the disclosure decisions on segment information; Verrecchia and Weber (2006) investigate the decisions to redact proprietary information from the material contract filings. These studies also are often based on a small sample of data limited to a specific industry or a certain type of disclosure. As a result, their findings may not be generalizable to the whole economy. For example, Bhojraj, Blacconiere, and D'souza (2004) examine the disclosures on firms' strategies to protect the existing customer base and plans to exploit emerging opportunities in electric utilities industry; Guo, Lev, and Zhou (2004) examine the disclosures on product-related information in IPO prospectuses by biotech firms. Finally, these studies typically rely on disclosures provided in SEC filings, while those provided through other channels, such as analyst meetings, conferences, and conference calls, have not been investigated (Healy and Palepu, 2001). For example, Clarkson, Kao, and Richardson (1994) examine disclosures in the Management Discussion and Analysis (MD&A) section of the annual reports. The information on defined benefit pension plans examined in Scott (1994) and the information on business segments examined in Harris (1998) and Botosan and Stanford (2005) are also disclosed in annual reports. In contrast to existing studies, this paper provides a comprehensive investigation of the importance of competition in shaping firms' disclosure behavior based on a large sample of data and a common type of disclosure.

Prior literature suggests that disclosing more public information reduces a firm's cost of capital (Easley and O'Hara, 2004; Lambert, Leuz, and Verrecchia, 2007). However, revealing too much information to existing or potential competitors can harm a firm's product market competitiveness. Moreover, theories on competition

and disclosure show that the effect of competition on disclosure depends on the nature of the competition. By combining the predictions from these theories, I initially derive empirically testable predictions for both the quantity and the quality of disclosure. With regard to the quantity, I hypothesize that holding the capital market incentives constant, competition from potential entrants increases disclosure quantity while competition from existing rivals decreases disclosure quantity. With regard to the quality of disclosure, I hypothesize that product market competition enhances the disclosure quality by correcting potential disclosure biases, such as over-reporting profits, which arise for capital market reasons when these disclosures are not immediately verifiable.

I test the trade-offs between capital market incentives and product market concerns by examining firms' voluntary disclosure decisions on future profits and investments. I use management forecasts of future earnings and capital expenditures as proxies for profit and investment forecasts, respectively. I focus on forecasts, rather than historical information, as disclosing forward-looking profits and investments reveals information on firms' strategic plans for future operations, which is invaluable to both capital and product markets. In addition, since forward-looking disclosures are protected by the "Safe Harbour" Provision, under which false ones are subject to less litigation risk, and the disclosure content is not immediately verifiable, the disclosure quality also reflects a firm's conflicting incentives.

To measure competition from potential entrants and existing rivals separately, I employ two common factors extracted from several industry-level competition variables. I use the industry pervasiveness of forecasting, measured as the ratio of forecasters to total number of firms in an industry, as the proxy for disclosure quantity and use the industry average forecasting accuracy as the proxy for disclosure quality.

The results support the empirical predictions. First, the industry pervasiveness of issuing both profit and investment forecasts is positively associated with competition from potential entrants and negatively associated with competition from existing rivals. Second, there is a significant positive association between competition and forecasting accuracy, suggesting specifically that competition enhances disclosure quality. In additional analysis, I find intra-industry differences in these results. The association between disclosure and competition is found to be less pronounced for industry leaders than for industry followers, which is consistent with the argument in prior literature that firms with greater market shares, namely industry leaders, typically face lower competition (Nickell, Wadhwani, and Wall, 1992; Nickell, 1996). I also conduct analysis on competition and signed forecast errors and find that competition increases disclosure accuracy mainly through reducing the optimism in profit forecasts and reducing the pessimism in investment forecasts. Surprisingly, I find that competition from existing rivals is negatively associated with the accuracy of investment forecasts for industry followers and further analysis on signed forecast errors suggests that the decreased accuracy arises from the increased pessimism in these investment forecasts. One potential explanation for this result is that, in highly competitive industries, the way for industry followers to survive is to cut their costs and reduce scale (Wright, 1986; Helms and Wright, 1997). Therefore, these firms may use excessive reduction of investments to signal effective cost-cutting.

This paper contributes to the proprietary cost literature by proposing an alternative method to measure product market competition from various dimensions. I modify Karuna's (2007) method by constructing new variables characterizing the nature of competition. This approach enables me to test multiple theoretical models using a large sample of data covering various industries. Findings in this paper

suggest that the association between competition and voluntary disclosure is sensitive to the nature of competition. Therefore, drawing conclusions based on only one dimension of competition might be misleading.

This paper also contributes to management forecast literature by identifying an important economic determinant for forecasting quantity and quality. Previous studies examining management forecasts often ignore industry incentives by including industry fixed-effects in their regressions.[2] Exploring inter-industry differences in forecasting behavior is important, given that firms within the same industry herd in their voluntary disclosure decisions (Dye and Sridhar, 1995; Tse and Tucker, 2009). This paper also provides new evidence on the determinants of management investment forecasts. Management forecasts other than profits have been largely overlooked in existing accounting research.[3] Examining investment forecasts in addition to profit forecasts is important for the following two reasons. First, investments and profits convey information reflecting different aspects of a firm's strategy. Profits, as a comprehensive measure of performance, reflect pricing, marketing, cost managing, and other operating strategies, while investments reflect a firm's strategies on production scheduling and scale. In addition, profit forecasts and investment forecasts convey information reflecting different operating horizons. Period-end profits are likely to be determined by current or short-run market demand, while investments are determined by long-run market demand. Therefore, including both types of forecasts in the analysis is a more comprehensive way to measure voluntary disclosure on future demand. Second, compared with future profits,

[2] The only exception is Rogers and Stocken (2005), who use Herfindahl-Hirschman Index as a proxy for industry concentration. However, as Karuna (2007) points out, industry concentration alone could be a poor proxy for competition due to endogeneity.

[3] To the best of my knowledge, Brown, Gordon, and Wermers (2006) and Jones and Cole (2008) are the only papers that study management forecasts on future capital expenditures.

managers have better control of their future investment plans. Therefore, future investment numbers are less likely to be influenced by the uncertainty of the business and are therefore easier to forecast. In addition, compared with actual earnings numbers, actual investment numbers are less likely to be manipulated by managers. As a result, management investment forecasts provide a cleaner setting to examine the impacts of product market incentives on managers' disclosure behavior.

By documenting that product markets may provide disincentives as well as incentives for management forecasts depending on the type of industry competition, this paper aims to emphasize the importance of understanding the multi-dimensional nature of product market competition in determining voluntary disclosure.

The rest of this chapter is organized as follows. Section 2.2 reviews the theories and develops testable predictions. Section 2.3 describes the sample and data. Section 2.4 presents empirical models and results. Section 2.5 examines other forecasting behavior and conducts firm-level analysis. Section 2.6 investigates further the robustness of the results.

2.2 Theories and hypothesis development

The decision to voluntarily disclose proprietary information is a strategic choice. After new information arrives, the firm needs to decide whether to disclose it to the public. Once it has decided to disclose, the firm must also decide on the accuracy of the disclosure. I define the former as the decision on disclosure quantity and the latter as the decision on disclosure quality. These two disclosure decisions are determined by the trade-offs between capital market incentives and product market concerns. The capital market incentive is to reduce the cost of capital or to increase firm valuation, and the product market concern is that disclosures in favour of capital markets may adversely affect a firm's competitive position in product markets. Firms

generally face two distinctive dimensions of competition in a product market: the threat from potential entrants, whose entry to the market has adverse effects on the incumbent's profits, and the rivalry from firms already producing the same type of goods, whose strategic moves may jeopardize the incumbent's market position. I define the former as potential competition and the latter as existing competition.

For potential entrants, the entry decision depends on the entry costs relative to expected future benefits after entry, while for existing rivals, as entry costs are sunk costs, the production decision mainly depends on the expected future benefits. Therefore, these two dimensions of competition are likely to have different impacts on the incumbent's disclosure decisions. In the following subsections, I discuss in detail how potential and existing competition affects firms' voluntary disclosure decisions and provide testable predictions on the association between competition and the quantity and quality of disclosure.

2.2.1 Competition and disclosure quantity

In the realm of financial reporting, all information, both public and private, is disclosed to capital markets in the absence of associated costs, as rational investors presume that management has private information about the firm's operation and has incentive to withhold bad news (Grossman and Hart, 1980; Milgrom, 1981). However, with the existence of proprietary costs associated with disclosing private information, partial-disclosure equilibrium could be achieved, as investors are unsure whether withholding information is due to bad news or due to the costs associated with disclosing good news (Verrecchia, 2001).[4] Such costs come from competitors, whose

[4] Dye (1985) and Jung and Kwon (1988) argue that partial disclosure could also be achieved if investors are unsure about the manager's endowment of private information. However, all theoretical models discussed in this section assume that the manager is always endowed with private information and it is certain to investors that the manager has such information endowment.

strategic responses to good news may damage the incumbent's competitive position in product markets. Theories suggest that, in equilibrium, whether competition encourages or discourages disclosure depends on whether the competitive threat comes from potential entrants or existing rivals.

A. Competition from potential entrants

Theories predict that competition from potential entrants encourages more voluntary disclosures. For example, Darrough and Stoughton (1990) model a binary entry game consisting of two players, the incumbent and the potential entrant, and two markets, the product market and the capital market. They assume that the incumbent is endowed with private information, which is valuable to both capital and product markets. Disclosing favourable information increases the incumbent's valuation in the capital market but also encourages the potential entrant to enter the product market, which imposes proprietary costs on the incumbent's future profits. Both the capital market and the potential entrant have rational expectations about the incumbent's disclosure behavior. When the entry costs are low (that is when the threat of entry is high), the incumbent with bad news discloses to deter entry. The incumbent with good news discloses as well, because nondisclosure is interpreted by the potential entrant as withholding good news, and disclosure could at least increase the capital market valuation. Therefore, in equilibrium, both good news and bad news firms disclose (full-disclosure equilibrium). On the other hand, when the entry costs are high (that is when the threat of entry is low), the incumbent with bad news does not have incentive to disclose, and the incumbent with good news could also successfully withhold the information to prevent entry. In equilibrium, good news is withheld and bad news is either withheld (nondisclosure equilibrium) or randomly disclosed (partial-disclosure equilibrium). Wagenhofer (1990) models a continuous entry game and finds similar

results: there exists a partial-disclosure equilibrium when the entry costs are higher than the expected benefits and full-disclosure is triggered when the entry costs are low.

The intuition underlying these models is that the threat of entry encourages the disclosure of bad news, together with good news. As a result, more information is disclosed in industries facing higher potential competition.

The first testable prediction in this paper is stated as follows:

H1A: Competition from potential entrants is positively associated with disclosure quantity.

B. Competition from existing rivals

Theories predict that competition from existing rivals discourages voluntary disclosure. For example, Clinch and Verrecchia (1997) model a post-entry duopoly game, in which firms competing in the product market are endowed with private information about aggregate future demand. Since high demand stimulates overproduction across firms whereas low demand curtails production, well-informed firms are inclined to withhold evidence of high demand in order to exploit underproduction by their competitors and disclose evidence of low demand to discourage production. However, the uninformed firms have rational expectations and can make correct inferences from nondisclosure. In equilibrium, informed firms always voluntarily disclose some realizations of their signals but choose to withhold information indicating either very high or very low future demand. In each of these cases, informed firms prefer to hide their knowledge to exploit incorrect production decisions made by the uninformed competitors. The model also shows that both the range of the disclosure interval and the ex ante disclosure probability of an informed firm decrease as the level of competition increases.

Verrecchia (1983) also models competition among existing rivals and voluntary disclosure. He argues that proprietary costs associated with disclosure make partial-disclosure possible, as the capital market cannot tell whether nondisclosure is due to withholding bad news or due to the fact that the information is not favourable enough to cover the costs associated with disclosing good news. He interprets this finding as "the disclosure-related costs introduce noise by extending the range of possible interpretations of withheld information to include news which is actually favourable". He finds that the proprietary costs are positively associated with the disclosure threshold. In other words, as the proprietary costs increase (that is as competition increases), less information is disclosed.

Unlike in the entry game, firms are already in competition in this case, and established properties and equipments are sunk costs to existing rivals. Therefore, the power of disclosing bad news to prevent production is rather limited, and disclosure only serves to reduce firms' competitive advantage (Verrecchia, 1990). As a result, competition generally discourages disclosure, and less information is disclosed in industries facing higher existing competition.

The second testable prediction in this paper is stated as follows:

H1B: Competition from existing rivals is negatively associated with disclosure quantity.

2.2.2 Competition and disclosure quality

Once the decision to disclose proprietary information is made, firms must then decide on the disclosure accuracy. When disclosed information is not immediately verifiable, the disclosure setting becomes a "cheap-talk" game, where the credibility of the incumbent's message reflects its strategic choice. Firms may prefer to provide the most favourable information to the capital market and the least

favourable information to the product market. Theories show that, when the capital market and the product market operate in isolation, there is no truthful disclosure (Gigler, 1994; Evans and Sridhar, 2002). But when these two markets use the same disclosures, the offsetting demand could enhance the disclosure quality. For example, to raise the valuation, firms may overstate their profitability to the capital market. However, the concern that bright prospects may induce competitors to overproduce prevents firms from disclosing overly optimistic information, and thus increases the disclosure quality. (See Evans and Sridhar (2002) for an entry game and Gigler (1994) for a post-entry game.)

The above argument implies a positive association between both dimensions of competition and disclosure quality. Hence, the formed hypotheses, written separately for each dimension of competition, are as follows:

H2A: Competition from potential entrants is positively associated with disclosure quality.

H2B: Competition from existing rivals is positively associated with disclosure quality.

2.3 Measures and data

In this section, I discuss in detail the measures for product market competition and voluntary disclosure, as well as their data sources.

2.3.1 Measures of product market competition

I construct variables to separately measure competition from potential entrants and competition from existing rivals by conducting principal component analysis on commonly employed proxies of competition. The most widely used proxy for competition is industry concentration, measured as Herfindahl-Hirschman Index

(IND-HHI) or four-firm concentration ratio (IND-CON4). Karuna (2007) suggests three determinants of industry competition: industry PP&E, product market size, and price-cost margin. Industry PP&E (IND-PPE) is calculated as the weighted average of PP&E for all firms operating in the same industry and measures the minimum investments required to enter the market. Product market size (IND-MKTS) is measured as the natural log of aggregate industry sales. Price-cost margin (IND-MGN) is calculated as industry aggregate sales divided by industry aggregate operating costs or the negative reciprocal of price-demand elasticity. I also use industry research and development intensity (IND-R&D), calculated as the weighted average of R&D for all firms in an industry, industry capital expenditures (IND-CPX), calculated as the weighted average of capital expenditures for all firms in an industry, total number of firms operating in an industry (IND-NUM), and industry return on assets (IND-ROA), calculated as industry aggregate EBITDA divided by industry aggregate total assets, as additional measures for competition.[5]

Although the above nine proxies for competition are interrelated, they also characterize different factors related to competition. Based on the aspect of competition that they are most closely related to, these proxies could be categorized into the following three groups:

1) *Proxies for competition from potential entrants.* Industry-average size of plant and equipment (IND-PPE) is widely used to measure the setup costs for a new player to enter the product market and operate as an average firm in the industry. (See Chapter 4 of Sutton (1991) for a discussion.) Since industry-average R&D outlays (IND-R&D) and capital expenditures (IND-CPX) also reflect necessary investments for potential entrants to make to compete with average existing rivals, they are also

[5] Using equally-weighted PP&E, capital expenditures, and R&D in the analysis does not change the results.

likely to be positively related with entry barrier.[6] Product market size (IND-MKTS) is likely to be negatively associated with potential competition. First, large market size is usually associated with a high entry barrier, as industries with large sales are usually associated with heavy investments in either PP&E (to increase volume) or technology (to increase price). Second, entry is also less harmful to the incumbent operating in a product market with higher demand. For example, Nakao (1980) finds that, when the demand growth is sufficiently large, the established firm will choose to raise its prices above the entry-preventing level, accepting a decrease in its market share caused by entry of a successive finite number of new firms.

2) *Proxies for competition from existing rivals.* The variables related to industry concentration, namely IND-CON4, IND-HHI, and IND-NUM, capture competition among existing rivals, as highly concentrated industries or industries with fewer firms typically face lower existing competition. Product market size (IND-MKTS) is also likely to be positively associated with existing competition. First, aggregate sales are positively associated with the number of firms in the market. Second, large market demand attracts more entrants, which would in turn lead to more firms competing in the same product market (Sutton, 1991)

3) *Industry profitability.* The industry profitability measures, IND-MGN and IND-ROA, are likely to reflect the effects of product differentiation or equivalently, the lack of substitute products. This group of measures complements the above two dimensions of competition, as it may potentially influence firms' responses to competition. For example, Shaked and Sutton (1982) argue that high product differentiation relaxes price competition and Bresnahan (1989) argues that firms

[6] For example, Sutton (1991) regards R&D outlays as endogenous sunk costs firms incur at stage 1 to enhance the demand for their products at stage 2. In contrast, setup costs are regarded as exogenous sunk costs at stage 1.

respond less to competitive moves by rivals when their products are more distinct. Since profitability reflects the perceived benefits of entering the market, it is also an important factor for potential entrants to consider (Darrough and Stoughton, 1990; Newman and Sansing, 1993). Empirical studies also regard profitability as positively associated with proprietary costs, as high profits attract entrants (Scott, 1994; Harris, 1998). Therefore, it is necessary to control for the industry profitability when analyzing competition structure. However, the association between industry profitability and competition is ambiguous, as high profitability could indicate either more competition from potential entrants or less competition from existing rivals.

To reduce the number of variables employed in the regressions but still capture the various effects of competition, I conduct principal component analysis on the above nine variables. After using orthogonal rotation method and requiring eigenvalues to be greater than one, I retain three components. The results of principal component analysis are reported in Table 2.1. Panel A shows that the first three principal components have eigenvalues greater than one and account for approximately 75% of the total variance. Consistent with the prior that these nine variables are categorized into three groups, the rotated factor pattern reported in Panel B suggests that PC1 is loaded by IND-MKTS, IND-CON4, IND-HHI, and IND-NUM, that PC2 is loaded by IND-PPE, IND-R&D, IND-CPX, and IND-MKTS, and that PC3 is loaded by IND-MGN and IND-ROA. Therefore, PC1, PC2, and PC3 reflect competition from existing rivals, competition from potential entrants, and industry profitability, respectively. The standardized scoring coefficients of each variable are reported in Panel C.[7] In the following analysis, I use the negative of PC1, denoted as EXIST-COMP, to measure competition from existing rivals; the negative of PC2,

[7] Note that to compute the value of principal components, original variables are standardized. Therefore, principal components could have negative values.

denoted as POTENT-COMP, to measure competition from potential entrants; and PC3, denoted as IND-PROFIT, to measure industry profitability. Larger values of EXIST-COMP, POTENT-COMP, and IND-PROFIT suggest higher competition from existing rivals, higher competition from potential entrants, and higher industry profitability, respectively.

Data for competition measures

The data used to calculate competition measures are obtained from segments database and fundamentals annual database of Compustat North America. In U.S, *SFAS No. 14* requires multi-industry firms to disclose revenues, operating profits, identifiable assets, depreciation and amortization, research and development, and capital expenditures for their significant industry segments. Therefore, using segment-level data to measure competition is a more accurate way than using firm-level data.[8] A detailed description of the methodology is included in Appendix 2.B.

Table 2.2 reports descriptive statistics for competition variables used in principal component analysis. The sample consists of 27,053 industry-years, spanning the period from 1977 to 2007. Panel A presents summary statistics. The sample shows considerable variance for all variables. Panel B presents the correlation matrix. Within each group, variables are highly correlated with each other, while across groups, the

[8] Ali, Klasa, and Yeung (2009) argue that Compustat-based industry concentration measures are subject to measurement error, as most of the private firms are not covered by Compustat and high Compustat-based concentration ratio is likely to be due to the declining of the industry, which is left with only a few large, public firms relative to private firms. Alternatively, they suggest that researchers should use concentration ratios from U.S. Census data. In this paper, I choose to use Compustat concentration measures for the following reasons. First, the U.S. Census measure of concentration is only available for the year 2002 of my sample period and only available for manufacturing industries. Hence, using U.S. Census data would reduce the sample size, thereby contradicting the aim of this paper to provide large sample evidence. Second, using a Compustat-based concentration measure in this paper is a conservative approach. Previous literature suggests that firms with poor performance usually provide less voluntary disclosures (Miller, 2002; Kothari, Shu, and Wysocki, 2009). Therefore, if the Compustat-based concentration ratio is capturing the declining of the industry, using it will work against me finding the results for H1B that existing competition (industry concentration) is negatively (positively) associated disclosure quantity. Nevertheless, I further address the measurement error problem with Compustat-based competition measures in the robustness analysis by using exploratory factor analysis.

correlations are relatively low. The last three rows present correlations between principal components and raw competition variables. Again, the correlation pattern is consistent with categorizing competition proxies into three groups based on their relation to competition. Consistent with the findings in Karuna (2007), IND-MKTS is both positively correlated with IND-PPE and negatively correlated with IND-CON4. A potential explanation for the positive association between product market size and industry-average PP&E is that product market size is measured by aggregating sales and large capacity is usually achieved by heavy investments in plant and machinery. The negative association between product market size and industry concentration could be explained as the expansion in product market size attracting entry, which leads to a fall in concentration (Philips, 1976; Sutton, 1991).

2.3.2 Measures of disclosure

I use management forecasts on future earnings and capital expenditures as proxies for voluntary disclosures on future profits and investments. Therefore, throughout the paper, these two types of management forecasts are referred to as profit forecasts and investment forecasts, respectively. Focusing on management forecasts has the following advantages. First, it enables me to conduct more powerful tests on the extent of voluntary disclosure, as the precise disclosure time is known and the ex post accuracy of management forecasts can be measured through the actual realizations of earnings or capital expenditures (Healy and Palepu, 2001). Also, as management forecasts are not verifiable at the time when they are issued and because of the Safe Harbour Provision, under which false forecasts are subject to less litigation risk compared with other types of disclosure, managers may strategically bias their

forecasts.[9] Therefore, focusing on management forecasts enables me to test theoretical models that consider the credibility of disclosure (Verrecchia, 2001). Lastly, proprietary costs associated with management forecasts increase with time, as the information is less valuable when the forecasting date approaches the actual announcement date. This attribute is in line with the assumptions made in theoretical models. For example, Verrecchia (1983) argues that proprietary costs can be viewed as a function of time: as time approaches zero, proprietary costs associated with disclosing private information decrease. In this paper, I focus on annual forecasts, as annual forecasts typically allow a longer time horizon for rival firms to respond strategically.

To use management forecasts as the proxy for voluntary disclosure to test the above hypotheses, I make the following assumptions in the empirical tests. First, to test H1A and H1B, I assume that management forecasts are generally truthful, in the sense that managers do not distort the sign of the news in their forecasts, as "truthful disclosure" is an explicit assumption underlying all the theoretical studies modelling the relation between competition and disclosure quantity. Considering the high litigation risk associated with hiding bad news (Skinner, 1994), assuming that managers are unlikely to lie about the sign of the news is not unreasonable. Second, to test H2A and H2B, I assume that managers might strategically bias their forecasts, as "cheap talk" is an assumption underlying the models studying competition and disclosure quality. This assumption is in line with previous studies examining the credibility of management earnings forecasts (e.g., Rogers and Stocken, 2005). The following example illustrates the reconciliation of the above two assumptions in the

[9] Under Safe Harbor, it is more difficult to prove the defendant guilty, because plaintiffs must identify the specific statement or statements that are misleading when they file the lawsuit rather than undertaking a "fishing expedition" for supporting documentation during the discovery process (Johnson, Kasznik, and Nelson, 2001).

empirical tests of this paper. A manager forecasts next year's earnings per share to be $1 higher, when in fact he knows that the actual earnings per share would be only 50 cents higher. The fact that the manager discloses good news (higher earnings) will be captured by the measure of disclosure quantity and the fact that the manager exaggerates the good news by 50 cents will be captured by the measure of disclosure quality.

To be consistent with the competition measures, the primary measures for disclosure quantity and quality are also computed at the industry level. I use the industry pervasiveness of forecasts, defined as the percentage of forecasters in an industry (FORECASTER%), to measure disclosure quantity. A firm is identified as a forecaster if it issues at least one forecast for the subsequent fiscal year-end. Higher percentage of forecasters indicates higher disclosure quantity. I use the ex post forecasting accuracy to measure disclosure quality. A firm's forecasting accuracy is defined as:

$$\text{ACCURACY} = -\left|\frac{\text{Actual value} - \text{Forecasted value}}{\text{Market value of equity}}\right|,$$

where larger value of ACCURACY indicates higher forecasting accuracy.[10] To be consistent with previous literature, the earliest point or range forecast is used for the calculation of forecasting accuracy for each firm-year (Rogers and Stocken, 2005; Johnson, Kasznik, and Nelson, 2001). Disclosure quality is measured as the average forecasting accuracy across all firms in an industry. Higher forecasting accuracy indicates higher disclosure quality.

Data for disclosure measures

[10] The results are unchanged if total assets are used as the deflator.

The data for profit forecasts are obtained from First Call database. The data for investment forecasts are manually collected from Factiva.[11] Examples of investment forecasts are illustrated in Appendix 2.C.

2.3.3 Sample and descriptive statistics

I start from the sample with valid competition measures as described in Appendix 2.B and delete industries with less than three member firms.[12] As in Karuna (2007), I delete observations with a zero value for the fourth digit of SIC code to avoid ambiguity in the industry classification. I further restrict the sample to the coverage of First Call database and require sufficient data to compute control variables.13 Since First Call started systematically expanding its coverage in 1998 (Anilowski, Feng, and Skinner, 2007), 1998 is the starting year for my sample period. Finally, all continuous variables are winsorized at the bottom and top one percent level.

For profit forecasts, the disclosure quantity sample consists of 21,033 firm-year observations covering 3,649 industry-years, and the disclosure quality sample consists of 5,268 firm-year observations covering 1,987 industry-years over the period 1998 to 2006.

[11] Management forecasts are mainly issued through conference calls, conferences, analyst meetings, shareholder presentations and press releases. To obtain information about management investment forecasts, I first use key words to search in Factiva and download all output articles. The search period starts 24 months before the forecasting fiscal year-end. Then, I use Perl to extract relevant information from downloaded articles. Finally, I manually read and code the extracted information.

[12] The purpose of this data requirement is to have meaningful industry-average measures. Nevertheless, the results are not sensitive to this data requirement (unreported).

[13] Two possible reasons may cause the data on management forecasts to be missing: (1) the firm did not issue any forecast or (2) the firm was outside the coverage of First Call database, which primarily covers only firms followed by analysts (Anilowski, Feng, and Skinner, 2007). I, therefore, limit the sample to firms that have data available on analyst estimates. In other words, a firm with missing data on management forecasts is regarded as a nonforecaster only if it has non-missing data on analyst estimates. Firm-years that are not covered by analysts are excluded from the sample.

The investment forecast sample is constructed by following the procedures described above. Since financial firms generally do not have or have few capital expenditures, I eliminate financial industries in the investment forecast sample (SIC code from 6000 to 6999). To further facilitate the data collection, I limit the sample to firms with fiscal year ending in December. I collect data on management forecasts on next year's capital expenditures for the years from 2001 to 2005. For these forecasts, the disclosure quantity sample consists of 6,252 firm-year observations covering 1,105 industry-years and the disclosure quality sample consists of 2,508 firm-year observations covering 811 industry-years.

Table 2.3 presents the number of sample firms, the number of forecasters, as well as the percentage of forecasters by year for the profit, investment, and profit-and-investment forecast samples, respectively. For profit forecasts, the percentage of forecasters is increasing monotonically until 2003, probably due to the passage of SEC Regulation Fair Disclosure (Reg FD). On average, firms issue more investment forecasts than profit forecasts: the average percentage of forecasters in an industry is 42.30% for the investment forecast sample, compared with 34.96% for the profit forecast sample. On average, only 20.69% of firms in an industry issue both profit and investment forecasts.

Summary statistics for selected variables used in the regressions are presented in Table 2.4. Panel A reports the statistics for the disclosure quantity sample, which consists of 21,033 firm-years for the profit forecast sample and 6,252 firm-years for the investment forecast sample. Consistent with the findings in Table 2.4, on average, around 35% of firms in the sample issue profit forecasts and around 42.3% issue investment forecasts. Compared with the statistics reported in Table 2.2, firms in the final sample come from industries with lower competition from potential entrants and

higher competition from existing rivals, indicating that First Call analysts tend to follow firms from more established industries. Firm characteristics are generally comparable across the profit forecast sample and the investment forecast sample, except that the latter contains slightly bigger firms. This panel also presents differences in the means across nonforecaster and forecaster groups, where a firm-year is classified as a forecaster if it issues at least one forecast for the subsequent fiscal year-end. The results also suggest that forecasters are more likely to cluster in industries with higher competition from potential entrants and lower competition from existing rivals, consistent with the predictions of H1A and H1B. Forecasters are also characterized with larger firm size, lower market-to-book ratio, higher leverage, more analysts following and higher institutional ownership.

Panel B reports the statistics for disclosure quality sample, including 5,268 firm-years for the profit forecast sample and 2,508 firm-years for the investment forecast sample. The average forecasting accuracy (ACCURACY) and forecasting surprise (SURPRS) are comparable to the average forecast error (FE) and forecasting news (FN) reported in Rogers and Stocken (2005).[14] Compared with disclosure quantity sample, disclosure quality sample is characterized with higher competition from potential entrants, lower competition from existing rivals, larger firm size, higher leverage ratio, more analysts following and higher institutional ownership. The earliest profit and investment forecasts are issued roughly 300 days before the forecasting period end. Average profit forecasts convey bad news (SURPRS<0), while average investment forecasts generally convey good news (SURPRS>0).

Table 2.5 lists industries and their two-digit SIC codes sorted into deciles by competition measures. Industries, such as railroad transportation (two-digit SIC 40),

[14] Note that the numbers for ACCURACY and SURPRS in this paper are multiplied by 100.

tobacco products (SIC 21), and general merchandize stores (SIC 53), face the lowest competition from potential entrants, while services industries, such as educational services (SIC 82), social services (SIC 83), and engineering, accounting, research, management, and related services (SIC 87) face the highest competition from potential entrants; mining industries, such as metal mining (SIC 10), coal mining (SIC 12), and mining and quarrying of nonmetallic minerals, except fuels (SIC 14) face lowest competition from existing rivals, while financial industries (SIC 62, 63, 64, and 65) and restaurant industries (SIC 58) face the highest competition from existing rivals. This table also presents the average percentage of forecasters in each competition decile. The relation between POTENT-COMP or EXIST-COMP and the percentage of forecasters is nonmonotonic, probably due to the fact that capital market incentives are not controlled in this analysis. Nevertheless, in profit forecast sample (Panel A), industries in the lowest decile of POTENT-COMP and in the highest decile of EXIST-COMP have the lowest percentages of forecasters. In contrast, in investment forecast sample (Panel B), industries in the top two deciles of POTENT-COMP and in the bottom two deciles of EXIST-COMP have the lowest percentages of forecasters, probably due to the fact that industries, like forestry (SIC 8) and personal services (SIC 72) have few capital expenditures.

2.4 Empirical results

2.4.1 Competition and disclosure quantity

I use the following OLS regression to examine the impacts of competition on disclosure quantity.

$$\text{FORECASTER}_{jt}\% = \alpha_1 \text{POTENT-COMP}_{jt} + \alpha_2 \text{EXIST-COMP}_{jt} + \alpha_3 \text{IND-PROFIT}_{jt} + \text{Capital Market Incentives} + \text{Litigation Risk} + \text{Year Dummies} \quad (2.1)$$

This regression is estimated at the industry-year level, where *j* denotes industry and *t* denotes year. The dependent variable is the percentage of forecasters in industry *j* at year *t*, and the main independent variables of interest are POTENT-COMP$_{jt}$ and EXIST-COMP$_{jt}$, measuring competition from potential entrants and competition from existing rivals for industry *j* at year *t*, respectively. All firm-level control variables are averaged within each industry-year. Since forecasting behavior is likely to be correlated across time, the standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation.[15]

As discussed above, it is necessary to control for industry profitability (IND-PROFIT) when analyzing the impacts of competition on disclosure, because profitability is an important factor affecting firms' responses towards competitive threats.

I also control for a variety of capital market incentives. Since firms are likely to disclose more information before accessing capital markets to reduce their cost of capital (Frankel, McNichols, and Wilson, 1995), I control for the external financing needs by including a dummy variable ISSUE equal to 1 if the firm issues public equity or debt in a subsequent two-year period. Firm size (SIZE) is generally regarded as positively associated with management forecasts, as the costs of issuing forecasts are lower for big firms (Lev and Penman, 1989; Frankel, McNichols, and Wilson, 1995; Baginski and Hassell, 1997). I use the natural log of market value of equity at fiscal year-end to measure firm size. Due to the forecasting difficulty, firms with higher growth rate or higher earnings/capital expenditures volatility are less likely to issue management forecasts on future earnings/capital expenditures. (See Bamber and Cheon (1998) and Rogers and Stocken (2005) for the former and Waymire (1985) for

[15] The results are qualitatively similar but with lower statistical significance if the standard errors are clustered at industry-level, due to the small degrees of freedom for industry-level regressions.

the latter.) Therefore, I use market-to-book ratio (MTB) and standard deviation of earnings/capital expenditures over a five-year period prior to the forecast year (STDEV) to control for growth opportunities and earnings/capital expenditures volatility, respectively. Including the historical earnings/capital expenditures volatility (STDEV) in the regression also controls for managers' ability to possess forward-looking information, as future profits and investments are more difficult to predict for firms operating in more volatile businesses.

Theoretical models of capital structure and product market competition suggest that leverage softens the extent of product market competition (Fudenberg and Tirole, 1986; Bolton and Scharfstein, 1990). This argument has also been supported by empirical evidence (Chevalier, 1995). Hence, I control for capital structure by including leverage ratio (LEV) in the regression. In addition, Ajinkya, Bhojraj, and Sengupta (2005) argue that institutional ownership also affects firms' voluntary disclosure decisions and Bhojraj, Blacconiere, and D'Souza (2004) use the percentage of institutional ownership to control for capital market incentive. Lang and Lundholm (1993) find that the level of disclosure is positively associated with the analyst coverage. Ajinkya and Gift (1984) find that managers issue forecasts to avoid large earnings changes. Therefore, I also include the percentage of institutional ownership (SHRINST), the number of analysts following (ANALYST), the magnitude of earnings/capital expenditures change (ABSCH), and the sign of earnings/capital expenditures change (DCH) as additional controls in the regressions. Institutional ownership also controls for corporate governance, as institutional investors are generally regarded as active monitors. Cotter, Tuna, and Wysocki (2006) argue that managers may issue earnings forecasts to "walk down" optimistic analyst

estimations. Therefore, I control for the analyst optimism (OPTM) in the profit forecast regression.

Besides capital market incentives, litigation risk might be also a determinant factor for voluntary disclosure. For example, Skinner (1994), among others, argues that a firm issues earnings forecasts, especially bad news forecasts, to mitigate its litigation risk. Therefore, riskier firms are more likely to issue management forecasts. I control for the litigation risk by including a dummy (LIT) equal to 1 if a firm operates in an industry facing high litigation risk. I also include year dummies in the regression to control for year-fixed effects. A detailed description of the above control variables is included in Appendix 2.A.

Regression results for Equation (2.1) are reported under Column "FORECASTER%" in Table 2.6. Consistent with the predictions that competition from potential entrants encourages disclosure (H1A) and competition from existing rivals discourages disclosure (H1B), the coefficient on POTENT-COMP is positive and the coefficient on EXIST-COMP is negative, both significant at the 1% level. The above associations are also economically significant. For example, the coefficient of -0.045 on EXIST-COMP in the profit forecast regression indicates that when competition from existing rivals increases by one standard deviation (1.252), the percentage of profit forecasters in an industry decreases by 5.6% in absolute value or 16.1% relative to the sample mean; the coefficient of 0.033 on POTENT-COMP in the investment forecast regression indicates that when competition from potential entrants increases by one standard deviation (2.322), the percentage of investment forecasters in an industry decreases by 7.7% in absolute value or 18.1% relative to the sample mean.

The coefficients on the control variables are generally consistent with prior studies. For example, industries with larger size, higher leverage ratios, larger numbers of analysts following, higher institutional ownership, and higher litigation risk have larger percentages of firms issuing forecasts. The negative and significant coefficients on STDEV and ABSCH in the profit forecast regression are consistent with the forecasting difficulty argument that firms operating in volatile businesses are less likely to issue forecasts on future profits. Similarly, the negative coefficient on MTB in the investment forecast regression also indicates that growth firms are less likely to issue forecasts on future investments. In contrast, the coefficient on ABSCH in investment forecast regression is positive, indicating that larger changes in capital expenditures encourage firms to issue more investment forecasts, probably to avoid surprises in the change of investment plans.

2.4.2 Competition and disclosure quality

Next, I use the following OLS regression to examine the impacts of competition on disclosure quality.

$$\begin{aligned}\text{ACCURACY}_{jt} = {} & \alpha_1 \text{POTENT-COMP}_{jt} + \alpha_2 \text{EXIST-COMP}_{jt} + \alpha_3 \text{IND-PROFIT}_{jt} \\ & + \text{Capital Market Incentives} + \text{Litigation Risk} + \text{Year Dummies} \end{aligned} \quad (2.2)$$

This regression is estimated at industry-year level, where *j* denotes industry and *t* denotes year. The dependent variable is the average forecasting accuracy for industry *j* at year *t*, and the main independent variables of interest are POTENT-COMP$_{jt}$ and EXIST-COMP$_{jt}$, measuring competition from potential entrants and competition from existing rivals for industry *j* at year *t*, respectively. All firm-level control variables are averaged within each industry-year. Since forecasting behavior is likely to be

correlated across time, the standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation.[16]

Similar to the disclosure quantity analysis, I control for industry profitability (IND-PROFIT), capital market incentives, litigation risk, and year fixed-effects in the regression. Previous studies identify external financing, firm size, growth opportunities, number of analysts following, and institutional ownership as capital market incentives that influence disclosure quality (e.g., Johnson, Kasznik, and Nelson, 2001; Rogers and Stocken, 2005). In addition, historical volatility (STDEV), forecasting horizon (HORIZ), and forecasting news (SURPRS) are also likely to influence forecasting accuracy (e.g., Anilowski, Feng, and Skinner, 2007; McNichols, 1989). Therefore, the above variables are included as additional controls in the regression.

Furthermore, investors' ability to assess the truthfulness of forecasts and earnings management may also influence the accuracy of earnings forecasts. (See Rogers and Stocken (2005) for the former and Kasznik (1999) for the latter.) Therefore, I include the standard deviation of analyst estimations prior to the management forecast (DIFFI), stock return volatility (STDRET), and discretionary accruals (DACCR) as additional controls in the profit forecast regression. DIFFI and STDRET are expected to be negatively related to investors' ability to assess the credibility of forecasts, and DACCR is expected to be positively associated with earnings management. A detailed description of the above variables is included in Appendix 2.A.

Regression results are reported under Column "ACCURACY" in Table 2.6. For both profit and investment forecasts, the coefficients on POTENT-COMP are

[16] The results are qualitatively similar but with lower statistical significance if the standard errors are clustered at industry level, due to the small degrees of freedom for industry level regressions.

positive and significant at the 1% level, consistent with the hypothesis that competition from potential entrants increases disclosure quality (H2A). For profit forecasts, the positive coefficient on EXIST-COMP is consistent with the prediction in H2B that competition from existing rivals increases disclosure quality. However, for investment forecasts, the coefficient on EXIST-COMP is not different from zero, suggesting that competition from existing rivals has no impact on the accuracy of investment forecasts for the average firm in an industry. I leave the interpretation of this result to the next section, where I explore the intra-industry differences in competition and conduct the regression analysis at firm level.

The coefficients on control variables suggest that firms in industries with larger size, higher growth opportunities, and lower leverage ratios issue more accurate forecasts and forecasts issued with longer horizons are less accurate. Consistent with findings in Rogers and Stocken (2005) and Kasznik (1999), investors' ability to assess the truthfulness of forecasts and earnings management increase the ex post accuracy of profit forecasts. In addition, I also find that historical volatility of capital expenditures and industry profitability significantly reduce the accuracy of investment forecasts.

2.5 Additional analysis

2.5.1 Other forecasting behavior

In this section, I conduct additional analysis to explore the impacts of product market competition on management forecasting behavior, including forecasting frequency, forecasting type and forecasting horizon.

A. Forecasting frequency

In Equation (2.1), a firm is treated as a forecaster if it issues at least one forecast for the subsequent fiscal year-end, and disclosure quantity is measured as the percentage of forecasters in an industry. In this way, firms issuing multiple forecasts per year are treated in the same way as those issuing only one. However, it is likely that firms reveal more information by frequently updating their forecasts. Therefore, to take into account the extra information contained in updated forecasts, I use forecasting frequency, defined as the total number of forecasts issued by a firm-year, as an alternative measure for disclosure quantity. The distributional statistics of forecasting frequency are reported in Panel A of Table 2.7. For both profit and investment forecasts, the majority of forecasters issue multiple forecasts per year. Although a firm is more likely to issue at least one investment forecast in a certain year, it updates profit forecasts more frequently, consistent with the finding in Table 2.4 that the mean value of NUM-FOR is higher for the profit forecast sample.

The regression results of competition on forecasting frequency are reported in Table 2.8 under Column "Frequency." The dependant variable is forecasting frequency averaged across firms within each industry-year. The results are similar to those reported in Table 2.6, suggesting that competition from potential entrants encourages firms to issue forecasts more frequently, while competition from existing rivals reduces forecasting frequency.

B. Forecasting type

In Equation (2.1), I treat point, range, and qualitative forecasts alike. However, forecasters may also strategically choose their forecasting type. For example, Verrecchia (2001) argues that "the manager may vaguely claim that the firm is expected to have earnings of at least $1 per share when in fact she expects earnings to be exactly $1 per share." To take into account the extra information contained in more

precise forecasts, I assign a numeric score to each type of forecast, that is 4 for point forecasts, 3 for close range forecasts, 2 for open-end forecasts, 1 for qualitative forecasts and 0 for nonforecasters. A higher score suggests that more precise information is disclosed. If a firm issues multiple forecasts per year, the score of the earliest one is used. The distributional statistics of forecasting type are reported in Panel B of Table 2.7. For both profit and investment forecasts, the majority are issued in the format of close range or point. Compared with profit forecasts, investment forecasts are more likely to be point ones, probably because managers are more certain about future investments than future profits.

The regression results of competition on forecasting type are reported in Table 2.8 under Column "Type". The dependent variable is forecasting type averaged across firms within each industry-year. The results are similar to those reported in Table 2.6, suggesting that competition from potential entrants encourages more precise forecasts while competition from existing rivals reduces forecast precision.

C. Forecasting horizon

As the information contained in management forecasts is more valuable if disclosed earlier, forecasting horizon may also reflect a firm's strategic choice. In this section, I examine how competition affects firms' forecasting horizon. Forecasting horizon is defined as the difference between the forecasting date and the forecasting fiscal year-end divided by 100. If a firm issues multiple forecasts per year, the date of the earliest one is used. For nonforecasters, forecasting horizon is set to be 0, as the information on profits and investments is revealed once financial statements become public. Panel C of Table 2.7 presents the distributional statistics for forecasting horizon. For both profit and investment forecasts, most firms issue their forecasts approximately one year in advance.

The regression results of competition on forecasting horizon are reported in Table 2.8 under Column "Horizon." The dependant variable is forecasting horizon averaged across firms within each industry-year. The results are similar to those reported in Table 2.6, suggesting that competition from potential entrants encourages firms to forecast early while competition from existing rivals delays forecasts.

The above analyses suggest that product market competition not only affects a firm's decision on whether to disclose but also affects the decisions on how often, what, and when to disclose. Results suggest that, consistent with the hypotheses on disclosure quantity, competition from potential entrants encourages firms to forecast more frequently, more precisely, and earlier, while competition from existing rivals reduces forecasting frequency, precision, and horizon.

2.5.2 Firm-level competition and disclosure

So far, the analyses only explore the inter-industry differences in disclosure behavior, as competition is measured at industry level, and all firms within the same industry are assumed to face the same level of competition. However, firms within the same industry are also likely to face different levels of competition depending on their market position. Nickell, Wadhwani, and Wall (1992) and Nickell (1996) suggest that firms with greater market shares in an industry typically face lower competition, as higher market share indicates greater market power. Therefore, I further divide firms within the same industry into subgroups according to their market shares. Their arguments imply that, compared with industry followers, industry leaders face less competitive pressures. Therefore, I expect the association between competition and disclosure to be less pronounced for industry leaders.

Firms within the same industry are sorted into quartiles according to their market shares, and those in the top quartile are identified as industry leaders. In the

following two subsections, I discuss the empirical results of competition and disclosure quantity and quality at firm level.

A. Firm-level competition and disclosure quantity

I use the total number of forecasts issued by a firm in a certain year to measure the firm-level disclosure quantity and use the following regression to examine the impact of competition on disclosure quantity.

$$\text{NegBin}(\text{Num-For}_{ijt}) = F(\alpha_1 \text{POTENT-COMP}_{jt} + \alpha_2 \text{EXIST-COMP}_{jt} + \alpha_3 \text{IND-PROFIT}_{jt} + \text{Capital Market Incentives} + \text{Litigation Risk} + \text{Year Dummies}) \quad (2.3)$$

This is a negative binomial regression model estimated at firm-year level, where *i* denotes firm, *j* denotes industry, and *t* denotes year. The dependant variable NUM-FOR$_{ijt}$ is the total number of forecasts issued by firm at year *t*. Similar to the industry-level analysis, I control for capital market incentives, litigation risk, and year fixed-effects in the regression. The standard errors are clustered by industry.[17]

The regression analysis is conducted on the full sample, as well as separately on the industry followers and leaders sub-samples. The results are reported in Table 2.9. The coefficients on POTENT-COMP and EXIST-COMP are similar to those reported in Table 2.6, indicating that competition from potential entrants increases disclosure quantity and competition from existing rivals decreases disclosure quantity. Consistent with the argument that industry leaders face less competitive pressures, the above association is less pronounced for industry leaders. Although coefficients on both POTENT-COMP and EXIST-COMP have the correct sign in the industry leader regression, neither of them is significant. The results by comparing the coefficients across sub-samples suggest that the impacts of competition on disclosure are smaller for industry leaders, probably because product market competition is less of a concern

[17] The results are similar if the standard errors are clustered by both industry and calendar year.

for them. The negative and significant coefficient on EXIST-COMP for industry followers is also in line with the findings in Verrecchia and Weber (2006) that small firms in competitive industries elect to redact proprietary information from their material contracts as they are willing to trade off the benefits from avoiding disseminating proprietary information in product markets against the costs associated with the increased adverse selection in capital markets.

Coefficients on control variables show some interesting patterns. For example, external financing needs (ISSUE) encourage more profit forecasts while discouraging investment forecasts; historical volatility and absolute change of earnings discourage profit forecasts while historical volatility and absolute change of capital expenditures encourage investment forecasts, suggesting that for investment forecasts, forecasting needs outweigh forecasting difficulty. Therefore, unlike forecasts on future earnings, which have been documented as serving multiple capital market purposes (e.g., reducing analyst optimism, reducing litigation risk, and reducing information asymmetry between insiders and investors, etc.), the major capital market incentive for issuing investment forecasts is to provide additional information on investment plans to reduce uncertainty.

B. Firm-level competition and disclosure quality

Next, I use the firm-level forecasting accuracy to measure disclosure quality and use the following OLS regression to examine the impacts of competition on disclosure quality.

$$\begin{aligned}\text{ACCURACY}_{ijt} = {} & \alpha_1 \text{POTENT-COMP}_{jt} + \alpha_2 \text{EXIST-COMP}_{jt} + \alpha_3 \text{IND-PROFIT}_{jt} \\ & + \text{Capital Market Incentives} + \text{Litigation Risk} + \text{Year Dummies} \end{aligned} \quad (2.4)$$

This regression is estimated at firm-year level, where *i* denotes firm, *j* denotes industry, and *t* denotes year. Similar to the industry-level analysis, I also control for capital market incentives, litigation risk, and year fixed-effects in the regression.

The regression analysis is conducted on the full sample, as well as separately on the industry followers and leaders sub-samples. The results are reported in Table 2.10. For both profit and investment forecasts, consistent with H2A, the coefficients on POTENT-COMP are positive and significant across all samples, suggesting that competition from potential entrants increases disclosure quality. For profit forecasts, consistent with H2B, the coefficients on EXIST-COMP are positive and significant for the full sample and industry followers sub-sample. For investment forecasts, the coefficients on EXIST-COMP are negative and statistically significant for the industry follower sub-sample, indicating that existing competition decreases the forecasting accuracy of investment forecasts, in contrary to H2B.

To further investigate the mechanism through which competition influences disclosure quality, I examine the impacts of competition on the signed forecast error, which is defined as follows:

$$\text{ERROR} = \frac{\text{Actual value} - \text{Forecasted value}}{\text{Market value of equity}}.$$

A positive ERROR suggests a pessimistic forecast compared with the actual value, and a negative ERROR suggests an optimistic one. I implement this analysis by replacing ACCURACY in Equation (2.4) with ERROR. The regression results are reported in Table 2.11. Panel A reports the results for the full sample, while in Panels B and C, I split the sample based on the sign of ERROR.

For profit forecasts, in Panel A, both the means and medians of the dependent variable ERROR are negative, suggesting that profit forecasts are optimistic on average. The coefficients on POTENT-COMP and EXIST-COMP are positive, suggesting that competition reduces optimism in profit forecasts. The means and medians of ERROR in Panel C are much larger than those in Panel B, suggesting that

forecast errors are mainly attributable to optimistic forecasts. Therefore, competition improves the accuracy of profit forecasts mainly through reducing forecast optimism.

For investment forecasts, in Panel A, the means of the dependant variable ERROR are positive, suggesting that forecast errors mainly come from pessimistic investment forecasts.[18] The coefficient on POTENT-COMP is negative, suggesting that potential competition reduces pessimism in investment forecasts. This finding is consistent with the argument in Spence (1977) and Fudenberg and Tirole (1983) that firms could deter entry by committing to overproduction and threatening would-be entrants with lower profits in the post-entry equilibrium. As a result, firms facing high potential competition are less likely to be pessimistic about their investment plans. The above association is more pronounced in Panel B, suggesting that competition from potential entrants improves the accuracy of investment forecasts mainly through reducing forecast pessimism. Interestingly, the coefficient on EXIST-COMP is positive and significant, especially for industry followers, suggesting that industry followers facing high competition from existing rivals issue more pessimistic investment forecasts. One explanation for this result may be that, in highly competitive industries, building up excessive capacity is not a sustainable strategy for industry followers, and an alternative way for them to survive is to reduce the scale and cut costs (Wright, 1986; Helms and Wright, 1997). Therefore, industry followers may use investment reduction to signal effective cost-cutting.

[18] Although the medians are negative, the magnitudes are much smaller, indicating a long right tail. The reason why investment forecasts are pessimistic on average is unclear and outside the scope of this paper. The empirical evidence on the market reaction to investment announcements is mixed. For example, McConnell and Muscarella (1985) find that announcements of increases in capital expenditures lead to significant positive stock returns for industrial firms, but such association does not exist for public utility firms. Chung, Wright, and Charoenwong (1998) find that share price reaction to a firm's capital expenditure decisions depends critically on the capital market's assessment of the quality of its investment opportunities.

Compared with the results on forecasting accuracy, those on forecast error have less power. However, this finding is not surprising, as forecasting accuracy is better able to capture the offsetting informational demand from capital markets and product markets. Theories argue that the offsetting informational demand from capital markets and product markets enhances disclosure quality. However, the directional demand from one market is uncertain. For example, theories argue that, if capital market incentives lead to optimistic disclosure on future profits, the concern that overly optimistic prospects may attract potential entrants to enter the market or encourage existing rivals to produce more will enhance the disclosure credibility by reducing disclosure optimism. However, in practice, it is unlikely that all firms want to overstate their future profits. For example, to create positive earnings surprises, some firms may intentionally issue pessimistic earnings forecasts (Matsumoto, 2002). On the other hand, some firms in competitive industries may prefer to overstate future profits to pre-empt competitors. In this case, offsetting informational demand from capital markets and product markets has positive impacts on forecasting accuracy, but the opposite impacts on forecast error will wash out the results.

2.6 Robustness analysis

2.6.1 Issues with competition measures

In Equations (2.1) and (2.2), competition measures are constructed by conducting principal component analysis on original competition measures. As discussed in Section 3.1, due to the coverage of Compustat, it is likely that the original competition variables are measured with error. The advantage of principal component analysis is to obtain maximum variance from original variables. However, if the variables are measured with error, exploratory factor analysis (EFA) should be a

better method. The advantage of EFA is to identify the latent variables or common factors underlying a group of raw variables and keep only variance of these common factors. Applying EFA in the analysis may result in some loss of information but could mitigate the measurement error problem by throwing away uncommon variances existing in the data. Similar to principal component analysis, three common factors EF1, EF2, and EF3 are retained from EFA by requiring eigenvalues larger than one. EF1 is loaded by IND-MKTS, IND-CON4, IND-HHI, and IND-NUM. EF2 is loaded by IND-PPE, IND-R&D, IND-CPX, and IND-MKTS, and EF3 is loaded by IND-MGN and IND-ROA. I use the negative of EF1, denoted as EXIST-COMP$_{EFA}$, to measure competition from existing rivals, the negative of EF2, denoted as POTENT-COMP$_{EFA}$, to measure competition from potential entrants, and EF3, denoted as IND-PROFIT$_{EFA}$, to measure industry profitability in the robustness analysis. The regression results are reported in Panel A of Table 2.12. The coefficients on competition measures are qualitatively similar to those in Table 8.

One shortcoming of factor analysis is the difficulty in interpreting the results. Therefore, in this section, instead of using common factors to measure competition, I use the original competition variables. Since competition variables within the same category are highly correlated with each other (Table 2.2), to avoid multicollinearity, I use only one competition variable from each category in the regression. In the first set of competition variables, IND-PPE, the minimum investments that a firm needs to incur to enter the market, is used as an inverse measure for competition from potential entrants; IND-CON4, the industry concentration ratio, is used as an inverse measure for competition from existing rivals; IND-MGN is used as the control for industry profitability. In the second set of competition variables, I use IND-CPX, the capital intensity of an industry, as an inverse measure for competition from potential entrants;

IND-NUM, the number of firms operating in the same industry, as a measure for competition from existing rivals; and IND-ROA as the control for industry profitability. The regression results, as reported in Panel B, are similar to those in Table 2.6. As IND-MKTS is highly correlated with both variables in potential competition category and those in existing competition category, it is excluded from the analysis. However, after including IND-MKTS in the regression, results are qualitatively unchanged (unreported).[19]

Existing literature argues that market structure is endogenous and that concentration indices alone are poor measures of competition (Raith, 2003). Although I include multiple competition variables in the same regression, there are still concerns regarding whether high industry concentration (or low EXIST-COMP) indicates low competition. Panzar and Rosse (1987) develop an index (*H*-statistic) from a reduced form revenue equation to measure the competitiveness of an industry.[20] *H*-statistic is equal to the sum of the factor price elasticity, with less than 0 being monopolists, between 0 and 1 being monopolistic competition, and 1 being perfect competition. Although Panzar and Rosse (1987) argue that *H*-statistic could be interpreted as a measure for the degree of competition under certain assumptions (long-run equilibrium, demand with constant elasticity, and a Cobb-Douglas technology), this methodology is rarely used in empirical studies.[21] The main difficulty in applying this measure to large sample studies is to identify common input factors in the production function and the corresponding prices of these factors for a

[19] Note that competition measures based on common factors, such as POTENT-COMP, EXIST-COMP, POTENT-COMP$_{EFA}$, and EXIST-COMP$_{EFA}$, have been multiplied by -1, so that higher value indicates higher competition level. Therefore, the coefficients on some of the original variables, such as IND-PPE, IND-CPX, and IND-CON4, in this table have the opposite signs as those on POTENT-COMP and EXIST-COMP in Table 2.6.

[20] I thank the referee for pointing out this issue and suggesting the *H*-statistic.

[21] So far, this measure has only been empirically applied in banking industries.

variety of industries. To obtain consistent *H*-statistics across a number of industries, I estimate the following reduced-form revenue equation on a pooled sample for each industry (four-digit SIC):

$$\begin{aligned} ln(\text{SALE}_{ijt}) = {} & \alpha_{1,j} + \beta_{1,j} ln(\text{COGS}_{ijt}) + \beta_{2,j} ln(\text{DEP}_{ijt}) + \beta_{3,j} ln(\text{SG\&A}_{ijt}) \\ & + \gamma_{1,j} ln(\text{ASSETS}_{ijt}) + \gamma_{2,j} ln(\text{CAPEX}_{ijt}) + \gamma_{1,j} ln(\text{EQUITY}_{ijt}) \\ & + \text{Year Dummies}, \end{aligned} \tag{2.5}$$

where *i* denotes firm, *j* denotes industry, and *t* denotes year. SALE_{ijt} is the ratio of sales to total assets, a proxy for output price. COGS_{ijt} is the ratio of cost of goods sold to total assets, a proxy for input price of raw materials. DEP_{ijt} is the ratio of depreciation to total assets, a proxy for input price of equipment and fixed capital. $\text{SG\&A}_{ijt}$ is the ratio of selling, general, and administrative expenses to total assets, a proxy for input price of labour. I also control for firm characteristics, including total assets (ASSETS_{ijt}) to control for firm size, the ratio of capital expenditures to total assets (CAPEX_{ijt}) to control for fixed investments, and the ratio of equity to total assets (EQUITY_{ijt}) to control for leverage. The above model shares a similar logic to the one in Claessens and Laeven (2004), which estimates *H*-statistics for banking industries.

As *H*-statistic is derived from individual firm's revenue function, which depends on the decisions of its actual and potential rivals, it is a comprehensive measure for industry competitiveness, combining both existing competition and potential competition (Panzar and Rosse, 1987; Claessens and Laeven, 2004). Since the focus of this paper is to examine the impacts of different dimensions of competition on disclosure, *H*-statistic is not an alternative measure for either competition from potential entrants or competition from existing rivals. Therefore, I only use *H*-statistic to assess the validity of the competition measures used in this

paper. In unreported analysis, I find that *H*-statistic is positively correlated with EXIST-COMP, suggesting that EXIST-COMP is a valid measure for competition. Furthermore, after adding *H*-statistic as a separate independent variable in Regressions (2.1) and (2.2), I obtain results that are qualitatively unchanged.

2.6.2 Endogeneity between competition and disclosure

An alternative explanation for the negative association between competition from existing rivals and disclosure is that voluntary disclosure facilitates mergers and acquisitions among firms, thereby leading to more concentrated industry structure. To address this endogeneity concern, I examine the endogenous link between competition and disclosure quantity by using Granger causality test as follows.

$$\begin{aligned}\text{Forecasters}_{j,t}\%= {} & \alpha_1 \text{Forecasters}_{j,t-1}\% + \alpha_2 \text{Forecasters}_{j,t-2}\% + \alpha_3 \text{POTENT-COMP}_{j,t-1} \\ & + \alpha_4 \text{POTENT-COMP}_{j,t-2} + \alpha_5 \text{EXIST-COMP}_{j,t-1} + \alpha_6 \text{EXIST-COMP}_{j,t-2} \\ & + \alpha_7 \text{IND-PROFIT}_{j,t-1} + \alpha_8 \text{IND-PROFIT}_{j,t-2} + \text{Capital Market Incentives} \\ & + \text{Litigation Risk} + \text{Year Dummies} \qquad (2.6)\end{aligned}$$

This regression is estimated at industry-year level, where FORECASTER$_{j,t-i}$%, POTENT-COMP$_{j,t-i}$, EXIST-COMP$_{j,t-i}$, and IND-PROFIT$_{j,t-i}$ denote the percentage of forecasters, competition from potential entrants, competition from existing rivals, and industry profitability for industry *j* at year *t-i*, respectively. Results are reported in Table 2.13. The coefficients on FORECASTER$_{j,t-i}$% and FORECASTER$_{j,t-i}$% are positive and significant, suggesting that management forecasting behavior is highly auto-correlated. F-test results suggest that the sum of coefficients on POTENT-COMP$_{j,t-i}$ and POTENT-COMP$_{j,t-i}$ is positive and significant, indicating that competition from potential entrants increases disclosure quantity in a Granger sense. Similarly, the sum of coefficients on EXIST-COMP$_{j,t-i}$ and EXIST-COMP$_{j,t-i}$ is

negative and significant, indicating that competition from existing rivals decreases disclosure quantity in a Granger sense.[22]

2.6.3 Forecasts issued in MD&A

So far, the analyses are based on management forecasts collected from First Call and Factiva, which only cover information disclosed in press releases, conference calls, conferences, analyst meetings and shareholder presentations. In other words, management forecasts issued in the MD&A section of SEC filings (10-Ks and 10-Qs) are not studied. Although one could argue that ignoring disclosures in the MD&A limits the disclosure sample used in this study, it is worth noting that the disclosures in the SEC filings are often required by an auditor, which makes these disclosures less voluntary. Moreover, forward-looking disclosures in MD&A could be preceded by disclosures through other channels, such as conference calls, which makes the MD&A disclosures stale. Nonetheless, to check the robustness of the results and to investigate whether competition affects the information disclosed in SEC filings in a similar way to that disclosed outside the filings, I repeat the earlier analysis for a sample of management forecasts on capital expenditures collected from the MD&A section of SEC filings. I collect the MD&A disclosures by searching the 10-K and 10-Q filings of all sample firms in the years 2003 and 2004.

In Panel A of Table 2.14, the results from analyzing MD&A disclosures are reported under Column "MD&A". I also combine the data from SEC filings with those collected from Factiva and regression results are reported under Column "All." The coefficients are similar to those reported in Table 2.6, suggesting that the main

[22] In unreported analysis, results from regressing POTENT-COMP$_{j,t}$ on POTENT-COMP$_{j,t-1}$, POTENT-COMP$_{j,t-2}$, FORECASTER$_{j,t-1}$%, FORECASTER$_{j,t-2}$%, and control variables indicate that disclosure does not increase potential competition in a Granger sense. Similarly, results from regressing EXIST-COMP$_{j,t}$ on EXIST-COMP$_{j,t-1}$, EXIST-COMP$_{j,t-2}$, FORECASTER$_{j,t-1}$%, FORECASTER$_{j,t-2}$%, and control variables indicate that disclosure does not decrease existing competition in a Granger sense.

findings of this paper are robust to the disclosure media and, in particular, are robust to disclosures both inside and outside SEC filings.

2.6.4 Other robustness analyses

In above analyses, firms are assigned to industry groups according to their primary SIC code. This approach assumes that a firm's product market concern is only attributable to the competition in its primary industry, even if the firm operates in multiple industries. To check whether the results are sensitive to this assumption, I conduct analysis based on firms operating in a single segment. The regression results as reported in Panel B of Table 2.14 are similar to before.

One shortcoming of the measure for potential competition in this paper is that intangible entry barrier is not captured by these measures. For example, firms operating in regulated industries face extremely high entry barrier, and such a barrier is not reflected in physical investments. Although regulated industries are typically regarded as facing high litigation risk and are captured by LIT dummy, to further test the robustness of the results, in Panel C, I conduct analysis after excluding regulated industries, namely industries with SIC 4812-4813, 4833, 4841, 4899 (communications), 4911, 4922-4924, 4931, 4941 (utilities). The results are still unchanged.

To further address the concern about the auto-correlated forecasting behavior, in Panel D, I conduct cross-sectional analysis where all the regression variables are averaged across time and results are qualitatively similar to before.

So far, I use ex post forecasting accuracy to measure disclosure quality, which is likely to be influenced by managers' ability to forecast, managers' incentives to meet the forecasts and the difficulty of forecasting. Although in the regressions, I control for these factors by including proxies for the volatility of a firm's operating

environment, growth opportunities, earnings management, etc., the above concern still cannot be eliminated. Therefore, as an alternative, in the robustness analysis (unreported), I use an ex ante proxy to measure disclosure quality. In particular, I use previous year's forecasting accuracy (*t-1*) as the ex ante measure for disclosure quality and the results are qualitatively unchanged (Hutton and Stocken, 2009).[23]

[23] I thank the referee for pointing this out and suggesting the alternative measure. The results are qualitatively similar if I use the average forecasting accuracy from years *t-3*, *t-2*, and *t-1* as an alternative.

Chapter 3: Capital market consequences of financial reporting

3.1 Introduction

In this chapter, I focus on the contracting benefits of conservatism and explore its influence on both debt and equity capital markets around the world.

The motivations for using an international setting are as follows. First, the majority of the variation in accounting practice is likely to be across countries rather than within a country or across time, as firms within a country follow the same set of accounting standards and face the same level of legal enforcement, which are likely to be static across time. Therefore, the cross-country study provides a powerful setting to investigate the impacts of financial reporting systems on capital markets. Second, recent studies in corporate finance literature have highlighted the importance of legal systems for the performance of capital markets (La Porta, Lopez-de Silanes, Shleifer, and Vishny (hereafter LLSV), 1997; Lombardo and Pagano (2000); Hail and Leuz, 2006). Their findings suggest that the performance of a country's capital market is determined by the country's corporate governance legal standards, the effectiveness of courts in enforcing such rules, and the ability of stakeholders (shareholders and debtholders) to verify if their rights have been violated. The effectiveness of a country's judicial system in turn depends on the transparency of the corporate accounts and the quality and timeliness of the information that firms disseminate (Lombardo and Pagano, 2002). Using an international setting enables me to assess the complementary role of a country's accounting system in assisting its corporate governance mechanisms to shape the performance of its capital markets, an important feature of which is the cost to obtain external capital.[24] Third, while there is much

[24] The idea that accounting conservatism facilitates corporate governance mechanisms in monitoring managers has been supported by empirical studies based on a sample of firms in the United States. For

debate on the firm-level measures for conditional conservatism, general consensus has been achieved on the country-level measures of conservatism as a proxy for a country's financial reporting quality (Ball, Kothari, and Robin, 2000; Ball, Robin, and Wu, 2003; Bushman and Piotroski, 2006; Ball, Robin, and Sadka, 2008).[25] Therefore, examining the contracting benefits in an international context could mitigate measurement error problems existing in the firm-level analysis.

Existing literature classifies conservatism into two categories based on whether the asymmetric verifiability requirement for the recognition of gains and losses is conditional on news. Basu (1997) defines conditional conservatism as the tendency of accountants to require a higher degree of verification for recognizing good news than bad news in financial statements (i.e. earnings reflect bad news more quickly than good news). Ball and Shivakumar (2005) define unconditional conservatism as the bias toward reporting low book value of equity. Basu (1997) and Ball and Shivakumar (2005) argue that the downward bias on reported net worth could be easily contracted around, so unconditional conservatism is inefficient or at best neutral in contracting. In this study, to investigate the contracting benefits of a conservative financial reporting system, I only focus on the conditional form of conservatism. In the remaining parts of this paper, the terminology accounting conservatism or conservatism refers to the conditional form of conservatism, or the asymmetric recognition of economic gains and losses into earnings.

I construct a country-level measure for accounting conservatism based on the pooled regression of Basu's (1997) model within each country. This measure captures

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example, Ahmed and Duellman (2007) find evidence consistent with the notion that accounting conservatism assists directors in reducing deadweight losses arising from agency conflicts.

[25] For example, Givoly, Hayn, and Natarajan (2007) find that the firm-level measures for conservatism based on Basu's (1997) model are too noisy. This potential explains why Francis, LaFond, Olsson, and Schipper (hereafter FLOS) (2004) fail to document any significant association between the cost of equity capital and conservatism based on a sample of firms in the United States.

the actual accounting practice of average firms within each country and reflects the distributional properties of reported accounting numbers that suggest different degrees of conservatism across countries. To examine the effect of conservatism on capital markets across countries, I further construct country-level measures of the expected cost of debt and equity capital. The expected cost of debt is measured as one-year-ahead interest rates averaged across all firms within each country and the expected cost of equity is the discount rates extracted from accounting-based valuation models averaged across all firms within each country. After controlling for other determinants of the cost of capital, I find that the conservatism level in a country's accounting system is negatively associated with both cost of debt and cost of equity capital. One standard deviation increase of the measure for timely loss recognition reduces the nominal cost of debt by 86 basis points and reduces the nominal cost of equity by 74 basis points. I also conduct extensive analyses to address the concerns about the conservatism and the cost of capital measures, the issues associated with potentially correlated omitted variables and the potential biases introduced by sample selection. Nevertheless, the results are quite robust across various measures and specifications.

This paper contributes to a strand of research examining the influence of accounting information on international capital markets. Bhattacharya, Daouk, and Welker (2003) document that an increase of a country's overall earnings opacity significantly increases its cost of equity and decreases the trading in the stock market. This paper complements their findings by examining another important earnings attribute – conservatism, and its influence on both debt and equity capital markets. Hail and Leuz (2006) document that firms in countries with more extensive disclosure requirements, stronger securities regulations, and more effective legal systems have a significantly lower cost of equity capital. Although profound, their conclusions are

limited to the role of accounting standards in general. As Ball, Kothari, and Robin (2000) argue, focusing on the actual reported accounting numbers instead of accounting standards has several advantages. First, much accounting practice is not determined by accounting standards, because practice is more detailed than standards, standards lag innovations in practice, and companies do not invariably implement standards. Second, the extent to which accounting practice is determined for formal standards varies internationally, and the incentive to follow accounting standards depends on penalties under different enforcement institutions. Therefore, studying accounting standards per se is incomplete and potentially misleading in an international context. Third, securities laws and disclosure regulations, reflecting regulators' willingness or political forces, capture only the mandated reporting quality, while reported earnings numbers, also reflecting managers' or shareholders' incentives, are more relevant in the context of corporate governance and contracting.

This paper also contributes to studies examining the contracting benefits of conservatism on capital markets. So far, research in this area is limited to the syndicated loan market in the United States (e.g., Zhang, 2008; Wittenberg-Moerman, 2008) and little is known about the public debt market or equity market. Having access to private information, banks are able to customize debt contracts to partially fulfil their demands for unbiased accounting numbers and are less dependant on conservative accounting (Beatty, Weber, and Yu, 2008). On the other hand, public debt contracts are generally uniformly designed and based on accounting numbers prepared under GAAP. Therefore, public debtholders are likely to rely more on conservative accounting to monitor the borrowers, which makes public debt a more powerful setting to test the benefits of conservatism. By examining the influence of conservatism on the cost of debt in general and the cost of equity, this paper

completes the understanding for the contracting benefits of conservatism in the literature.

The rest of this chapter is organized as follows. I discuss the hypothesis development in Section 3.2. Section 3.3 describes the sample, data, and research design. Section 3.4 presents the empirical results and Section 3.5 presents robustness analyses.

3.2 Hypothesis development

3.2.1 Economic framework of conservatism and contracting

Two major agency problems exist in public firms: the one between shareholders and managers and the one between shareholders and debtholders. Shareholders delegate the firm's operating decisions to managers and incentivize them through compensation contracts based on a series of performance measures. As performance reports are also produced by managers, they are likely to embellish the reports in favour of themselves. Therefore, shareholders incur agency costs resulting from information asymmetry and imperfection of compensation contracts. Kothari, Ramanna, and Skinner (2009) argue that accounting conservatism mitigates the agency problem between shareholders and managers from three aspects. First, as managers are compensated according to current performance, they are likely to be reluctant to volunteer bad news. Timely loss recognition introduces a contractual obligation through accounting standards for managers to disclose bad news. Second, withholding bad news may further induce managers to undertake overly risky investments in the hope of riding pool performance. Timely loss recognition sends timely signals to shareholders, who could take actions to curb management's potential value-destroying decisions either by exercising greater oversight or by replacing the

existing management. Third, because recouping excessive compensation ex post is extremely costly for the shareholders, managers could compensate themselves excessively by delaying bad news. Timely loss recognition restricts managers' ability to delay bad news and prevents them from receiving overpayments.

Similar to the shareholder-manager conflicts, agency problem also exists between debtholders and shareholders. Debtholders lend capital to shareholders, but shareholders and managers have the full control of the firm's daily operations as long as the contractual terms of the debt are being honoured. Shareholders' claims to the firm can be regarded as holding a call option over the firm's assets with an exercise price equal to the face value of debt. Debtholders' claims are akin to those of a writer of a put option, i.e. their upside is capped at the principal and interest payments of debt. Due to the conflicts of interests, debtholders incur agency costs resulting from information asymmetry and imperfection of debt contracts. Accounting conservatism mitigates the agency problem between shareholders and debtholders in the following way: shareholders have the incentive to transfer wealth to themselves through investing in overly risky assets or overpaying dividends when the call option is close to the money. Timely loss recognition sends timely signal to debtholders, who could take actions to restrict shareholders' self-serving behavior either by taking over the control or by exercising greater oversight.

To sum up, both shareholders and debtholders demand for the timely recognition of bad news in financial reporting. However, timely gain recognition is less desirable in contracting. Kothari, Ramanna, and Skinner (2009) argue that recognizing good news timely could create moral hazard problem between managers and shareholders. For example, if revenues are recognized before the actual sales happen and managers are compensated accordingly, managers will not have any

ongoing incentive to exert full effort to convert the good news into real cash flows. Due to the asymmetric payoff function of debt, debtholders have less incentive to require managers to recognize good news, especially when the firm value is way above the face value of the debt. Even if self-interested managers voluntarily disclose good news, such behavior is unlikely to be rewarded in contracting.

One potential argument regarding the contracting benefits of conservatism is that firms could write contracts in a way to account for the expected bias in financial reporting (Guay and Verrecchia, 2006). Beatty, Weber, and Yu (2008) address this issue by examining the adjustments in debt covenants and find that firm-specific modification of debt contracts does not entirely replace lenders' demand for conditional conservatism in financial reporting. Guay (2008) comments that this finding suggests a comparative advantage of conditional conservatism in satisfying lenders' demand for timely information about bad news from managers.

In the following two subsections I discuss in detail how the contracting benefits of conservative financial reporting help reduce firms' cost of debt and equity capital.

3.2.2 Cost of debt and conservatism

Since conditional conservatism sends timely signal to debtholders and mitigates the potential risk of wealth transfer, debtholders often demand conditional conservatism as a precondition to lending (Kothari, Ramanna, and Skinner, 2009). As debtholders can price protect themselves ex ante, ceteris paribus conservative borrowers are likely to obtain outside debt at a lower cost.

Financial reporting system evolves over time to meet the needs of various market participants and contracting parties (Guay, 2008). For example, Bushman and Piotroski (2006) show that accounting conservatism is shaped by the institutional

structures of the country, such as the legal systems, securities laws, political economy and tax regime. The degree of conservatism in a country's accounting system, which is not necessarily reflected in the country's accounting standards, could be regarded as an ex ante commitment for conservative financial reporting by firms domiciled in the country. By committing to reporting conservatively as a general accounting practice, borrowers in such country would be rewarded by paying a lower price for their borrowing. Therefore, I have the following hypothesis:

H1: Firms domiciled in countries with more conservative financial reporting systems have lower cost of debt.

3.2.3 Cost of equity and conservatism

Accounting conservatism also mitigates the agency problem between managers and shareholders. However, the way in which better contracting efficiency is translated into lower cost of equity is less straightforward, because shareholders are the residual claimants of the firm's assets and any expected cash flow effect has already been reflected in current stock price, leaving the expected rate of return unchanged.

Theoretical works relate the quality of accounting information to firm's cost of equity in two ways. First, they find that higher quality accounting information reduces the systematic risk of the market, thereby reducing all firms' cost of equity capital in the economy. For example, Hughes, Liu, and Liu (2007) show that information asymmetry about systematic factors affects factor risk premiums. Therefore, low information asymmetry leads to low market cost of capital. Similarly, Lambert, Leuz, and Verrecchia (2007) show that better accounting information directly affects a firm's assessed covariances with other firms' cash flows, thereby reducing the former's cost of capital. As better disclosure by each firm generates an externality on

other firms' cost of capital, this effect is not diversifiable and does not disappear in large economies.

Second, existing theoretical studies also find that higher quality accounting information directly reduces individual firm's cost of equity capital. Easley and O'Hara (2004) show that investors demand a higher return to hold stocks with greater private (and correspondingly less public) information. Since informed investors are better able to shift their portfolio weights to incorporate new information, uninformed investors who hold stocks with greater private information bear higher risk and require compensation for this risk. In other words, information asymmetry increases the cost of equity capital. However, Hughes, Liu, and Liu (2007) argue that such idiosyncratic risk can be diversified away in large economies. By assuming that firms have correlated cash flows, Lambert, Leuz, and Verrecchia (2007) show that better information reduces the amount of cash flows that managers appropriate for themselves, thereby shifting the ratio of the expected future cash flow to the covariance of the firm's cash flow with the sum of all cash flows in the market, which determines the cost of equity capital.[26]

Based on the theoretical arguments above, accounting conservatism could reduce firms' cost of equity through two channels. First, it reduces the deadweight loss in shareholder-manager conflicts and thereby increases future cash flows available to shareholders (Watts, 2003; Kwon, Newman, and Suh, 2001). Such increase further shifts the ratio of the expected future cash flow to the covariance of firm's cash flow with other firms' cash flows, and thereby reduces the cost of equity.

[26] Lambert, Leuz, and Verrecchia (2007) find that the only situation in which accounting information system has no impact on the cost of capital is when the manager's appropriation is exactly a fixed proportion of the end-of-period cash flow. As long as there is a component of appropriation that does not vary with the realization of the end-of-period cash flow (e.g., if it depends on the expected future cash flow instead of its realization), or the quality of information affects the "fixed" component of appropriation, there is a nonzero impact on the cost of capital.

Second, as accounting conservatism reduces information asymmetry between managers and shareholders (Ball, Kothari, and Robin, 2000; LaFond and Watts, 2008), shareholders require a lower cost of return from conservative firms and such effect can not be diversified away in economies with finite numbers of securities.

Since conservative financial reporting system reflects the actual accounting practice of all firms in the country, its influence on individual firm's cost of capital is not diversifiable. Therefore, conservative accounting further reduces the cost of equity capital of firms domiciled in the country by reducing the systematic risk of the market. Therefore, I have the following prediction in this paper:

H2: Firms domiciled in countries with more conservative financial reporting systems have lower cost of equity.

3.3 Data and research design

3.3.1 Measures of conservatism

Basu (1997) uses the following piecewise linear regression model of accounting income on stock returns to measure accounting conservatism, or asymmetric timeliness of losses to gains:

$$NI_{i,t} / P_{i,t-1} = \beta_0 + \beta_1 \times DR_{i,t} + \beta_2 \times R_{i,t} + \beta_3 \times DR_{i,t} \times R_{i,t} + \varepsilon_{i,t}. \qquad (3.1)$$

$NI_{i,t}$ is firm i's net income before extraordinary items at year t; $P_{i,t-1}$is firm i's market value at the beginning of year t; $R_{i,t}$ is the annual buy-and-hold return; $DR_{i,t}$ is a dummy variable equal to 1 if $R_{i,t}$ is negative, and 0 otherwise. Asymmetric timeliness of losses to gains implies $\beta_3>0$.

Roychowdhury and Watts (2007) argue that, if the above model is estimated across time and by using single-period returns and earnings, the coefficient β_3 reflects asymmetric timeliness of earnings with respect to news arrival within that one period

only. In other words, which β_3 is only an implication of asymmetric verification standards rather than a measure of aggregate conservatism, which should reflect the cumulative effect of asymmetric timeliness across all prior periods. Therefore Roychowdhury and Watts (2007) modify Basu's (1997) model by cumulating earnings and returns over multiple periods. The modified model is as follows:

$$NI_{t-j,t} / P_{t-j-1} = \beta_0 + \beta_1 \times DR_{t-j,t} + \beta_2 \times R_{t-j,t} + \beta_3 \times DR_{t-j,t} \times R_{t-j,t} + \varepsilon_t \qquad (3.2)$$

$NI_{t-j,t}$ is cumulative net income before extraordinary items during the years *t-j* to *t*, and *j* varies from 0 to 3; when $j = 0$, there is no cumulation, and the model is the same as Basu's (1997) model; P_{t-j-1} is the market value of equity at the end of year *t-j-1*; $R_{t-j,t}$ is the buy-and-hold return, beginning in the fourth month of fiscal year *t-j* and ending three months after the end of year *t*; dummy variable $DR_{t-j,t}$ equals 1 if $R_{t-j,t}$ is negative, and 0 otherwise.

In this paper I estimate conservatism by using earnings and stock returns cumulated over two years (i.e. j=1). Cumulating returns backwards also alleviates the concern that equity markets in certain countries are not efficient enough to reflect news in a timely manner. In the robustness analyses, I also measure conservatism based on earnings and returns cumulated over other periods and get similar results.

To obtain the conservatism measure for each country, I estimate Regression (3.2) for each country by using all firm-year observations. The stock returns are adjusted for market return measured as the country's equally-weighted average return.[27] The reason for using country-level pooled regression is that, as pointed out by Bushman, Piotroski, and Smith (2006), pooling all firms and industries within a country for all available years achieves maximum power in estimating timely loss

[27] The adjustment for returns is used as a control for differences in expected return across countries and across years (Ball, Robin, and Sadka, 2008).

recognition practice. What these country-level estimations capture, in the presence of diversification, is an estimate of the first-order country component of financial reporting practice.

Consistent with previous literature, in this paper I use timely loss recognition equal to $\beta_2+\beta_3$ and incremental loss recognition equal to β_3 estimated from Equation (3.2) as the main proxies for conservatism. I also use incremental R^2, which measures asymmetric timeliness of earnings to bad news and good news, as the third proxy for conservatism. $IncR^2$ is defined as the adjusted R^2 from Regression (3.2) minus the adjusted R^2 from the following linear regression:

$$NI_{t-j,t} / P_{t-j-1} = \beta_0 + \beta_1 \times R_{t-j,t} + \varepsilon_t \quad (3.3)$$

Adding non-linear parts ($DR_{t-j,t}$ and $DR_{t-j,t}\times R_{t-j,t}$)to the above regression allows response coefficients for bad news and good news to be different, which increases the overall explanatory power of economic news to accounting information. All these three measures are denoted as "CONSERV" in the regression tables.

The financial data for measuring conservatism are obtained from Compustat Global Vantage. I delete observations in the top and bottom percentiles for earnings and returns variables, and require each country-year to have at least five observations to allow for a reliable calculation of annual market returns. I also require each country to have at least 400 firm-year observations to run the pooled regression.[28] Table 3.1 lists estimated conservatism measures for each country. Numbers are comparable with those reported in Bushman and Piotroski (2006) but with slightly higher magnitudes, which is consistent with the findings in Roychowdhury and Watts (2007) that asymmetric timeliness measures conservatism more efficiently when it is estimated cumulatively over multiple periods.

[28] In unreported analyses, regression results are not sensitive to this data requirement.

3.3.2 Measures of cost of capital

A. Cost of debt

Interest rate, a proxy for default risk, is widely used as the measure for the cost of debt in the literature (Francis, LaFond, Olsson, and Schipper (hereafter FLOS), 2005; Pittmana and Fortin, 2004). In this paper, one-year-ahead interest rate, calculated as the ratio of a firm's interest expenses at year $t+1$ to average interest-bearing debt outstanding during years t and $t+1$, is used as the primary measure for the expected cost of debt. This measure reflects the average cost of borrowing for both public and private debt and is likely to capture the agency costs for debtholders as a whole. However, interest rate is simultaneously determined by other features of the debt contracts, such as the seniority of the debt, the strictness of the covenants, and the maturity. As such information is not available for global firms, to address this concern, in the robustness analyses, I use credit ratings of new bond issues as an alternative measure for the cost of debt, which is considered as closely associated with the eventual payoff of the interests and principal obligations but less likely to be correlated with other debt features (ABMS, 2002).

Table 3.2 reports the cost of debt (in both nominal and real terms) averaged across time for each country. Brazil has the highest cost of debt in both nominal (0.175) and real (0.108) terms, corresponding to a quite low conservatism level (i.e. with $\beta_2+\beta_3$ 0.108, β_3 0.083, and $IncR^2$ 0.009) as reported in Table 3.1. Because of Japan's low inflation rate, it has the lowest nominal cost of debt (0.030), whereas India has the lowest real cost of debt (0.018).

B. Cost of Equity

I use internal rates of return implied from accounting-based valuation models to measure the expected cost of equity. I adopt four different models as suggested by

Claus and Thomas (2001), Gebhardt, Lee, and Swaminathan (2001), Ohlson and Juettner-Nauroth (2005), and Easton (2004). A detailed description and an empirical implementation of these models are presented in Appendix 3.A. To mitigate biases and measurement errors existing in each model, I use the average of four estimates as the proxy for the cost of equity in the regression analysis (Hail and Leuz, 2006). As suggested by Table 3.3, these four measures R_{CT}, R_{GLS}, R_{OJ}, R_{PEG} and their arithmetic mean R_E are highly correlated with each other. This table also suggests that the measures for the cost of debt and the cost of equity are positively related with each other, with a Pearson correlation coefficient of 0.438.

Table 3.2 reports the average cost of equity (in both nominal and real terms) across time for each country. Again, Brazil has the largest value for both nominal and real terms of the cost of equity (0.314 and 0.229), and Japan has the lowest nominal cost of equity (0.091). Mexico, which has the highest value for $\beta_2+\beta_3$ (0.706) in Table 3.1, has the lowest real cost of equity (0.051). In general, the cost of equity is higher than the cost of debt in each country, reflecting the larger risk premium for equity capital.

3.3.3 Methodology and control variables

I use the following two multivariate regression models to estimate the influence of conservatism on the cost of debt and equity capital, respectively.

$$\begin{aligned}\text{Cost of Debt}_{kt} = {} & \alpha_0 + \alpha_1 \text{Conservatism Measure}_k + \alpha_2 \text{BTM}_{kt} + \alpha_3 \text{LEVERAGE}_{kt} \\ & + \alpha_4 \text{STDRET}_{kt} + \alpha_5 \text{STDEARN}_{kt} + \alpha_6 \text{SIZE}_{kt} + \alpha_7 \text{INTCOV}_{kt} \\ & + \alpha_8 \text{GROWTH}_{kt} + \alpha_9 \text{ROA}_{kt} + \alpha_{10} \text{INF}_{kt} + \alpha_{11} \text{CRED}_k + \alpha_{12} \text{LAW}_k \\ & + \alpha_{13} \text{SECREG}_k + \alpha_{14} \text{FLOW}_k + \alpha_{15} \text{SECREG}_k \times \text{FLOW}_k \\ & + \text{Year Dummies} + \varepsilon_{kt} \end{aligned} \quad (3.4)$$

$$\begin{aligned}\text{Cost of Equity}_{kt} = {} & \alpha_0 + \alpha_1 \text{Conservatism Measure}_k + \alpha_2 \text{BTM}_{kt} + \alpha_3 \text{LEVERAGE}_{kt} \\ & + \alpha_4 \text{STDRET}_{kt} + \alpha_5 \text{STDEARN}_{kt} + \alpha_6 \text{SIZE}_{kt} + \alpha_7 \text{FBIAS}_{kt} + \alpha_8 \text{INF}_{kt} \\ & + \alpha_9 \text{LAW}_k + \alpha_{10} \text{SECREG}_k + \alpha_{11} \text{FLOW}_k + \alpha_{12} \text{SECREG}_k \times \text{FLOW}_k \\ & + \text{Year Dummies} + \varepsilon_{kt} \qquad (3.5)\end{aligned}$$

In the above models, *k* denotes country and *t* denotes year. The reasons for using country-level panel data for the analyses are: (1) one motivation of this study is to explore the variation in country aggregate conservatism, which varies at the country level, not at the firm level; (2) country-year analyses avoid giving undue weight to large countries with many firms (Hail and Leuz, 2006). As is seen in Table 3.2, well-developed economies, such as the U.S., the U.K. and Japan have dominant numbers of firm-year observations in the whole sample. If regressions are conducted at the firm level, the results are likely to be driven by these three countries; (3) firms within the same country are likely to be affected by unknown country factors. However, including country fixed effects in the regressions would over-control for cross-country differences and remove the effects of conservatism, which has a constant value for all the firm-years with the same country.

However, the country-level cost of capital is likely to be serially correlated across time. To address this concern, the standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation (Hail and Leuz, 2006). To further address this concern, as a robustness analysis, I also run the above regressions by using country-level cross-sectional data and the results are unchanged. In the following two subsections, I discuss in detail the control variables used in the above regressions.

A. Firm specific control variables

Beta, book-to-market, firm size and leverage ratio are typically regarded as firm-risk measures (Fama and French, 1992). However, instead of beta, I use return variability (STDRET) in the cost of equity regressions, because the estimation of beta

requires a choice of market portfolio, which is a common difficulty in international studies and depends on the level of market integration (Hail and Leuz, 2006). Return variability is measured as the standard deviation of monthly stock returns over the last 12 months. I define book-to-market (BTM) as the book value of equity divided by the market value of equity, firm size (SIZE) as the natural log of a firm's market value of equity, and leverage (LEVERAGE) as the ratio of interest-bearing debt to total assets. Book-to-market ratio also controls for the difference in accounting rules, such as unconditional conservatism. Earnings variability (STDEARN), measured as the standard deviation of annual earnings divided by total assets over the last five years, captures the volatility of business, and country-year median of earnings variability also captures the variability of macroeconomy (Hail and Leuz, 2006; FLOS, 2005).

For the regressions on the cost of debt, I also include sales growth (GROWTH), interest coverage ratio (INTCOV) and return on assets (ROA) as controls for growth, default risk and profitability, respectively (ABMS, 2002; FLOS, 2005).

To mitigate the mechanical effects of the international differences in analysts' forecasting biases on the cost of equity results, analyst forecasting bias (FBIAS), measured as one-year-ahead analyst forecast made 10-month after current fiscal year-end minus one-year-ahead actual EPS scaled by stock price, is also included in the cost of equity regressions (Hail and Leuz, 2006).[29]

All the firm-specific control variables are measured as country-year medians in the regressions. A detailed description and an empirical implementation of these variables are provided in Appendix 3.B.1.

B. Country specific control variables

[29] This is consistent with the cost of equity calculation, in which I use analyst forecasts made in month +10 after the fiscal year-end.

Since all financial and market data are expressed in nominal terms and in local currencies, the resulting estimates for the cost of capital reflect countries' expected inflation rates (Hail and Leuz, 2006). Therefore, I use one-year-ahead inflation rate as the control for cross-country differences in the expected future inflation.[30]

LLSV (1997) find that the legal origin determines the development of capital markets and Ball, Kothari, and Robin (2000) find that legal origin also shapes the reported accounting numbers. To control for the legal origin, I include a dummy variable CIV_COM indicating that the country has a civil law origin. Hail and Leuz (2006) find that firms from countries with more extensive disclosure requirements, stronger securities regulations and stricter enforcement mechanisms have lower cost of equity capital. Therefore I control for the effectiveness of a country's legal systems and securities regulations by including country-level indices LAW and SECREG. LAW reflects the law and order tradition in a particular country, and is obtained from La Porta, Lopez-de Silanes, and Shleifer (hereafter LLS) (2006). SECREG combines the disclosure requirement index with the liability standards and the public enforcement indices, and is obtained from Hail and Leuz (2006). Creditors with stronger legal rights are better protected, thereby requiring a lower rate of return. Therefore, I include country creditor right index (CRED) in the cost of debt regression analysis. CRED is an index measuring aggregate creditor rights in a country and is

[30] Hail and Leuz (2006) point out that another approach to control for the inflation is to subtract the expected future inflation rates from the cost of capital estimates, and conduct a regression analysis on the resulting inflation-adjusted estimates. However, this approach essentially forces a coefficient of -1 on the inflation proxy. As the market's expectation for future inflation is only imperfectly observable, they prefer to introduce a separate control variable for cross-sectional differences in inflation. This approach lets the data determine the relation between the inflation proxy and the cost of capital estimate. They expect the coefficient to be positive, but smaller than 1, as measurement error is likely to bias the coefficient towards zero. This approach also controls for the real risk-free rate by assuming that the differences in the nominal risk-free rate stem only from differences in expected inflation rates, and that real risk-free rate in a given year is a yearly constant across countries. Therefore, by including inflation rate and year dummies in the regressions, I could control for the time variation in the real risk-free rate. In the robustness analyses in Section 5.1, I also use local nominal risk-free rates to replace inflation rate in the regressions as a control.

obtained from LLSV (1998). The level of capital market integration could also influence the cost of capital. Highly segmented capital markets have less liquidity or higher transaction costs, so investors require a higher return as compensation. On the other hand, in integrated markets, risk is shared and diversified globally, which reduces firms' cost of capital (Karolyi and Stulz, 2003). In addition, Lombardo and Pagano (2002) show that the impacts of law and its enforcement on the cost of capital depend on the degree of capital market integration. In a fully integrated economy, the reduction in managerial diversion of corporate sources obtained from improving the legal environment is entirely reflected in the stock price, with no effect on the cost of capital. In contrast, in an internationally segmented stock market, only a fraction of the benefits materialize in the stock price and the remainder translate into an increase of the expected rate of return. Therefore, in the regressions, I use the level of market integration as a separate control variable and also interact it with securities regulation variable (SECREG)[31]. FLOW, a dummy variable indicating high market integration, is obtained from Hail and Leuz (2006). It equals one if the sum of a country's portfolio inflows and outflows divided by its GDP is above the sample median.

Country-specific variables and data sources are described in detail in Appendix 3.B.2. Table 3.1 lists the value of these variables by country. This table shows considerable variation in these variables. Developed countries, such as Switzerland, Austria, the United Kingdom and the United States, generally have high values for the LAW and FLOW indices, whereas developing countries, such as Indonesia, Mexico and the Philippines, have very low LAW indices, and their capital markets are identified as segmented (FLOW = 0). The United States and Canada have

[31] This approach is consistent with Hail and Leuz (2006).

the strongest securities regulations. The UK and its former colonies, such as Hong Kong and India, have the strongest creditor rights.

3.3.4 Sample selection and data processing

Financial and stock price data are obtained from COMPUSTAT Global Vantage. Analyst forecasts and actual EPS data are obtained from I/B/E/S. The sample selection procedure follows prior studies: I eliminate firm-years if they are listed outside their home country;[32] all items are denominated in local currencies (Hail and Leuz, 2006); when estimating country-level conservatism, I delete observations in the top and bottom percentiles for earnings and returns variables, and require each country to have at least 400 firm-year observations to estimate Equation (3.2) (Ball, Robin, and Sadka, 2008); for the cost of debt sample I eliminate firm-years if the estimated cost of debt value is missing or non-positive (FLOS, 2005); for the cost of equity sample I eliminate firm-years if any of the four measures of implied cost of equity is missing, or if its value is outside the range 0 to 1 (Hail and Leuz, 2006); for both debt and equity samples I eliminate country-years with an inflation rate higher than 25%, to exclude extreme macroeconomic situations (Hail and Leuz, 2006); since I use country-year medians in all the regressions, for both samples, I eliminate country-years with less than five observations to allow for a reliable calculation of annual country median (Hail and Leuz, 2006); for both samples I delete countries without data on control variables.

The final cost of debt (equity) sample has 466 (430) country-year observations or 140,774 (62,292) firm-years covering 31 countries and 16 years, from 1991 to 2006.

[32] Holthausen (2003) argues that, when doing cross-country studies, we should try to control for or eliminate firms that are cross-listed.

3.4 Empirical results

Table 3.4 reports Pearson correlation coefficients between conservatism measures and the cost of capital, as well as institutional variables. Consistent with H1, $\beta_2+\beta_3$, β_3 and $IncR^2$ are negatively correlated with the cost of debt, with Pearson correlation coefficients of -0.210, -0.210 and -0.171, respectively. Consistent with H2, $\beta_2+\beta_3$, β_3 and $IncR^2$ are negatively correlated with the cost of equity, with Pearson correlation coefficients of -0.271, -0.311 and -0.330, respectively.

Although LAW and FLOW are positively correlated with $\beta_2+\beta_3$, β_3 and $IncR^2$, none of these coefficients is larger than 50%. Therefore multicollinearity should not be an issue if both conservatism and these country-level control variables are included in the same regression.

Table 3.5 presents distributional statistics for conservatism and time-variant variables in the cost of debt and equity regressions. All variables show considerable variation in both samples. Statistics for variables BTM, STDRET, FBIAS and INF are very similar to those reported in Hail and Leuz (2006) (Table 3.2). Compared with the cost of debt sample, firms in the cost of equity sample have slightly larger size, probably because analysts are more likely to follow larger firms. Results from estimating Equations (3.4) and (3.5) are reported in Table 3.6.

3.4.1 Cost of debt and conservatism

Table 3.6 reports multivariate regression results for Equation (3.4). The results are consistent with the univariate test results reported in Table 3.4 and the hypothesis that accounting conservatism reduces firms' cost of debt capital (H1). The coefficient on conservatism is negative and significant for all three measures. The coefficient on timely loss recognition ($\beta_2+\beta_3$) is -0.059, indicating that a one standard

deviation increase of $\beta_2+\beta_3$ reduces the nominal cost of debt by 86 basis points. The coefficient on incremental loss recognition (β_3) is -0.053, indicating that a one standard deviation increase of β_3 reduces the nominal cost of debt by 82 basis points. The coefficient on asymmetric timeliness of good news and bad news ($IncR^2$) is negative and has a one-tailed *p*-value of 0.02. Therefore the relation between the cost of debt and conservatism is statistically and economically significant.

For firm-level control variables, leverage ratio, stock return volatility, earnings volatility, and interest coverage ratio are important in explaining the variation of firms' cost of debt. The coefficient on leverage is negative and significant. Although this finding is similar to that in FLOS (2005), previous studies generally find a positive association between leverage and the cost of debt at the firm level. To the best of my knowledge, there is no study predicting a positive relation between leverage and the cost of debt at the country level. Since leverage is an endogenous variable and the majority of its cross-country variation comes from institutional factors, such as bankruptcy codes, the preparation of financial statements and the availability of different forms of financing (Booth, Aivazian, Demirguc-Kunt, and Maksimovic, 2001; Acharya, Sundaram, and John, 2008), a country's leverage ratio is likely to be negatively correlated with its macroeconomic risk. Therefore, it is not surprising to observe a negative coefficient of leverage in country-level cost of debt regressions. Consistent with findings in Hail and Leuz (2006) and FLOS (2005), stock return volatility and earnings volatility have positive and significant coefficients, implying that both firm risk and macroeconomic risk are priced by the debt market. The negative coefficient on interest coverage ratio reflects the positive association between default risk and cost of debt. In contrast, book-to-market, firm size, sales growth and return on assets contribute little to explaining the cost of debt. The

insignificant coefficient on book-to-market ratio is also consistent with its role as a proxy for unconditional conservatism.[33]

Coefficients on country-level control variables show patterns similar to those in previous studies. Inflation rate is positively related with the nominal cost of debt, with coefficients around 0.2 and one-tailed *p*-value 0.01. Civil law countries have lower cost of debt. Countries with stronger creditor rights, more effective legal systems, better securities regulations, and more integrated capital markets have lower cost of debt. The positive coefficient of the interaction term of SECREG and FLOW suggests that the effect of securities regulations becomes smaller in integrated markets.

The adjusted R^2s reported in Table 3.6 are around 50% for all three conservatism measures, indicating substantial explanatory power of the regression model on a country's average cost of debt capital.

3.4.2 Cost of equity and conservatism

Table 3.6 also reports multivariate regression results for Equation (3.5). Results are consistent with univariate test results reported in Table 3.4 and the hypothesis that accounting conservatism reduces firms' cost of equity capital (H2). The coefficient on conservatism is significant at the 1% level (one-tailed *p*-value) for all three measures, and their magnitudes are comparable with those in the cost of debt regressions. The coefficient on timely loss recognition ($\beta_2+\beta_3$) is -0.051, indicating that a one standard deviation increase of $\beta_2+\beta_3$ reduces the nominal cost of equity by 74 basis points. The coefficient for β_3 is -0.042, indicating that a one standard deviation increase of β_3 reduces the nominal cost of equity by 65 basis points. The coefficient on asymmetric timeliness of good news and bad news ($IncR^2$) is -0.374,

[33] Ball and Shivakumar (2005) argue that unconditional conservatism is at best neutral and possibly inefficient in contracting.

indicating that a one standard deviation increase in $IncR^2$ reduces the nominal cost of equity by 82 basis points. Therefore the relation between the cost of equity and conservatism is statistically and economically significant.

Coefficients on control variables show patterns similar to those in the cost of debt regressions. Leverage ratio, stock return volatility, earnings volatility and analyst forecasting bias are important in explaining the variation of the cost of equity. The coefficient on leverage is positive and significant, indicating a higher risk premium for highly leveraged firms. Both stock return volatility and earnings volatility have positive and significant coefficients, implying that firm risk and macroeconomic risk are priced by the equity market. The positive coefficient of analyst forecasting bias suggests that analyst forecast optimism has been incorporated into stock prices. In contrast, book-to-market contributes little to explaining the cost of equity, consistent with its role as a proxy for unconditional conservatism. Although the coefficient on firm size is not significant at the conventional level, its sign and magnitude are consistent with previous studies (e.g., Hail and Leuz, 2006).

The coefficients on the country-specific control variables are consistent with prior studies, and comparable to those reported in the cost of debt regressions. Inflation rate is positively related with the nominal cost of equity, with coefficients around 0.3 and one-tailed *p*-value 0.01. Countries with more effective legal systems, better securities regulations, and more integrated capital markets have significantly lower cost of equity. The effect of securities regulations on the cost of equity is smaller in integrated markets. The magnitudes of coefficients on SECREG, FLOW and SECREG×FLOW are very similar to those reported in Hail and Leuz (2006) (Table 7).

The adjusted R^2s reported in Table 3.6 are around 47% for all three conservatism measures, indicating substantial explanatory power of the regression model on a country's cost of equity capital.

3.5 Robustness analyses

In this section I conduct a battery of robustness analyses. First, I use several alternative proxies to measure both the cost of capital and conservatism. Second, I address the concern of correlated omitted variables. Next, I check whether the results are sensitive to the sample composition. Last, to address the concern about serial correlation, I conduct cross-sectional regressions with only 31 country-level observations.

3.5.1 Alternative measures for cost of capital

A. Bond credit ratings

In Section 3.3.2, I use realized interest rate as the proxy for the cost of debt, and this approach has several drawbacks. First, realized interest rate measures historical cost of debt and is influenced by the amortization rate and firm age. Therefore, it is not a current market measure for the cost of debt. Second, interest rate is also affected by the underlying structure of debt, such as the maturity and the seniority. Third, it is a noisy proxy for a firm's interest rate.[34] As the analyses in this paper are conducted at the country level, where the cost of debt is measured as country-year medians, extreme values should not be a concern. In addition, by using regressions with year fixed-effects, the year dummies are likely to capture the existing time trend for the changes in the interest rate. Furthermore, since the conservatism

[34] For example, Pittmana and Fortin (2004) argue that the data need to be trimmed at the 5th and 95th percentiles to address the extreme observations.

measure is a country-specific variable which does not vary across time and the focus of this paper is to examine the impact of a country's conservative financial reporting system on the borrowers' agency cost of debt on average, using historical cost of debt is unlikely to bias the results. In the last part of this section, I also run cross-sectional regressions, where the cost of capital measures are averaged cross time and the results are still unchanged.

Nevertheless, to further address the above concerns, I use debt ratings on new bond issues as the alternative measure for the cost of debt. Prior literature shows that credit ratings are closely related with the cost of debt (Ziebart and Reiter, 1992; Hand, Holthausen, and Leftwich, 1992) and also widely uses debt ratings as a proxy for firms' cost of debt (e.g., ABMS, 2002). I collect data on new bond issues during the sample period for all the sample countries from Thomson Deal (former SDC) database. Due to the limited coverage of deals outside the United States by Thomson Deal, the final sample only has 4,267 firm-year observations representing 280 country-year observations from 30 countries.[35] I use Standard&Poor's bond ratings at the time of offering as the primary source and use Moody's rating to fill in the missing values. The bond ratings are further transformed into numeric scores, with values ranging from 1 (AAA) to 21 (C). The average rating scores by country are reported in Table 3.1. Austria, Denmark, Spain and Japan have low rating scores, suggesting low cost of debt, and Indonesia, Brzail and Philippines have high rating scores, suggesting high cost of debt. The ratings range from 1 (AAA) to 17 (CCC+ or Caa1) for the whole sample, with a mean of 7.6 (between A- and BBB+) and a median of 8 (Panel A, Table 3.5). The rating scores are positively correlated with the interest rates, with a Pearson correlation coefficient of 0.238 (Table 3.3).

[35] The data on new bond issues are missing for firms in South Africa.

The results from the univariate test in Table 3.4 and the OLS regression analysis in Table 3.7 are similar to those using realized interest rate as the proxy for the cost of debt.[36] Despite the smaller sample size, the R^2s reported in Table 3.7 are smaller than those reported in Table 3.6, probably because debt rating is a rather indirect measure for the cost of debt, compared with the interest rate.

B. Ex post stock returns

Several papers have criticized using accounting-based proxies imputed from prices and contemporaneous analysts' earnings forecasts to measure the expected returns. Easton and Monahan (2005) find that these proxies are unreliable and none of them has a positive association with the realized returns even after controlling for changes in expectations about future cash flows and future discount rates. Guay, Kothari, and Shu (2005) find that as analysts do not incorporate information in stock prices in a timely manner, sluggish analyst forecasts usually result in downward (upward) biased cost of capital estimates following large positive (negative) stock returns. As the analyses in this paper are based on country-level variables, the above problem is less severe and could be mitigated by controlling for analyst forecasting bias (FBIAS) in the regressions. Botosan and Plumlee (2005) find that the R_{PEG} estimate is associated with firm risk in a stable and meaningful manner and recommend it as a firm-level measure for the expected cost of equity capital. In unreported tests, I replace R_E with R_{PEG} in the regressions and get similar results.

Another potential concern with the implied cost of equity proxy is its correlation with conservatism by construction. As conservative financial reports depress forecasted earnings, they also introduce downward biases to the cost of equity

[36] Previous literature generally uses ordered Logit model for regressions using numeric debt ratings as the dependent variable. Since country-year medians of debt ratings are not always ordinal numbers, I use OLS model for the regressions.

estimates. To address this concern, I use the ex post stock returns (R_{Ret}), which do not depend on analyst forecasts, as the alternative measure for the cost of equity. R_{Ret} is measured as one-year-ahead realized buy-and-hold stock returns, adjusted for stock splits and dividends. To have a meaningful proxy for the cost of capital, and to be consistent with R_E, I require realized stock returns to be in the range 0 to 1, which reduces the sample size to 307 country-years.

The average realized stock returns by country and the distributional statistics for R_{Ret} are reported in Tables 3.1 and 3.5, respectively. Compared with R_E, R_{Ret} has larger mean, median and standard deviation. The correlation matrix reported in Table 3.3 suggests very small positive correlations between realized returns and the implied cost of equity estimates, consistent with the findings in Easton and Monahan (2005) and Guay, Kothari, and Shu (2005). Nevertheless, both univariate (Table 3.4) and multivariate test (Table 3.7) results suggest that realized stock returns are negatively associated with conservatism. Moreover, in Table 3.7, the magnitudes of the coefficients on conservatism variables are larger than those reported in Table 3.6, with one standard deviation increase of $\beta_2+\beta_3$ reducing the realized return by 150 basis points.

C. Country credit risk

I also use country risk indices as an alternative proxy for the cost of capital. Country credit risk score (R_{Credit}) measures the overall risk assessment of the political and macroeconomic environment within a country. Country financial risk score ($R_{Financial}$) measures the risk of financing and accessing capital markets within a country. The data are obtained from the EIU Market Indicators and Forecasts database. Because of limited data availability of these indices, the sample is further reduced. Nevertheless, the results still hold.

The results obtained from Regression (3.4) by using country risk indices are presented in Panel A of Table 3.8. For brevity, only the coefficients and *p*-values on conservatism measures, as well as sample size and adjusted R^2s are reported. Coefficients on both $\beta_2+\beta_3$ and β_3 are negative and significant at the 1% significance level.

D. Risk-free rate

Although it is the common practice to assume that differences in the nominal risk-free rate stem only from differences in expected inflation rates, and that the real risk-free rate in a given year is a yearly constant across countries (Hail and Leuz, 2006), it is likely that local real interest rates differ across countries. Therefore, to check the sensitivity of the results, I replace the expected inflation rates in the regressions with the local nominal risk-free rates using the money market interest rates provided by EIU country database. As EIU analysts use different rates for different countries, this proxy might be noisy. Nevertheless, the results as reported in Panel B of Table 3.8 are unchanged.[37] Conservatism variables continue to be negative and significant, with one-tailed *p*-values ranging from 0.00 to 0.02, although the magnitudes of the coefficients are slightly attenuated compared with those in Table 3.6.

3.5.2 Alternative measures for conservatism

A. Alternative cumulating horizon

[37] For most of the countries, EIU analysts use a 3-month interbank offer rate or a 3-month Treasury bill rate as the risk-free rate. However, for certain countries, they use other types of interest rates. For example, the weighted average rate paid on loans between financial institutions involving firm sales of or repurchase agreements based on federal securities in the Special Settlement and Custody System is used as the money market interest rate for Brazil and the money market overnight closing rate is used for Hong Kong.

Roychowdhury and Watts (2007) argue that the expected slope coefficients in Basu's (1997) model depend on the intervals over which stock returns and earnings are measured, and conservatism is estimated more efficiently over longer intervals. Whereas in the main analyses I use a two-year window for both stock returns and earnings to estimate conservatism, here I re-estimate Equation (3.2) over different intervals. Table 3.9 reports results from regressions (4) and (5). For brevity, I tabulate only the coefficients and *p*-values for conservatism measures, as well as adjusted R^2s and sample size. Cumulating horizon j = 0, 1, 2, 3 indicates that $\beta_2+\beta_3$ and β_3 are measured by using stock returns and earnings over one-, two-, three- and four-year windows, respectively.

Coefficients on both measures are negative under all cumulating windows, and statistically significant under all but one scenario. There is no clear pattern on these coefficients, as the cumulating horizon varies. However, the explanatory power (adjusted R^2) of the regression model increases as the cumulating interval becomes larger, probably because of the decreasing sample size.

B. Non-price-based model

As noted by Bushman and Piotroski (2006), another concern about Basu's (1997) model is its reliance on the assumption that price changes reflect economic gains and losses, and that the price formation process is equally efficient across all markets. However, in reality, the price formation process is likely to differ across countries. Ball and Shivakumar (2005) estimate accounting conservatism without relying on market data. Their model is specified as follows:

$$\text{ACCRUALS}_{i,t} = \beta_0 + \beta_1 \times \text{DCFO}_{i,t} + \beta_2 \times \text{CFO}_{i,t} + \beta_3 \times \text{DCFO}_{i,t} \times \text{CFO}_{i,t} + \varepsilon_{i,t} \ . \qquad (3.6)$$

$\text{ACCRUALS}_{i,t}$ is firm i's accruals at year t, deflated by the beginning of period market value of equity; $\text{CFO}_{i,t}$ is firm i's operating cash flow deflated by the

beginning of period market value of equity; the dummy variable $DCFO_{i,t}$ equals 1 if $CFO_{i,t}$ is negative, and 0 otherwise. β_2 is expected to be negative, owing to the negative association between cash flows and accruals by definition. Positive β_3 suggests timely loss recognition. Owing to the large magnitude and negative sign of β_2, $\beta_2+\beta_3$ is usually negative. Therefore I use only β_3 as the measure for conservatism, as well as the alternative measure $IncR^2$, defined as the adjusted R^2 from regression (6) minus the adjusted R^2 from the regression:

$$\text{ACCRUALS}_{i,t} = \beta_0 + \beta_1 \text{CFO}_{i,t} + \varepsilon_{i,t}. \quad (3.7)$$

The regression results by using the above non-price-based conservatism measures are qualitatively similar as before, and are reported in Table 3.10. The coefficient on β_3 is negative and significant at the 1% level (one-tailed *p*-value) for both the cost of debt and the cost of equity regressions. The coefficient on $IncR^2$ is significant at the 1% level for the cost of equity regression, and at the 5% level for the cost of debt regression. Coefficients on other regression variables are comparable to those reported in Tables 3.6.

As pointed out by Bushman and Piotroski (2006), this non-price-based model also has limitations. For example, it relies on the assumptions that the cash flow implications from a current news event are present in the current year and are persistent, and that operating cash flow is unbiased. However, the consistent results across these two models and over different intervals alleviate concerns about the potential errors and biases associated with a particular model.

3.5.3 The issue on potentially correlated omitted variables

Due to the concern of multicollinearity and small degrees of freedom, so far I only include control variables that have been identified by previous literature as

influencing the cost of capital. In this section, I discuss variables that are not controlled in the regressions, but could be potentially correlated with both conservatism and cost of capital.

Prior literature shows that the size of equity or debt market and GDP per capital could influence conservatism (Ball, Robin, and Sadka, 2008). Therefore, I use the ratio of debt market capitalization to GDP as a control for the size of debt market (DEBTMKT) in the cost of debt regression, the ratio of the equity market capitalization to GDP as a control for the size of equity market (EQUITYMKT) in the cost of equity regression and the natural log of GDP per capital in both regressions. In addition, the accessibility of equity market (ACCESS) may also reduce the cost of equity capital.

Bushman and Piotroski (2006) show that a country's legal/judicial system, securities laws, political economy and tax regime generate incentives that influence the conservatism level of its reported accounting numbers. To address the concern that these institutional structures may potentially influence a country's cost of capital, I further include these controls in the regressions. CIV_COM has already been included in the regression as an indicator for the legal origin of the country, and it is also used as a proxy for the extent of investor protections under law. The variable JUDIMP measures the quality of the judicial system and captures whether a trusted legal framework exists for private business to challenge the legality of government actions or regulation. A motivated public enforcer could elicit honesty from issuers. Therefore public enforcement (PUBLENF) represents an important dimension of securities laws. Both RISKEXP, the proxy for the risk of outright confiscation of firms' wealth or forced nationalization by the state, and SOE, the share of country-level output supplied by state-owned enterprises, measure government involvement in

markets. TAXBURN measures the tax burden of a country. PRIVDEBT proxies for the prevalence of debt financing in a country. Both BANKMKT and OWNCONC are used as proxies for the prevalence of internal monitoring arrangements. Finally, ITENF, the enforcement of insider trading laws, has been documented as associated with the reduction of the country-level cost of capital (Bhattacharya, Daouk, and Welker, 2003).

After controlling for the above variables, the regression results become even stronger (Table 3.11), with one standard deviation increase of $\beta_2+\beta_3$ reducing the cost of equity by 146 basis points. As the effect of these institutional variables on the cost of capital is not of interest in this paper, I omit the discussion on their regression coefficients for brevity.

3.5.4 The issue on sample composition

The sample selection procedure requires at least five firms in a country and at least 400 country-year observations for that country to be included in the sample. Although this data selection process has been used in previous studies, it is rather subjective. To mitigate the likelihood that the results are driven by a specific sample of firms, I adopt conservatism measures directly from Ball, Robin, and Sadka (2008) in the regressions.[38] This data requirement reduces the final cost of debt (equity) sample to 336 (312) country-year observations covering 22 countries. The regression results as reported in Table 12 are qualitatively similar to those reported earlier.

Coefficients on conservatism measures $\beta_2+\beta_3$ and β_3 are negative and significant in both the cost of debt and the cost of equity regressions.[39] Coefficients on

[38] Ball, Robin, and Sadka (2008) follow a stricter sample selection procedure. They require each country-year to have at least 25 firms, and discard Hong Kong, Switzerland, and Taiwan.
[39] As Ball, Robin, and Sadka (2008) do not use $IncR^2$ to measure conservatism, the analyses in this section are based only on $\beta_2+\beta_3$ and β_3.

other variables are comparable to those reported in Table 3.6. The adjusted R^2s are higher than before, because of the smaller sample size.

3.5.5 Cross-sectional regressions

To address the issues that country-year regression analyses give undue weight to countries with a longer sample period, that conservatism and other institutional variables are time-invariant, and that a country's cost of capital is serially correlated, I conduct cross-sectional regression analyses based on 31 country-level observations, where regression variables are average across time. The results are reported in Table 13. Due to smaller sample size, the statistic significance for most of the regression variables is smaller than that in the pooled regressions. Nevertheless, the magnitudes of coefficients on conservatism in the cost of debt regression are only slightly smaller than before, and those in the cost of equity regression are even larger.

In summary, analyses in this section show that the main results of this study are robust and generally support the conclusion that firms in countries with more conservative financial reporting systems have lower cost of debt and equity capital.

Chapter 4: Corporate governance and lender governance

4.1 Introduction

Debtholders own fixed claims which are exposed mainly to downward risks and are more senior compared to the residual and limited liability claims of stockholders. As a result, debtholders and stockholders may have diverging views on corporate governance. For instance, relative to debtholders, equity holders generally prefer corporate governance structures which allow higher dividends and stock repurchases, riskier investment projects, and financing new investment projects with additional debt. These actions expropriate debtholders' wealth and increase the riskiness of their claims (e.g., Jensen and Meckling, 1976). In order to reduce these risks, debtholders may explicitly embed protective covenants in their lending agreements and limit borrowers' opportunistic behaviour ex ante.[40]

While a form of debtholder-driven corporate governance through debt restrictions can mitigate the impact of debtholder-shareholder conflicts, it may come with significant costs to debtholders. First, overly restrictive covenants ex ante could reduce operating flexibility and may preclude managers from undertaking investment projects which maximize the value of the firm ex post. Consequently, debtholders could inadvertently contribute to a decrease in the value of their own investments. Second, writing and enforcing debt covenants is costly and monitoring activities involving significant information collection efforts can be quite inefficient. For instance, dispersed ownership in a debt issue makes information acquisition and monitoring activities very costly, in relative terms, for the marginal debt investor. Third, covenants can provide little protection to debtholders against unanticipated

[40] Debtholders can also limit the wealth destroying effects of expropriation and asset substitution by simultaneously owning debt and equity. In this paper, we do not investigate this alternative.

events. Ex ante, debtholders cannot address the entire range of contingencies through covenants since that would make the debt contract extremely complex. Finally, each covenant generates additional pre-payment risk to debtholders. When covenants are tripped and the firms return the amounts borrowed back, debtholders need to redeploy their funds at short notice. Finding alternative investment opportunities that provide similar returns over the same investment horizon may prove difficult.

Therefore, we expect that debtholders will trade off the corporate governance mechanisms in place with the extent and strictness of covenant requirements they demand in debt contracts.[41] In particular, we expect governance mechanisms not only to limit managers' ability to shirk, consume private benefits or make suboptimal investments to build empires but also to monitor the value of the debt collateral, enforce covenants and supply high quality accounting information to creditors.[42] If corporate governance provides debtholders with these benefits then it should be associated with fewer restrictions in debt contracts.

Our empirical investigation analyzes separately the presence of covenants in bond and syndicated bank loan contracts. These two sets of debtholders receive differential access to information. While banks can use both public and private information sources through their long term relationships with borrowers, bondholders rely solely on public sources of information. Hence, we expect that banks and bondholders require different sets of covenant protections which may have distinct relationships with corporate governance mechanisms.

[41] Smith and Warner (1979) suggest that debtholders also use the price of the firm's debt to reflect difficulties associated with suboptimal covenant packages. In our empirical tests, we control for this substitute contracting mechanism as well as for other debt contracting features.

[42] Beasley (1996), Dechow, Sloan, and Sweeney (1996), Carcello and Neal (2000) and Klein (2002) among others, document a relation between board characteristics and the quality of the accounting information reported. Sengupta (1998) finds a negative association between the quality of corporate disclosure and the bond yields, suggesting that governance mechanisms can affect borrowing costs indirectly through a reduction in information asymmetry.

We examine the role of corporate governance on the presence of restrictions in debt contracts using a broad array of corporate governance proxies. As argued by Larcker, Richardson, and Tuna (2007), researchers still do not have a proper understanding of the measurement properties for the indicators of corporate governance or of the number of dimensions (or constructs) that are necessary to provide a comprehensive assessment of corporate governance. Using data from Equilar and IRRC over the time period 1997 to 2006 and employing an exploratory Principal Component Analysis, we compute indicators of corporate governance for a large sample of firms with public bond and syndicated loan contracts available. These indicators focus on corporate governance resulting from two sources of monitoring – board governance and shareholder governance.[43] We capture the first source with board size, independence and expertise. With respect to shareholder governance, we consider monitoring by block holders and activist shareholders

For our sample of 3,306 observations that represent public bond contracts, we find that board size and board independence are negatively associated with the restrictions in debt contracts. Similarly, for our sample of 5,011 syndicated loan contracts, we find that board characteristics such as size, independence and expertise are negatively associated with debt restrictions. The negative association between the restrictiveness of debt contracts and the quality of board governance structures in place suggests that corporate governance mechanisms traditionally viewed as mitigating the agency conflicts between shareholders and managers also play a role in mitigating the conflicts between shareholders and creditors. These results hold after controlling for relevant determinants of debt contracting features documented by prior literature (e.g., Ball, Bushman, and Vasvari, 2008; Sufi, 2008). We also find that the

[43] In reported sensitivity tests, we also include controls for the executive compensation mix and anti-takeover provisions as additional dimensions of corporate governance and the results are similar.

number of restrictions is positively associated with block holder governance in public bond contracts but not in syndicated bank loan contracts. Strong shareholder power exacerbates the conflicts between debtholders and shareholders. However, these agency problems are resolved differently by the two sets of debtholders. Bondholders specify ex ante contractual restrictions while banks use alternative private monitoring mechanisms, beyond covenants.

Our paper contributes to the literature along several dimensions. First, we contribute to the literature that investigates the design of debt contracts. Existing studies generally focus on a single contract based restriction. For example, El-Gazzar and Pastena (1991) explore factors affecting the presence and initial tightness of accounting-based covenants in private debt contracts and find that the borrower's leverage ratio, loan maturity and the use of collateral are important determinants. Cook and Easterwood (1994) examine the presence of a poison put covenant in public debt contracts and find that the issuance of poison put debt protects managers and bondholders, at the expense of stockholders.[44] To the best of our knowledge, our study is the first one to examine a comprehensive set of restrictions present in both public bonds and syndicated bank loans and how that is affected by the quality of enforcement provided by corporate governance structures. Second, prior literature has analyzed the effect of corporate governance on debt yields and implicitly on the value of debt claims. Papers such as Warga (1997), Bhojraj and Sengupta (2003), Klock, Mansi, and Maxwell (2005), Anderson, Mansi, and Reeb (2005) and Ashbaugh-Skaife, Collins, and LaFond (2006) examine the relation between bondholder wealth and corporate governance and find a negative relation between various corporate

[44] In addition, Begley and Feltham (1999) examine the association between the use of covenants restricting dividends and additional borrowing in public senior debt contracts and managerial incentives. Frankel, Seethamraju, and Zach (2008) examine the association between the borrower's goodwill and the presence of net-worth covenants in private lending agreements.

governance measures and the debt yields or credit ratings.[45] Our analysis investigates the role of corporate governance on another important contracting mechanism that is available to debtholders, covenant restrictions. We are not aware of any empirical evidence on the extent of complementarity between firm level corporate governance structures and debt contract level corporate governance tools. Furthermore, results of prior research that investigates the effect on the value of debtholders' claims are consistent with an alternative explanation that the observed relation between corporate governance and debt yields is driven by firm performance.[46] By investigating the presence of covenant restrictions in debt contracts, which are less likely to be driven by firm performance, the results of our paper are not subject to the same criticism.

The rest of this chapter is organized as follows. Section 4.2 reviews the literature. Section 4.3 describes the data. Section 4.4 discusses the main results, and Section 4.5 discusses the results for robustness analysis.

4.2 Literature review

In this paper we examine whether the debt contract terms, namely the restrictions in debt contracts, are designed as a function of corporate governance mechanisms in place at the borrowing firm. Earlier research such as Bhojraj and Sengupta (2003) and Anderson, Mansi, and Reeb (2004) find that the cost of debt is lower for companies with higher board independence, and Ashbaugh-Skaife, Collins, and LaFond (2006) find that credit ratings are positively associated with board independence, the proportion of directors that hold company stock, and the proportion of directors that have board seats at other companies. However, to the best of our

[45] Cremers, Nair, and Wei (2007) find that corporate governance that mainly serves shareholders can either increase or decrease bondholder risk. They are the first to document that corporate governance can have divergent and economically important effects on bondholders.

[46] One could argue that corporate governance improves the quality of managerial decision-making and leads to better firm performance. In turn, better firm performance lowers the yield spreads.

knowledge, the potential effect of corporate governance on the restrictiveness of debt contracts has not been studied in the prior literature.

Bhojraj and Sengupta (2003) define two types of risk that creditors are concerned about when designing the debt contract. Creditors aim to protect themselves from agency risk, namely the risk that the manager will behave in a way that is inconsistent with the interests of the creditors, via the use of covenants or other restrictions in debt contracts. These restrictions limit the managers' ability to make unprofitable investments to grow the size of the company (Murphy, 1985), and alleviate horizon problems (Dechow and Sloan, 1991), under which managers trade off short-run profits with long-run returns. To the extent that creditors perceive the corporate governance mechanisms in place to be useful in reducing the agency risk, restrictions in debt contracts and corporate governance mechanisms can be viewed as substitutes. If this is the case, we expect the debt contracts to be less restrictive for borrowing firms characterized by better monitoring of the agency risk via the corporate governance mechanisms in place.

Creditors also aim to protect themselves from information risk, namely the risk that managers may have private information about the probability of default. Sengupta (1998) documents that bond ratings are higher and bond yields are lower for companies with higher disclosure ratings. This finding indicates that concerns about information risk also play a role in the design of debt contracts. Therefore, to the extent that corporate governance mechanisms mitigate information risk, we expect creditors to place fewer restrictions in debt contracts for borrowing firms with better corporate governance mechanisms in place.

However, the conventional emphasis on corporate governance design seems to be on the protection of the interests of shareholders. For example, the board has a

fiduciary duty to ensure that management behaves in line with the interests of shareholders. Although it is not clear whether the board will ensure that the management also behaves in line with the creditors' incentives, or whether the alignment between the management and the shareholders exacerbates the agency conflicts between the creditors and the shareholders, empirical evidence discussed above (e.g., Bhojraj and Sengupta, 2003) suggests that creditors perceive the governance mechanisms in place as useful monitors of the management's actions as evidenced by the lower bond yields. In this paper, we directly test whether creditors view corporate governance mechanisms as substitutes to their own monitoring by examining whether debt contracts contain fewer restrictions for companies with certain corporate governance characteristics.

We study private lending contracts separately from bond contracts. Banks, by virtue of their exclusive relationship with borrowers, have access to private information and therefore are less exposed to adverse selection and moral hazard problems (e.g., Leland and Pyle, 1977; Diamond, 1984). They also have strong links with borrowers through cash management or advisory activities. Because of this informational advantage, banks are better able to monitor borrowers and renegotiate loan agreements at a lower cost if necessary. Hence, bank loans usually come with elaborate sets of affirmative and negative covenants covering everything from minimum cash receipts to timely delivery of audited financial statements. When a covenant is breached, the bank is able to exercise de facto control rights such as replacing the CEO of the company, restructuring the company or imposing restrictions on further borrowings and investment activities (e.g., Roberts and Sufi, 2008; Nini, Sufi, and Smith, 2009; Baird and Rasmussen, 2008; DeFond and Jiambalvo, 1994). As a result, we expect restrictions in bank lending contracts to be

less affected by the quality of borrowers' corporate governance mechanisms in place.

On the other hand, bondholders typically do not have access to private information and the dispersed ownership structure makes bond contract renegotiations very costly. In general, they can do little until a corporation defaults on debt payments or violates a covenant. Thus, bond contracts tend to have fewer covenant restrictions, especially financial ones, and those available tend to cover mainly event risks such as additional borrowings, changes in ownership or cash payouts to shareholders. Bondholders are less likely to play an active role in the governance of the corporation and, instead, are expected to rely more on the quality of the corporate governance mechanisms in place. As a result, we predict that the substitute relation between the restrictiveness of debt contracts and the strength of the borrowers' corporate governance to be more pronounced in the context of public bonds.

As documented in Larcker, Richardson, and Tuna (2007), corporate governance is a difficult construct to measure. Furthermore, there is no clear theory that would allow us to focus on specific governance mechanisms that facilitate the resolution of agency conflicts between shareholders and creditors. Therefore, we take an agnostic approach to our analysis and focus on corporate governance resulting from two sources of monitoring in our main analyses – board governance and shareholder governance.[47] In order to capture the first source, we consider three board characteristics: board size, board independence, and board expertise.

The relation between board size and corporate governance quality is ambiguous. On one hand, large boards are often associated with better monitoring capacities. For example, Baranchuk and Dybvig (2009) argue that the diverse

[47] This is a research design choice that maximizes the number of observations we can use in our analyses. As discussed later in the paper, for our robustness tests, we also include governance measures resulting from executive compensation and anti-takeover provisions and find similar results.

preferences and new information that extra directors bring to the board improve the monitoring performance. One the other hand, associated costs, such as slower decision-making, less-candid discussions of managerial performance, and biases against risk-taking, could potentially make large boards less effective (e.g., Lipton and Lorsch, 1992; Yermack, 1996).

Board independence is generally regarded as positively associated with the quality of corporate governance for debtholders. For example, Bhojraj and Sengupta (2003) find that the proportion of outside directors is positively associated with bond ratings and negatively associated with debt yields. Ashbaugh-Skaife, Collins and LaFond (2006) also document a positive relation between the percentage of outside independent directors in the board and firms' credit ratings.

Finally, boards comprised of members who are more competent or knowledgeable are likely to be more capable of monitoring and preventing the borrowers from defaulting. For example, Fama and Jensen (1983) argue that multiple board appointments can signal director quality and the appointment to numerous boards might be the result of the superior performance enjoyed earlier by the firm for which the individual serves as a director or as an executive. Consistent with this reputation effect argument, Ferris, Jagannathan, and Pritchard (2003) find that firm performance has a positive effect on the number of appointments held by a director. From a debtholder's perspective, Ashbaugh-Skaife, Collins, and LaFond (2006) find that the percentage of outside board members that sit on boards of other companies is positively associated the firm's credit rating. However, one could also argue that busy directors are less effective monitors. Fich and Shivdasani (2006) find that firms with busy boards exhibit lower market-to-book ratios, weaker profitability and lower sensitivity of CEO turnover to firms' performance.

In order to capture the second source, namely shareholder governance, we consider two types of governance from shareholders: monitoring by block holders and monitoring by activist shareholders. Concentrated ownership is typically regarded as a good governance mechanism, as institutional shareholders play an active role in monitoring management's behaviour. However, powerful shareholders may exercise undue influence over management, such as forcing managers to take risky investments or paying out excessive dividends, which adversely affects debtholders' wealth (Shleifer and Vishny, 1997; Bhojraj and Sengupta, 2003). For instance, Ashbaugh-Skaife, Collins, and LaFond (2006) find that the number of block holders and institutional owners are negatively associated with firms' credit ratings.

As there is no clear theoretical prediction on whether existing corporate governance mechanisms alleviate or exacerbate agency conflicts between shareholders and creditors, and if so which governance mechanisms are more effective in the resolution of the conflicts, we tackle this question empirically. Assuming that debt contracts are efficient, we analyze the restrictions in debt contracts in conjunction with the borrower's corporate governance in place, and infer from the results which governance mechanisms the creditors deem useful in alleviating the agency conflicts with the shareholders. We discuss our methodology in the next section.

4.3 Data

We use four categories of data in this paper. Below, we discuss each of these categories in detail.

4.3.1 Public bonds

We obtain the data for public bonds from Mergent Fixed Income Securities Database (FISD). FISD is a comprehensive database providing issue-level

information on covenants and other features for publicly traded bonds in the United States. We use the total number of debt contract restrictions, including bondholder protective covenants, issuer restrictive covenants, and the presence of put, convertibility and asset-backed features, as the primary measure for the restrictiveness of public bond contracts. Both bondholder protective and issuer restrictive covenants are designed to protect bondholders by limiting issuers' ability to take opportunistic actions against bondholders' interests. For example, a negative pledge covenant limits the borrower's ability to issue additional secured debt, which may dilute the claims of existing bondholders. Covenants on investments, dividends and asset sales prevent issuers from transferring wealth from bondholders to shareholders through risky investments, excessive cash payouts or asset substitution. The presence of put, convertibility and asset-backed features provides bondholders extra protections against the issuer's value-destroying behaviour. For example, a put feature provides bondholders with the option to sell the bonds back to the issuer at a specified price and time. The convertibility feature gives bondholders the option of converting the bonds into common stocks, thus allowing them to participate in the upside of the issuing company and increasing their returns. The asset-backed feature provides bondholders with unrestricted claims to the ownership of the pledged assets, and therefore lowers their risk by improving the recovery of their claims if liquidation is necessary.

In robustness analysis, we also use the number of covenants and a covenant index developed using Principal Component Analysis on individual covenants as alternative measures for restrictions in public bond contracts.

4.3.2 Syndicated bank loans

We obtain the data for syndicated bank loans from DealScan. Similar to public bonds, we retrieve information on covenants and other features for syndicated loans issued by non-financial public firms in the United States. One special characteristic of syndicated loans is that they are usually structured in packages of multiple loans with different maturities and repayment schedules. However, loan agreements within the same package (or deal) are typically attached with the same set of covenants and other restrictive features. Therefore, our measures for the restrictions in syndicated loan contracts are calculated at the package level and, consistent with prior research, we use the characteristics of the largest facility within each package as additional controls in our empirical tests (e.g., the loan spread, maturity, or size). We use the total number of restrictions which include financial and general covenants, the presence of a performance pricing provision and the presence of a secured feature, as the primary measure for the restrictiveness of syndicated loan contracts. In robustness analyses, we also use the number of covenants and the number of financial covenants as alternative measures for the restrictions in syndicated loan contracts.

Similar to covenants in public bond contracts, both financial and general covenants in syndicated loan contracts are designed to protect lenders' interests. For example, mandatory prepayment covenants, such as asset sale sweeps, debt issuance sweeps and equity issuance sweeps, require that proceeds from selling assets and issuing new debt and equity be used to repay the outstanding senior bank debt. Financial covenants, such as minimum interest coverage ratio and maximum debt to

net worth ratio, prevent the borrowers from deviating too far from the interests of lenders by establishing financial performance benchmarks.[48]

The performance pricing provision links interest rates to the change in borrowers' credit quality (either captured by credit ratings or by an accounting ratio) and thereby mitigates the adverse selection and moral hazard problems by allowing ex post settling up (e.g., Asquith, Betty, and Weber, 2005). Similar to asset-backed bonds, secured syndicated loans protect lenders through unrestricted claims to the ownership of the pledged assets.

4.3.3 Corporate governance mechanisms

In our main analysis, we focus on two sources of corporate governance – board governance and shareholder governance. We obtain data for board characteristics from Equilar and IRRC and data on institutional ownership from Thomson-Reuters Institutional (13f) Holdings.

A. Board governance

We measure board governance from three aspects: (1) board size; (2) board independence; and (3) board expertise.

Our board size variables are the total number of directors serving on the board (*#Directors*), the number of directors serving on the audit committee (*#AC*) and the number of directors serving on the compensation committee (*#CC*). More directors

[48] To check the quality of the covenant data provided by DealScan, we manually collect information on financial covenants for a sub-sample of syndicated loan contracts. Based on our analysis, we conclude that DealScan does a reasonable job in recording the presence of a certain covenant, although misclassification of a particular covenant type exists occasionally. However, this misclassification does not have any impact on our analysis as our restriction measures are based on the total number of covenants included in the contract. Consistent with the findings of Nini, Smith, and Sufi (2009), we also observe that DealScan significantly understates the frequency of capital expenditure covenants, which are often written in a separate section in the loan agreements from the main group of "financial covenants". In unreported analyses, we replace the number of financial covenants provided by DealScan with the number we get based on our manual collection process and find that our results are not affected.

serving on the board or on the audit and/or compensation committees indicate a larger board size.

We use several measures commonly used in the literature to capture board independence (we code them as inverse measures of board independence): the percentage of the board comprised of inside directors (*%Board Inside*), the percentage of the audit committee comprised of affiliated directors (*%AC Affiliated*), the percentage of the compensation committee comprised of affiliated directors (*%CC Affiliated*), a dummy variable indicating that the chairperson of the audit committee is affiliated (*AC Chair Affiliated*), a dummy variable indicating that the chairperson of the compensation committee is affiliated (*CC Chair Affiliated*), a dummy variable indicating that an insider holds the position of chairperson of the board (*Insider Chairman*), the percentages of outside and affiliated directors who were appointed by existing insiders (*%Outsiders Appointed* and *%Affiliated Appointed*), the percentages of outstanding shares held by the average outside, affiliated and inside directors (*%Outsider Own*, *%Affiliated Own*, and *%Insider Own*), and the percentages of outstanding shares held by the average top and non-top executive directors (*%Insider Top Own* and *%Insider Non-top Own*). The presence of inside and/or affiliated directors on the board and various committees, the presence of a dual CEO-Chairperson, the presence of outside and/or affiliated directors who have been appointed by incumbent management, and the stock holdings of directors are argued as compromising the independence of the board/committee (e.g., Klein, 1998; Yermack, 1996; Larcker, Richardson, and Tuna, 2007).

We use the percentages of outside and affiliated directors who serve on four or more boards (*%Outsiders Busy* and *%Affiliated Busy*), the percentage of inside directors who serve on two or more boards (*%Insiders Busy*), and the percentages of

outside, affiliated, and inside directors who are older than 70 years (*%Outsiders Old*, *%Affiliated Old* and *%Insiders Old*) to capture board expertise. Multiple board appointments are likely to be associated with the directors' competence and age is often regarded as positively associated with a person's experience and knowledge.

B. Shareholder governance

We measure shareholder governance from two aspects: (1) block holder governance; and (2) activist holder governance.

Our block holder governance variables are the percentage of outstanding shares owned by block holders (*%Block Own*), the number of block holders (*#Block*), and the percentage of shares owned by the largest institutional owner (*%Largest Own*). Our activist holder governance variables are the number of activist holders (*#Activists*) and the percentage of outstanding shares owned by activist holders (*% Activists Own*).[49] A larger number of block holders or a higher percentage of stock ownership indicates greater shareholder influence.

Following the approach in Larcker, Richardson, and Tuna (2007), we conduct an exploratory Principal Component Analysis on the above corporate governance measures. By employing an oblique rotation method and retaining factors whose eigenvalues exceed one, we generate eight factors.[50] We report the results from the analysis in Table 4.1. The original corporate governance variables are classified into eight groups according to their loadings on each factor. Each factor is assigned a name according to the characteristics of the loading governance variables. For example, the first factor is loaded by *%Board Inside*, *%Insider Non-top Own*,

[49] A block holder is defined as a shareholder who holds more than 5 percent of outstanding shares. Institutions with the following manager numbers are defined as activists: 12000, 12100, 12120, 18740, 38330, 81590, 49050, 54360, 57500, 58650, 63600, 63850, 63895, 66550, 66610, 66635, 82895, 83360, 90803 and 93405 (for more details please see Larcker, Richardson, and Tuna, 2007).

[50] The oblique rotation method allows the retained factors to be correlated with each other and thereby enhances the interpretability of the results.

%Insider Top Own, and *%Insider Own*. Therefore, it is a measure for insider power and is named *F-InsiderPower*. The other factors are named in a similar way. The only ambiguous case is *F-Active*, on which *%Outsider Own* and *%Affiliated Own* have negative loadings. Although unexpected, this result is consistent with that in Larcker, Richardson, and Tuna (2007) and could be potentially explained by the fact that activists are less likely to target a firm with significant shares held by its directors. Since the loadings on other factors are much smaller than those on *#Activists* and *%Activists Own*, we still regard this factor as a measure for activist holder governance and name it *F-Active*. These eight factors together explain about 60% of the total variance of the data.

The final corporate governance factors used in the regression analysis are computed as the equally-weighted average of the standardized original corporate governance variables in each group, except that *F-Active* is computed as the sum of the standardized *#Activists*, *%Activists Own* and *Insider Chairman* minus standardized *%Outsider Own* and *%Affiliated Own* divided by 5.[51]

The above factors represent different aspects of corporate governance mechanisms. For instance, with respect to board governance, *F-BoardSize* captures board size, *F-InsiderPower*, *F-Affiliated* and *F-InsiderAppt* are inverse measures for board independence and *F-Busy* and *F-Old* capture board expertise. For shareholder governance, *F-Block* reflects the block holder influence and *F-Active* reflects the activist holder influence.

[51] In unreported analysis, the results are not influenced by replacing *F-Active* with another factor constructed from only *#Activists* and *%Activists Own*.

4.3.4 Firm characteristics

We obtain data for firm characteristics from Compustat Fundamentals Annual and CRSP databases. We compute several firm specific variables, which are likely to be associated with debt contract terms such as the leverage ratio (long-term debt divided by total assets), firm size (market value of equity), the market-to-book ratio (market value of equity divided by book value of equity), the tangibility ratio (net PP&E divided by total assets) and the interest coverage ratio (earnings before interest payments and taxes divided by interest expenses).

4.3.5 Sample selection

Our sample selection process consists of the following three main steps. First, we obtain data for years 2002 to 2006 from Equilar and then augment this dataset with the IRRC dataset. The coverage of IRRC is much smaller compared with Equilar, but it spans a different period, i.e. from 1997 to 2005.[52] Firms from Equilar are matched manually with Compustat by using the company name and the observations from IRRC are matched with Compustat using the CRSP Permco (the Compustat-CRSP linkage table provides this information). As a result of this step, we obtain 31,305 firm-year observations. We further obtain institutional ownership data from 13F filings and match them with Compustat by CUSIP and calendar year. Finally, we require each observation to have data available on all the corporate governance variables to conduct the Principal Component Analysis, which reduces the number of observations to 24,352.

[52] The data in IRRC starts from 1996, but the information on director stock holdings is not available until 1997.

Second, we match manually the data for public bonds and syndicated loans with firm characteristics from Compustat using the company names and their industry membership which are available in Mergent FISD and DealScan.

Third, the corporate governance data obtained from the first step are further merged with data obtained from the second step by the Compustat unique firm identifier and the calendar year. Since a firm's corporate governance structure is often sticky, if the corporate governance data of a firm are missing for a particular year, the data from the previous calendar year (or two years before) are used.[53]

Finally, we require each observation to have non-missing data for all the control variables in the regression analysis and winsorize all continuous variables at the top and bottom one percentile levels. The final public bond sample consists of 3,306 issues and the final syndicated loan sample consists of 5,011 deals, spanning the period from 1997 to 2007.

4.4 Results

In this section, we examine separately the association between corporate governance and the restrictions in public bond and syndicated loan contracts.

4.4.1 Corporate governance and restrictions in public bond contracts

Due to the fact that the number of restrictions in the bond contracts is a discrete variable, we use the following Poisson regression model to examine the impacts of corporate governance on the restrictiveness of public bond contracts.

$$\#\text{Restrictions}_{i,j,t} = \sum \alpha \text{ Corporate governance factors}_{i,t} + \sum \beta \text{ Firm specific controls}_{i,t} + \sum \gamma \text{ Bond specific controls}_{i,j,t} + \text{Year dummies}, \quad (4.1)$$

[53] This backfilling approach enables us to increase the public bond sample by about 800 observations and the syndicated loan sample by 480 observations.

where *i* denotes the firm, *j* denotes the bond issue and *t* denotes the year. We cluster the standard errors at firm level to remove the effects of intra-firm cross-correlations and heteroscedasticity.

In the above model, we control for a series of firm specific variables, which are likely to be associated with debt contract terms, including the leverage ratio, firm size, market-to-book ratio, tangibility ratio and interest coverage ratio. We define *firm size* as the market value of the borrower's equity. Larger firms are more likely to obtain favourable contract terms given their reputation. We define *leverage ratio* as long-term debt divided by total assets. Since higher leverage leads to a higher probability of default, lenders are likely to require more restrictions from highly leveraged borrowers either to reduce the *ex ante* likelihood of default or to increase the *ex post* recovery rate. As firms with higher growth opportunities are riskier, debt contracts are likely to be more restrictive for firms with higher *market-to-book* ratios. Both the *tangible ratio*, defined as net PP&E divided by total assets, and *interest coverage ratio*, defined as earnings before interest payments and taxes divided by interest expenses, capture the borrowers' ability to repay debt, and therefore are likely to be negatively associated with the restrictiveness of debt contracts.

We also control for a large set of bond specific variables, including the covenant violation history, a subordinated bond indicator, bond maturity, bond yield spread, bond size, and bond credit rating. Nini, Smith, and Sufi (2009) find that after covenant violations, borrowers face stronger contractual restrictions on firm behaviour via amendments to the existing credit agreements. Therefore, borrowers with a covenant violation history are also likely to face more restrictive contract terms in their future debt issuance. We define *covenant violation* as a dummy variable equal to one if the borrower had a covenant violation before the current bond is issued.

Subordinated bonds are those ranked after other debt instruments in case of liquidation. Due to the limited claims on the borrowers' assets *ex post*, subordinated bondholders have a lower incentive to monitor the borrowers' behaviour through restrictive contracts and instead, they may ask for a higher yield spread as compensation *ex ante*. S*ubordinate* is a dummy variable equal to one if the current bond issue is subordinated.

Maturity measures the number of years from the date of bond issuance until the date of maturity. Since bonds with longer maturities are often riskier, maturity is expected to be positively associated with the restrictiveness of bond contracts. *Spread* is measured as the yield spread at bond issuance. On one hand, the level of spread reflects the riskiness of the borrower and is positively associated with the strength of the restrictions in the contracts. On the other hand, the high bond yield may also be used as a compensation for loose contract terms. *Bond size* is measured as the total offering amount. A large bond increases the default risk but reduces liquidity risk in the secondary over the counter bond market. Therefore, the net effect of bond size on restrictions is ambiguous.

Credit rating is a direct proxy for the probability of default and therefore is likely to be highly correlated with the strength of restrictions in debt contracts and other bond characteristics. In addition, several previous studies have documented that the credit rating is also associated with the quality of the borrower's corporate governance (e.g., Cremer, Nair, and Wei, 2007). To avoid the multicollinearity in the regression and to isolate the effect of corporate governance on the restrictiveness of debt contracts beyond that on credit ratings, we use the residuals from the following regression to replace the credit rating in Equation (1):

$$\text{Credit rating}_{i,j,t} = \sum \alpha \text{ Corporate governance factors}_{i,t} + \sum \beta \text{ Firm specific controls}_{i,t} + \sum \gamma \text{ Bond specific controls}_{i,j,t} + \text{Year dummies}, \quad (4.2)$$

where corporate governance factors, firm specific and bond specific controls are the same as in Equation (4.1). The credit rating variable we use is the numeric transformation of the lettered credit ratings provided by S&P and Moody's for bond issues. A score of 1 corresponds to the highest credit rating (AAA for S&P or Aaa for Moody's) and a score of 24 corresponds to the lowest credit rating (D for both S&P and Moody's).

The descriptive statistics for corporate governance factors, firm specific control variables and bond specific control variables are reported in Panel A of Table 4.2. The average bond contract in our sample contains around 6.9 restrictions, including 6.8 covenants. Around 14.5% of bond issues in our sample have a covenant violation history at the time of issuance and only less than 2% of bonds are subordinated. The average credit rating for bond issues in our sample is BBB^+ (S&P) or Baa1 (Moody's). The Pearson correlation coefficients between corporate governance variables, bond contract restriction variables and control variables are reported in Panel A of Table 4.3. The number of restrictions is positively correlated with *F-InsiderPower*, *F-Affiliated* and *F-Block*, suggesting that insider-controlled boards and concentrated institutional ownership are regarded as poor corporate governance mechanisms by public bondholders, whereas the negative correlations between the number of restrictions and *F-BoardSize*, *F-Active* and *F-Busy* suggest that large and busy boards, as well as activist shareholders are regarded as good ones. This panel also suggests that larger issuers and issuers with more tangible assets are able to obtain less restrictive contract terms. Issuers that are highly leveraged, have a covenant violation in the past or have lower credit ratings face more restrictions in

debt contracts. In addition, subordinated bonds and bonds with large offering amounts and long maturities contain fewer restrictions. As expected based on prior research (e.g., Ashbaugh-Skaife, Collins, and LaFond, 2006), the credit rating is highly correlated with several corporate governance variables, as well as our contract restriction measures.

The multivariate regression results for Equation (4.1) are reported in Panel A of Table 4.4. Coefficients on firm specific and bond specific variables in Columns (1) and (2) are consistent with the univariate results reported in Table 4.3. In Column (3), coefficients on corporate governance variables are also consistent with those reported in Panel A of Table 4.3, suggesting that insider-controlled boards and concentrated ownership are regarded as poor quality corporate governance mechanisms by bondholders, whereas large and busy boards and activist shareholders are regarded as good ones, as evidenced by fewer contract restrictions. These findings suggest that bondholders perceive the large board size as a benefit, consistent with information sources that exist in larger boards enhancing their monitoring function (Bhojraj and Sengupta, 2003). Thus, firms with larger boards are able to obtain less restrictive debt contracts. In addition, the negative association between busy boards and restrictions in contracts is consistent with bondholders perceiving multiple board appointments as a signal of high competence or expertise and better ability to monitor the management. On the other hand, as insider-controlled boards are less likely to effectively monitor management, bondholders require extra restrictions to protect themselves from the potentially value-destroying management behaviour. Despite a concern that powerful shareholders may be potentially harmful to bondholders, activist shareholders are regarded as good monitors by bondholders, potentially because of their well-known value-enhancing interventions in the management of target firms (e.g., Brav, Jiang,

Partnoy, and Thomas, 2008). After controlling for firm specific and bond specific variables, the magnitudes of coefficients on the above corporate governance variables are reduced, but those on *F-Block*, *F-BoardSize* and *F-Active* are still statistically significant at conventional levels (Column (4)). The marginal effect of *F-BoardSize* is -0.512, suggesting that increasing *F-BoardSize* by one standard deviation, the number of restrictions is reduced by 0.43. In other words, the borrower with the smallest board size in our sample has 2.8 more restrictions in its bond contracts compared with the borrower with the largest board size, holding other things constant.

Comparing *Pseudo-*R^2s across different models, we observe that bond specific variables alone explain about 19% of the variation of the number of restrictions and corporate governance variables alone explain roughly 12%.

4.4.2 Corporate governance and restrictions in syndicated loan contracts

Similar to our analysis of the bond restrictions, we use the following Poisson regression model to examine the impacts of corporate governance on the restrictions in syndicated loan contracts.

$$\begin{aligned}\#\text{Restrictions}_{i,j,t} = &\sum \alpha \text{ Corporate governance factors}_{i,t} + \sum \beta \text{ Firm specific controls}_{i,t} \\ &+ \sum \gamma \text{ Loan specific controls}_{i,j,t} + \text{Year dummies}, \end{aligned} \quad (4.3)$$

where *i* denotes firm, *j* denotes loan deal and *t* denotes year. Similarly, we cluster the standard errors at firm level to remove the effects of intra-firm cross-correlations and heteroscedasticity.

As in our regression model for public bonds, we control for a series of firm specific and loan specific variables, including the leverage ratio, firm size, market-to-book ratio, tangible ratio, interest coverage ratio, a covenant violation history, loan

maturity, yield spread and size. Firm specific variables are defined in the same way as before. *Covenant violation* equals one if the borrower had violated covenants before the current loan is issued. *Maturity* is defined as the number of years from the date of issuance until the date of maturity. *Spread* is defined as the level of yield spread at loan issuance. *Loan size* is defined as the facility amount issued. In addition, we control for the revolving feature, the number of loans previously issued, the number of lenders and the term loan feature. *Revolver* is equal to one if the loan comprises a renewal option, which is likely to reduce the monitoring costs of the lenders in the post-contracting period. The number of loans previously issued *(#Prev loans)* is used as a proxy for the borrower's reputation. The number of lenders *(#Lenders)* is the number of individual banks participating in the deal and is used as a proxy for risk diversification. However, as different lenders may have different preferences on the contract terms, the number of lenders could also be positively associated with the number of restrictions in debt contracts. *Term mix* is defined as the percentage of term loans (i.e. loans with specified repayment schedule and maturity) in the loan package based on the facility amount. Since term loans often have long maturities, they are likely to be attached with more restrictions. Similar to the bond model, we use the residuals from regressing loan credit ratings on the firm specific and loan specific control variables to replace the credit rating variable in Equation (4.3).

The descriptive statistics for corporate governance factors, firm specific, and loan specific control variables for our loan sample are reported in Panel B of Table 4.2. The average syndicated loan contract in our sample contains 4.9 restrictions, including 1.4 financial covenants and 2.6 general covenants.[54] Around 22.5% of

[54] The total number of covenants is defined in different ways for public bonds and syndicated bank loans. In particular, all commonly used covenants in public bond contracts are counted, whereas only financial and general covenants in syndicated loan contracts are included, as DealScan does not provide negative pledge or limitations on liens covenants.

syndicated loans in our sample have a covenant violation history at the time of issuance. 77.5% of the loans in our sample are revolving loans and 18.4% are term loans, with an average maturity of 3.5 years. The average credit rating for loans in our sample is BBB$^-$ (S&P) or Baa3 (Moody's).

The Pearson correlation coefficients between corporate governance variables, contract restriction variables and control variables are reported in Panel B of Table 4.3. Consistent with the bond sample results, the number of restrictions is positively correlated with *F-InsiderPower*, *F-Block* and *F-Affiliated*, suggesting that insider-controlled boards and concentrated institutional ownership are regarded as poor corporate governance mechanisms by private bank lenders, whereas the negative correlations between the number of restrictions and *F-BoardSize*, *F-Active* and *F-Busy* suggest that large and busy boards, as well as activist shareholders are regarded as good ones. This panel also suggests that borrowers with higher leverage, a covenant violation history, and lower credit ratings face more restrictive loan contracts, whereas larger firms are able to obtain less restrictive terms. In addition, revolving loans and loans with a larger facility amount have fewer restrictions attached, whereas term loans and high-yield loans receive more restrictions. As expected, credit rating is highly correlated with several corporate governance variables, as well as the contract restriction measures.

The multivariate regression results for Equation (3) are reported in Panel B of Table 4.4. Coefficients on firm specific and loan specific variables in Columns (1) and (2) are consistent with the univariate results reported in Panel B of Table 4.3. In Column (3), coefficients on corporate governance variables suggest that lenders regard affiliated boards and block holders as bad corporate governance mechanisms, but regard large and busy boards and activist shareholders as good ones. After

controlling for firm specific and loan specific variables, coefficients on *F-BoardSize*, *F-Affiliated* and *F-Busy* are still statistically significant at conventional levels (Column (4)), suggesting that board governance is regarded as the most important corporate governance mechanism by bank lenders, who are willing to draw less restrictive lending agreements for borrowers with stronger board governance mechanisms in place. The marginal effect of *F-BoardSize* is -0.416, suggesting that increasing *F-BoardSize* by one standard deviation, the number of restrictions is reduced by 0.34. In other words, the borrower with the smallest board size in our sample has 2.2 more restrictions in its loan contracts compared with the borrower with the largest board size, holding other things constant.

Comparing pseudo-R^2s across different models, we observe that loan specific variables alone explain about 17% of the variation of the number of restrictions and corporate governance variables alone explain roughly 10%. The finding that corporate governance variables have less power in explaining the variation of the restrictions in private loan contracts compared with public bonds is consistent with the conjecture that the substitute relation between lender governance via restrictive contract terms and the borrower's corporate governance mechanisms is less pronounced in the context of syndicated bank loans where private communications and monitoring take place.

4.5 Robustness analyses

In this section, we conduct a battery of tests to examine the robustness of our results.

4.5.1 Alternative measures for restrictions in debt contracts

Our first alternative measure for restrictions in debt contracts is the number of covenants *(#Covenant)*. For public bonds, *#Covenant* is calculated as the number of

all commonly used covenants in public bond contracts as suggested by Nikolaev (2009). For syndicated loans, *#Covenant* is calculated as the number of financial and general covenants as collected by DealScan.

Nikolaev (2009) further classifies commonly used covenants in public bonds into eight groups according to the type of restrictions they reflect: payout restrictions, M&A and investment restrictions, asset sale restrictions, debt issuance restrictions, negative pledge and limitations on liens, limitations on sale/leaseback transactions, change of control covenants, and other covenants. He then creates eight individual covenant indices by counting the number of covenants within each group. Following Nikolaev's approach, we create an overall covenant index by conducting the Principal Component Analysis on the individual indices described above. Results suggest that five individual covenant indices (payout restrictions, M&A and investment restrictions, debt issuance restrictions, change of control covenants, and other covenants) load in the first principal component, which explains about 50% of the variation in the data. Therefore, our second alternative bond restriction measure is computed by counting the total number of covenants within these five groups. For syndicated loans, our second alternative measure is the number of financial covenants.

Table 4.5 presents the regression results by using these alternative contract restriction measures. Coefficients are generally consistent with those reported in Table 4. In particular, for the regressions on *#Covenants*, the coefficients on corporate governance variables are very close to those reported in Table 4.4. For the regression on the covenant index for public bonds, the coefficients on *F-Affiliated* and *F-Busy* also become significant, indicating that independent and busy boards are regarded as good corporate governance mechanisms by bondholders. For the regression on

#Financial covenants for syndicated loans, the coefficients on corporate governance variables are similar to those reported before.

4.5.2 Additional corporate governance variables

So far, we focused on two major sources of corporate governance in order to maximize our sample size: board governance and shareholder governance. In this section, we also include the executive compensation mix and anti-takeover provisions as additional dimensions of corporate governance. We retrieve the data for executive compensation from Compustat Execucomp and the data for anti-takeover indices from RiskMetrics (formerly IRRC). Due to data limitations, the sample size is largely reduced after including these additional corporate governance variables.

Our executive compensation mix variables are measured along two dimensions: the proportion of annual CEO compensation comprised of long-term incentive payments (*%Long Term Mix*), including performance plans, stock options and restricted stock grants, and the proportion of annual CEO compensation comprised of accounting-based incentive payments (*%Accounting Mix*), including performance plans and annual bonus. Both compensation variables are expected to be positively associated with the alignment of executives' incentives with the interests of capital providers, and thereby should reflect strong corporate governance.

We compute five variables related to anti-takeover provisions: a dummy variable indicating that a firm has a classified board (*Class Board*), a dummy variable indicating that a super-majority vote is required for a business combination (*Supermajority*), a dummy variable indicating that the firm is incorporated in a state (PA, OH, MA or WI) with relatively greater protections to incumbent management (*State Incorp*), a dummy variable indicating that there exist unequal voting rights across shareholders (*Unequal Voting*), and a dummy variable indicating the presence

of a poison pill (*Poison Pill*). Although strong anti-takeover provisions in place generally indicate weak corporate governance (i.e. the management is entrenched), the association between the strength of anti-takeover defences and the restrictiveness of debt contracts is ambiguous, as takeovers could be potentially harmful to debtholders. For example, Klock, Mansi and Maxwell (2005) find that weak anti-takeover provisions are associated with a higher cost of debt financing, as wealth is likely to be transferred from bondholders to shareholders during takeovers.

We repeat our Principal Component Analysis on all corporate governance variables, and this time we retain twelve factors. As before, the final corporate governance factors are calculated as the equally-weighted average of the standardized original corporate governance variables in each group. The definitions on *F-InsiderPower*, *F-Block*, *F-BoardSize*, *F-Busy* and *F-Old* are the same as before. The definitions of the factors that are different are listed below:

- *F-Affiliated (Comp)* is defined as the equally-weighted average of the standardized *%CC Affiliated*, *CC Chair Affiliated* and *%Affiliated Own*.
- *F-Active* is defined as the equally-weighted average of the standardized *#Activists* and *%Activists Own*.
- *F-Affiliated (Audit)* is defined as the equally-weighted average of the standardized *%AC Affiliated* and *AC Chair Affiliated*.
- *F-InsiderAppt* is defined as the equally-weighted average of the standardized *%Affiliated Appointed* and *%Outsiders Appointed*.
- *F-Anti-1* is defined as the equally-weighted average of the standardized *Class Board*, *Supermajority* and *Poison Pill*.
- *F-Mix* is defined as the standardized *%Accounting Mix* minus *%Long Term Mix* divided by 2.

- *F-Anti-2* is defined as the standardized *State Incorp* minus *Unequal Voting* divided by 2.

The above twelve factors represent different aspects of corporate governance mechanisms, including board size, board independence, board expertise, block holder ownership, activist holder ownership, the executive compensation mix, and anti-takeover provisions.

The results from regressing corporate governance factors, firm specific, and bond/loan specific variables on the number of restrictions in public bond/syndicated loan contracts are reported in Table 4.6. For both public bond and syndicated loan samples, *F-BoardSize* continues to be negative and significant, suggesting that both bondholders and private lenders regard large boards as a good corporate governance mechanism, indicated by their willingness to award these borrowers with less restrictive lending terms. Public bondholders regard affiliated boards and anti-takeover provisions as weak corporate governance mechanisms, whereas bank lenders regard busy boards and well-motivated management as strong ones.

4.5.3 Sub-sample analysis

Since debtholders have limited up-side potential and significant downside risk, monitoring is likely to be more important for lenders of borrowers that are close to default. Therefore, the substitute relation between corporate governance and lender governance (via restrictive debt contracts) is expected to be more pronounced for financially-distressed borrowers. In Table 4.7, we split the sample in two according to Altman's (1968) Z-score. The results suggest that for both public bondholders and private lenders, the negative association between board size and the number of restrictions is significant and more economically relevant for financially-distressed firms. In addition, for bondholders, the coefficients on *F-Block* and *F-Busy* are also

more significant for the financially-distressed sub-sample, indicating that some corporate governance mechanisms, such as block holder governance and board expertise, are less of a concern for financially-healthy borrowers.

Chapter 5: Summary and conclusions

In this thesis, I examine various issues related with corporate financial reporting.

First, product market competition is an important determinant on corporate decisions and in particular on decisions about a firm's disclosure strategy. In Chapter 2, I investigate the effects of product market competition on firms' voluntary disclosure decisions. Using separate variables to measure different dimensions of competition and using management profit and investment forecasts as proxies for voluntary disclosure, I show that competition from potential entrants increases disclosure quantity while competition from existing rivals reduces disclosure quantity. This finding potentially explains the controversial evidence on competition and disclosure documented by existing studies.[55] I also find that given a certain level of capital market incentive, competition generally increases disclosure quality. Further analysis suggests that competition increases disclosure quality mainly by reducing forecasting optimism in profit forecasts and by reducing forecasting pessimism in investment forecasts. Overall, this chapter provides large sample evidence supporting the proprietary cost argument that product market competition shapes corporate voluntary disclosure behavior. Findings in this chapter contribute to the management forecast literature by providing rationale underlying the inter-industry differences in management forecasting behavior. This chapter also contributes to the literature by providing some initial evidence on the determinants of management investment forecasts, which have been largely ignored in extant accounting research.

[55] For example, Harris (1998) and Botosan and Stanford (2005) find that competition encourages disclosure, while other empirical studies generally find that competition discourages disclosure.

Second, conservative accounting brings significant contracting benefits to firms' costs of financing. In Chapter 3, I document that the conservatism level of a country's financial reporting system effectively reduces its firms' cost of debt and equity capital. These effects are over and above a series of economy-level factors, including legal origins, judicial systems, securities regulations, and market integration, which have been identified by previous studies to shape international capital markets. I estimate conservatism and the cost of debt and equity capital for 31 countries over the period from 1991 to 2006. In the primary analyses, I use timely loss recognition ($\beta_2+\beta_3$) and incremental loss recognition (β_3) estimated from a modified Basu's (1997) model (cumulating two years backwards) to measure conservatism, and use the incremental R^2 to measure the asymmetric timeliness of good news and bad news. I use the one-year-ahead interest rate to measure the expected cost of debt and use the discount rates extracted four accounting-based valuation models to measure the expected cost of equity. I conduct a battery of robustness analyses, including using credit ratings of new bond issues as the alternative measure for the cost of debt, realized stock returns as the alternative measure for the cost of equity, and the non-price-based model proposed by Ball and Shivakumar (2005) to estimate conservatism, and find similar results. I further address the concern about potentially correlated omitted variables by including a dozen of institutional variables suggested by previous studies that determine a country's conservatism level in the regressions, and the issue about sample composition by directly using country-level conservatism measures from Ball, Robin, and Sadka (2008), and results are still unchanged. Lastly, I conduct cross-sectional regression analyses by using 31 country-level observations, and the results are qualitatively similar. By showing the benefits of accounting conservatism on the debt and equity markets directly, this paper partially solves the

puzzle on the long-living conservatism in financial reports around the world. Findings in this chapter also highlight the importance of accounting information in facilitating corporate governance standards and legal systems. However, the findings in this chapter should not be interpreted as advocating conservative accounting for firms in all the countries. As Bushman and Piotroski (2006) and Ball, Kothari, and Robin (2000) find that several institutional variables determine countries' accounting systems, the lower cost of capital is by no means the only concern for either standard setters or managers. Considering the costs of conservatism, such as the reduced discretion of managers to recognize the economic gains and the lag in the accounting income compared with the economic income, the existing financial reporting properties should be regarded as the equilibrium outcome of various trade-offs among different incentive sources.

Third, corporate governance, which has been identified by previous literature as playing an important role in determining corporate financial reporting (e.g., Ajinkya, Bhojraj, and Sengupta, 2002; Klein, 2002), is studied in Chapter 4. We examine how debtholders trade off the corporate governance mechanisms in place with the extent of restrictions in debt contracts by analyzing separately the presence of restrictions in public bond and syndicated loan contracts and employing a broad array of corporate governance proxies. The findings suggest that corporate governance mechanisms traditionally viewed as mitigating the agency conflicts between shareholders and managers also play a role in mitigating the conflicts between shareholders and debtholders. In particular, firms with larger boards and more board members with multiple appointments (i.e. signalling higher expertise or competency) generally face fewer restrictions in their debt contracts, whereas firms with insider-controlled boards or powerful institutional shareholders face more restrictive contract

terms. This chapter provides initial evidence on the influence of firm-level corporate governance on the design of debt contracts and sheds light on the complementarity between corporate governance and lender governance.

Appendices

Appendix 2.A Variable definitions in Chapter 2

IND-PPE: The weighted average of property, plant, and equipment of all firms in an industry. A firm's market share, calculated as the ratio of its segment sales to industry aggregate sales, is used as its weight. A firm's segment PP&E is allocated according to the ratio of the segment sales to the firm's total sales.

IND-R&D: The weighted average of research and development of all firms in an industry. A firm's market share, calculated as the ratio of its segment sales to industry aggregate sales, is used as its weight. If a firm's segment R&D is missing, it is replaced by the firm's total R&D multiplied with the ratio of the segment sales to the firm's total sales.

IND-CPX: The weighted average of capital expenditures of all firms in an industry. A firm's market share, calculated as the ratio of its segment sales to industry aggregate sales, is used as its weight. If a firm's segment capital expenditures are missing, they are replaced by the firm's total capital expenditures multiplied with the ratio of the segment sales to the firm's total sales.

IND-MKTS: Product market size, measured as the natural log of industry aggregate sales.

IND-CON4: Four-firm concentration ratio, measured as the sum of market shares of the four largest firms in an industry.

IND-HHI: Herfindahl-Hirschman Index, measured as the sum of squared market shares of all firms in an industry.

IND-NUM: Total number of firms in the industry.

IND-MGN: Price-cost margin, measured as industry aggregate sales divided by industry aggregate operating costs. If a firm's segment operating cost is missing, it is replaced by the segment sales divided by the firm's price-cost margin.

IND-ROA: Return on assets, measured as industry aggregate operating profit before depreciation divided by industry aggregate total assets. If a firm's segment operating profit before depreciation is missing, it is replaced by the segment assets multiplied by the firm's ROA. If the value of a firm's segment total assets is missing, it is replaced by segment operating profit before depreciation divided by the firm's ROA. If both segment operating profit before depreciation and segment total assets are missing, they are replaced by the firm's total operating profit before depreciation multiplied by the ratio of the segment sales to the firm's total sales and the firm's total assets multiplied by the ratio of the segment sales to the firm's total sales, respectively.

POTENT-COMP: The negative of PC2 from principal component analysis of nine competition variables. It measures competition from potential entrants.

EXIST-COMP: The negative of PC1 from principal component analysis of nine competition variables. It measures competition from existing rivals.

IND-PROFIT: PC3 from principal component analysis of nine competition variables. It measures industry profitability.

FORECASTER%: The ratio of forecasters to the total number of firms in an industry. A firm-year is identified as a forecaster if it issues at least one forecast for the subsequent fiscal year-end.

NUM-FOR: Total number of forecasts issued by a firm in a certain year.

ACCURACY: Forecasting accuracy, defined as the negative of the absolute difference between actual earnings per share and management earnings forecast deflated by stock price two trading days before management forecast date. For

investment forecasts, it is defined as the negative of the absolute difference between actual capital expenditures and management capital expenditures forecast deflated by market value of equity at fiscal year-end.

ERROR: Forecast error, defined as the difference between actual earnings per share and management earnings forecast deflated by stock price two trading days before management forecast date. For investment forecasts, it is defined as the difference between actual capital expenditures and management capital expenditures forecast deflated by market value of equity at fiscal year-end.

SIZE: Firm size, measured as natural log of a firm's market value of equity (Item prcc_f × csho) at fiscal year-end.

MTB: Market-to-book ratio, measured as market value of equity plus book value of liability (Item lt) divided by book value of total assets (Item at).

LEV: Leverage ratio, measured as total liability (Item lt) minus deferred taxes (Item txdb) divided by total assets (Item at).

STDEV: Earnings or capital expenditures volatility, measured as the standard deviation of earnings before extraordinary items or the standard deviation of capital expenditures scaled by total assets over the past five years. At least three years' observations are required.

ANALYST: The number of analysts following. Data are obtained from I/B/E/S database.

SHRINST: The percentages of shares owned by institutional investors. Data are obtained from Thomson-Reuters Institutional Holdings (13F) Database.

ABSCH: Absolute value of actual earnings change scaled by market value of equity; absolute value of actual capital expenditures change scaled by total assets.

DCH: Dummy variable indicating that the actual earnings/capital expenditures during forecasting period are higher than the previous year.

OPTM: Analyst optimism, measured as the difference between analyst consensus estimation at the beginning of the fiscal year and the actual earnings per share, scaled by the absolute value of actual earnings per share.

SURPRS: Management forecasting surprise, defined as the difference between management earnings forecast and the latest consensus analyst estimation deflated by stock price two trading days before management forecast date. For investment forecasts, previous year's actual capital expenditures are used as the proxy for market expectation and the market value of equity at fiscal year-end is used as the scalar.

DIFFI: Forecasting difficulty, measured as the standard deviation of analyst estimates prior to the corresponding management forecast.

HORIZ: Forecasting horizon, measured as the number of days between forecast release date and forecasting fiscal year-end divided by 100.

ISSUE: A dummy variable equal to 1 if the firm issues either public equity or public debt in a subsequent two-year period, and zero otherwise. Data are extracted from Thomson Deal (SDC) database.

LIT: Proxy for litigation risk, measured as a dummy variable equal to 1 if the firm operates in an industry facing high litigation risk, namely industries with primary four-digit SIC code 2833-2836, 8731-8734 (bio-tech), 3570-3577 (computer hardware), 3600-3674 (electronics), 7371-7379 (computer software), 5200-5961 (retailing), 4812-4813, 4833, 4841, 4899 (communications), or 4911, 4922-4924, 4931, 4941 (utilities).

STDRET: Standard deviation of stock returns over a 120-day period prior to the forecast release date.

DACCR: Discretionary accruals, estimated using the cross-sectional modified Jones model.

ACCURACY, ERROR, SURPRISE, STDRET, and DIFFI are multiplied by 100 in descriptive statistics and regressions for expositional purpose.

Appendix 2.B Measuring product market competition

The data for computing product market competition variables are extracted from Compustat segments and fundamentals annual databases for the period from 1977 to 2007.[56] The data and sample selection process are described as follows:

1. I delete firms incorporated outside the United States, as those firms are likely to face a different product market.

2. Data on net sales (Item sale), operating profit (Item ops), operating income before depreciation (Item oibd), research and development (Item rd), capital expenditures (Item capx), and identifiable total assets (Item at) are obtained from Compustat segments. Only business segments with valid primary four-digit SIC code (Item ssic1) are retained. Segments with identical SIC codes under the same firm are merged into one, and all financial items are aggregated.

3. Merge segment data with Compustat fundamentals annual data. Firms without segment information are treated as having a single segment.

4. Calculate industry-wide variables: IND-PPE, IND-R&D, IND-CPX, IND-MKTS, IND-CON4, IND-HHI, IND-NUM, IND-MGN, and IND-ROA.

5. I require non-missing values for all competition variables to conduct Principal Component Analysis and Exploratory Factor Analysis. The final sample consists of 27,053 industry-years over the period from 1977 to 2007.

[56] *SFAS No. 14* became effective in 1976. Therefore, 1977 is the first calendar year when segment data were available for all firms.

6. Classify firms into different industries according to their primary segment SIC code. If a firm has multiple business segments, the segment with the same four-digit SIC code as the firm is identified as the primary segment. If none of the segments have the same SIC code as the firm, the segment with the largest sales is treated as the primary segment.[57]

Appendix 2.C Examples for investment forecasts

Management investment forecasts data used in this paper are hand-collected from Factiva. I use management forecasts on future capital expenditures as the proxy for investment forecasts. Examples for investment forecasts are illustrated below:

Q4 2003 ALLTEL Corp. Earnings Conference Call, Jan. 23, 2004:

"Turning to 2004, as Scott mentioned, we are making organizational changes to improve service delivery to our customers. These organizational changes which include a reduction of approximately 400 to 600 employees will result in a one-time charge of roughly $15 million in the first quarter, an operating expense savings of approximately $20 million this year. For the year, we expect total revenue growth of 2% to 5%, capital expenditures of $1.2 billion to $1.3 billion, and earnings per share from current businesses of $3.10 to $3.30."

Q4 2003 AMETEK Inc. Earnings Conference Call, Jan. 28, 2004:

"For 2004 we expect the capital expenditures will total approximately $23 million, while depreciation and amortization should be about $35 million. Operating cash flow for 2004 is expected to be up low to mid single digit percentage from the exceptional 2003 level, driven by higher income and less positive changes in the balance sheet."

[57] This is consistent with the methodology that SIC uses to assign primary SIC code to each firm.

Appendix 3.A Implied cost of equity capital models

As in Hail and Leuz (2006), I use four accounting-based valuation models suggested in previous literature to calculate the ex ante cost of equity capital. The first two are special cases of the residual income valuation model described by Ohlson (1995), and the second two are based on the abnormal earnings growth valuation model developed by Ohlson and Juettner-Nauroth (2005). The basic idea of all four models is to substitute price and analyst forecasts into a valuation equation, and to back out the cost of capital as the internal rate of return that equates current stock price and the expected future sequence of residual incomes or abnormal earnings. The individual models differ with respect to the use of analyst forecast data, the assumptions regarding short-term and long-term growth, the explicit forecasting horizon, and whether and how inflation is incorporated into the steady-state terminal value.

In the following models, variables are defined as follows:

p_0 Current stock price, measured as of month +10 after the fiscal year-end.

bv_0 Current book value of equity per share, measured as of fiscal year-end.

e_t Expected future earnings per share for year t.

d_t Expected future dividends per share for year t.

bv_t Expected book value of equity per share for year t.

g,g_{st},g_{lt} Expected perpetual, short-term or long-term growth rate.

k Dividend payout ratio.

3.A.1 Claus and Thomas (2001)

$$p_0 = bv_0 + \frac{e_1 - r_{CT} \times bv_0}{(1+r_{CT})} + \frac{e_2 - r_{CT} \times bv_1}{(1+r_{CT})^2} + \frac{e_3 - r_{CT} \times bv_2}{(1+r_{CT})^3} + \frac{e_4 - r_{CT} \times bv_3}{(1+r_{CT})^4}$$

$$+\frac{e_5 - r_{CT} \times bv_4}{(1+r_{CT})^5} + \frac{(e_5 - r_{CT} \times bv_4) \times (1+g)}{(r_{CT} - g)(1+r_{CT})^5} \qquad (3.A.1)$$

$$bv_t = bv_{t-1} + e_t - e_t \times k$$

If e_3, e_4, e_5 are missing, they are replaced by $e_3 = e_2 \times (1+g_{lt})$, $e_4 = e_2 \times (1+g_{lt})^2$, $e_5 = e_2 \times (1+g_{lt})^3$. As a proxy for g, I use the expected rate of inflation, which is calculated from country-specific one-year-ahead realized annual inflation rate.[58]

3.A.2 Gebhardt, Lee, and Swaminathan (2001)

$$p_0 = bv_0 + \frac{e_1 - r_{GLS} \times bv_0}{(1+r_{GLS})} + \frac{e_2 - r_{GLS} \times bv_1}{(1+r_{GLS})^2} + \frac{e_3 - r_{GLS} \times bv_2}{(1+r_{GLS})^3}$$

$$+\sum_{t=4}^{11} \frac{\overline{ROE}_t - r_{GLS}}{(1+r_{GLS})^t} \times bv_{t-1} + \frac{\overline{ROE}_{12} - r_{GLS}}{r_{GLS} \times (1+r_{GLS})^{12}} \times bv_{11} \qquad (3.A.2)$$

$$\overline{ROE}_t = \frac{1}{I} \sum_{i}^{I} \overline{ROE}_{t,i}$$

$$ROE_{t,i} = e_{t,i} / bv_{t,i}$$

$$bv_t = bv_{t-1} + e_t - e_t \times k$$

After the explicit forecast period of three years, the residual income series is derived by linearly fading the forecasted accounting return on equity to the sector-specific average return. I use the average return on equity in a given country and year for firms with the same SIC code.

3.A.3 Ohlson and Juettner-Nauroth (2005)

$$p_0 = \frac{e_1}{r_{OJ}} \times (g_{st} + \frac{r_{OJ} \times d_1}{e_1} - g_{lt}) / (r_{OJ} - g_{lt}) \qquad (3.A.3)$$

$$g_{st} = (e_2 - e_1)/e_1$$

[58] Inflation$_t$ = (CPI$_t$ - CPI$_{t-1}$)/CPI$_{t-1}$. CPI data are from EIU Country Data.

$$d_1 = k \times e_1$$

Short-term growth (g_{st}) is defined as in Gode and Mohanram (2003). Long-term growth (g_{lt}) is taken as the expected rate of inflation.

3.A.4 Modified PEG ratio model by Easton (2004)

$$p_0 = (e_2 + r_{PEG} \times d_1 - e_1)/r_{PEG}^2 \qquad (3.A.4)$$

3.A.5 Data requirements

Book equity value per share (bv_0), dividends payout ratio (k) and current stock price (p_0) are from the COMPUSTAT Global Vantage Industrial/Commercial (IC) file. e_1, e_2, e_3, e_4, $e5$, and g_{lt} are analyst-forecasted earnings per share and long-term growth from I/B/E/S Summary Unadjusted file. If e_1 or e_2 is missing, this data point is deleted. If g_{lt} is missing, it is replaced by $g_{lt} = (e_2 - e_1) / e_1$. All estimates are mean analyst consensus forecasts. k is constant dividend payout ratio, which is assumed as the historic three-year average for each firm. If k is missing, or is outside the range 0 to 1, it is replaced by the country-year median payout ratio. Stock prices and analyst forecasts are measured as of month +10 after the fiscal year-end, and all financial data are fiscal year-end data. All data items are adjusted for stock splits and converted to local currency.

I use an iterative program to back out the internal rate of return. This procedure identifies the annual firm-specific discount rate that equates the left-hand-side price to the right-hand-side value. I start iterating the discount rate from 0 to 1 by 0.0001 each time and stop if the imputed price falls within a 0.001 difference of its actual value. If there is no solution, I expand the difference between imputed price and actual price to be 0.01.

Appendix 3.B Variable definitions in Chapter 3

3.B.1 Firm specific variables

Financial data items are from COMPUSTAT Global Vantage Industrial/Commercial file and Global Vantage Issues file. Analyst forecast data are from I/B/E/S summary and actual unadjusted files.

R_D: The primary measure for the cost of debt, calculated as interest expenses (data15) divided by average interest-bearing debt outstanding (data106 + data94) during years *t* and *t+1*.

Rating: The alternative measure for the cost of debt: It is a numerical transformation of bond ratings from the Standard&Poor's or Moody's at the time of offering. Its value ranges from 1 (AAA) to 21 (C), with a larger value indicating a higher credit worthy.

R_E: The primary measure for the cost of equity, calculated as the average of implied cost of equity derived from the four models in Appendix A.

R_{Ret}: Ex post stock return, the alternative measure for the cost of equity. It is measured as the one-year-ahead buy-and-hold stock return adjusted for stock splits and dividends.

BTM: The ratio of book equity value to the market value of equity. Book equity value is calculated from the following equations (in order):

$$\begin{aligned} \textit{Book Value of Equity} = & \textit{Shareholder's Equity} \ (\textit{data}135) \\ & + \textit{Deferred Taxes} - \textit{Balance Sheet} \ (\textit{data}105) \\ & + \textit{Investment Grants and Other Deductions} \ (\textit{data}79) \\ & - \textit{Preferred/Preference Capital} - \textit{Redeemable} \ (\textit{data}121) \\ \textit{or} = & \textit{Comm on/Ordinary Equity} \ (\textit{data}146) \\ & + \textit{Preferred/Preference Capital} - \textit{Total} \ (\textit{data}119) \end{aligned}$$

or =Total Assets (*data*89)–*Total Liabilities* (*data*118)

LEVERAGE: Market equity value equals stock price multiplying number of shares outstanding.

STDRET: Ratio of interest-bearing debt (data106 + data94) to total assets (data89).

STDRET: Return variability, measured as the standard deviation of monthly stock returns over the past 12 months.

STDEARN: The standard deviation of net income before extraordinary items (data32) divided by average total assets over the past five years. At least three years' observations are required.

SIZE: Natural log of a firm's market value of equity.

IntCov: Interest coverage ratio, measured as operating income (data14) divided by interest expenses.

GROWTH: Sales growth rate, measured as the annual percentage change of sales (data1).

ROA: Return on assets, measured as net income before extraordinary items divided by total assets (data89).

FBIAS: One-year-ahead analyst forecast error (mean forecast minus actual value) divided by the forecast-period stock price (at month +10).

3.B.2 Country specific variables

The following variables are available annually.

INF: One-year-ahead inflation rate, calculated as the percentage change of CPI. (EIU Country Data)

R_f: One-year-ahead risk-free rate, defined as 3-month interbank offer rate or 3-month Treasury bill rate of the local country. (EIU Country Data)

ITENF: An indicator variable equal to one if the country enforced its first insider trading laws prior or during current year. (LLS, 2006; Bushman and Piotroski, 2006)

R_{Credit}*:* Country credit risk index, indicating overall risk assessment of the political and macroeconomic environment within the country. It equals the overall country credit risk score divided by 100. It ranges from 0 to 1. (EIU Market Indicators and Forecasts database)

$R_{Financial}$*:* Country financial risk index, indicating the risk of financing and access to capital markets within the country. The factors considered include the risk of devaluation, access to local markets, banking sector health, and the liquidity of the stock market. It equals the financial risk score divided by 100. It ranges from 0 to 1. (EIU Market Indicators and Forecasts database)

The following variables are time-invariant.

$\beta_2 + \beta_3$*:* Timely loss recognition, measured as $\beta_2 + \beta_3$ estimated from Equation (3.2) by using j=1 for each country.

β_3: Incremental loss recognition, measured as β_3 estimated from Equation (3.2) by using j=1 for each country.

$IncR^2$*:* Asymmetric timeliness of good news and bad news, measured as adjusted R^2 from regression (3.2) minus adjusted R^2 from regression (3.3) for each country.

CONSERV: Conservatism measures, in the form of $\beta_2 + \beta_3$, β_3, or $IncR^2$.

CIV_COM: A dummy variable takes a value of one for civil law legal origin, namely French, German or Scandinavian legal origin, and zero for common law legal origin.

CRED: An index aggregating different creditor rights. The index is formed by adding 1 when: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending their solution of the reorganization. The index ranges from 0 to 4. (LLSV, 1998)

LAW: Assessment of the law and order tradition in the country. (Data item *rulelaw2000* from LLS, 2006)

SECREG: The strength of securities regulation mandating and enforcing disclosures. It is measured as the mean of the disclosure index, the liability standard index and the public enforcement index. (Hail and Leuz, 2006)

FLOW: A measure for capital market integration. It is equal to 1 for countries with above-median portfolio inflows and outflows as a percentage of the gross domestic product as reported by the International Monetary Fund for 2001 (Hail and Leuz, 2006).

DEBTMKT: Debt market size, measured as the ratio of sum of bank debt of the private sector and outstanding non-financial bonds to GNP in 1994, or last available. (LLSV, 1997)

EQUITMKT: Equity market size, measured as the ratio of stock market capitalization to gross national product for 1994. It is computed as the ratio of the stock market capitalization held by minorities to GNP. (Data item External Cap/GNP from LLSV, 1997)

ACCESS: Index of the extent to which business executives in a country agree with the statement: Stock markets are open to new firms and medium-sized firms. Scale from 1 (strongly agree) to 7 (strongly disagree). (LLS, 2006)

GDP: Logarithmic of per capita Gross Domestic Product (in US dollars) in 2000. (LLS, 2006)

JUDIMP: Indicator variable for the impartiality of judical system ranking. It equals one if the given county's ranking is equal to or above the median country-level observation (high impartiality). Impartial courts: does a trusted legal framework exist for private businesses to challenge the legality of government actions or regulation? Based on survey responses. Rankings based on a scale from 0 (low) to 10 (high). (Bushman and Piotroski, 2006)

PUBLENF: Public enforcement of securities laws. The index of public enforcement equals the arithmetic mean of: (1) supervisor characteristics index; (2) rule-making power index; (3)investigative powers index; (4) orders index; and (5) criminal index. (LLS, 2006)

RISKEXP: Indicator variable for the risk of expropriation by the State. It equals one if the given county's score is less than or equal to the median country-level observation (high risk). ICR's assessment of the risk of "outright confiscation" or "forced nationalization" by the state. Average of the months April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with higher scores for lower risk. (Bushman and Piotroski, 2006)

SOE: Indicator variable for the state-operated enterprises. It equals one if the government enterprises and investment as a percentage of GDP is equal to or above the median country-level observation (high percentage). Data on the number, composition and share of output supplied by State-operated enterprises and

government investment as a share of total investment were used to construct the 0 (high percentage) to 10 (low percentage) ratings. (Bushman and Piotroski, 2006)

TAXBURD: Indicator variable for tax burden. It equals one if the given county's ranking is less than or equal to the median country-level observation (low tax burden). Data on the top marginal tax rate and the income thresholds at which they take effect used to construct rating of taxation. Countries with higher marginal tax rates that take effect at lower income thresholds receive lower ratings. Rankings based on a scale from 0 (low) to 10 (high). (Bushman and Piotroski, 2006)

BANKMKT: Indicator variable for bank economy versus market economy. It equals one if the ratio of deposit money bank assets to the market capitalization of equity securities of a given county is equal to or above the median country-level observation (bank economy). (Bushman and Piotroski, 2006)

PRIVDEBT: Indicator variable for the role of private long-term debt financing in the economy. It equals one if the ratio of private bond market capitalization to the country's market capitalization in the given county is equal to or above the median country-level observation (high amount of private debt). (Bushman and Piotroski, 2006)

OWNCONC: Ownership concentration. It is measured as the average percentage of common shares owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country. A firm is considered privately-owned if the State is not a known shareholder in it. (LLS, 2006)

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Tables

Table 2.1: Principal component analysis results

Panel A: Eigenvalues of the correlation matrix

Principal Components	Eigenvalue	Difference in Eigenvalue	Variance Explained	Cumulative Variance
PC1	3.479	1.679	38.65%	38.64%
PC2	1.800	0.301	20.00%	58.65%
PC3	1.499	0.848	16.65%	75.30%
PC4	0.651	0.060	7.23%	82.54%
PC5	0.591	0.187	6.57%	89.10%
PC6	0.404	0.100	4.49%	93.59%
PC7	0.304	0.154	3.38%	96.97%
PC8	0.150	0.028	1.67%	98.64%
PC9	0.122		1.36%	100%

	Panel B: Rotated factor pattern			*Panel C: Standardized scoring coefficients*		
Raw variables	**PC1**	**PC2**	**PC3**	**PC1**	**PC2**	**PC3**
IND-PPE	-10%	93%	3%	0.079	0.405	-0.030
IND-R&D	-12%	70%	2%	0.042	0.301	-0.027
IND-CPX	-9%	91%	3%	0.081	0.396	-0.025
IND-MKTS	-63%	48%	20%	-0.184	0.127	0.086
IND-CON4	93%	-5%	1%	0.369	0.097	0.048
IND-HHI	86%	-1%	-5%	0.343	0.107	-0.005
IND-NUM	-85%	22%	1%	-0.314	-0.009	-0.049
IND-MGN	-11%	6%	85%	-0.002	-0.029	0.552
IND-ROA	3%	2%	88%	0.050	-0.030	0.580

This table presents the principal component analysis of competition measures based on data obtained from Compustat segments and fundamentals annual databases over the period from 1977 to 2007. The sample consists of 27,053 industry-year observations. Four-digit SIC code is used to identify industry. PC1-PC9 are principal components extracted from the analysis by using orthogonal rotation method. IND-PPE, IND-R&D, IND-CPX, IND-MKTS, IND-CON4, IND-HHI, IND-NUM, IND-MGN, and IND-ROA are raw competition variables used for the analysis. The definition of each variable is included in Appendix 2.A.

Table 2.2: Descriptive statistics for competition variables

Panel A: Summary statistics

	N	Mean	Min	Q1	Median	Q3	Max	Stdev
IND-PPE	27,053	819.42	0.088	31.38	139.89	569.64	14536.86	2084.16
IND-R&D	27,053	18.80	0	0	0.141	5.056	512.18	68.40
IND-CPX	27,053	84.83	0.003	3.000	13.56	53.37	1806.78	241.03
IND-MKTS	27,053	6.574	-0.449	5.176	6.782	8.191	11.74	2.414
IND-CON4	27,053	0.906	0.353	0.870	1.000	1.000	1.000	0.158
IND-HHI	27,053	0.538	0.0528	0.263	0.486	0.875	1.000	0.318
IND-NUM	27,053	10.549	1	2	4.000	10	103	17.14
IND-MGN	27,053	1.108	0.508	1.043	1.090	1.147	2.026	0.171
IND-ROA	27,053	0.148	-0.349	0.091	0.147	0.205	0.580	0.121
POTENT-COMP	27,053	0	-8.113	0.052	0.274	0.405	1.117	1
EXIST-COMP	27,053	0	-2.003	-0.765	-0.231	0.452	3.979	1
IND-PROFIT	27,053	0	-4.499	-0.391	-0.005	0.411	5.141	1

Panel B: Correlation matrix

	IND-PPE	IND-R&D	IND-CPX	IND-MKTS	IND-CON4	IND-HHI	IND-NUM	IND-MGN	IND-ROA
IND-PPE		0.510	0.867	0.491	-0.161	-0.114	0.266	0.097	0.030
IND-R&D			0.457	0.351	-0.126	-0.103	0.303	0.049	0.059
IND-CPX				0.441	-0.152	-0.111	0.269	0.113	0.028
IND-MKTS					-0.502	-0.577	0.505	0.183	0.175
IND-CON4						0.695	-0.815	-0.107	0.027
IND-HHI							-0.562	-0.095	-0.034
IND-NUM								0.139	-0.028
IND-MGN									0.523
POTENT-COMP	-0.930	-0.704	-0.908	-0.480	0.046	0.010	-0.218	-0.056	-0.017
EXIST-COMP	0.101	0.119	0.090	0.628	-0.927	-0.859	0.847	0.106	-0.031
IND-PROFIT	0.027	0.017	0.033	0.204	0.014	-0.052	-0.008	0.852	0.884

Table 2.3: Number of observations by calendar year

Year	Profit			Investment			Profit & Investment		
	#Forecasters	#Firms	%Forecasters	#Forecasters	#Firms	%Forecasters	#Forecasters	#Firms	%Forecasters
1998	480	2,349	20.43%						
1999	504	2,178	23.14%						
2000	801	2,261	35.43%						
2001	856	2,246	38.11%	427	1,289	33.13%	223	1,226	18.19%
2002	922	2,269	40.63%	616	1,305	47.20%	292	1,246	23.43%
2003	985	2,266	43.47%	497	1,185	41.94%	235	1,111	21.15%
2004	926	2,421	38.25%	526	1,237	42.52%	222	1,185	18.73%
2005	967	2,521	38.36%	577	1,236	46.68%	262	1,193	21.96%
2006	929	2,522	36.84%						
Average	819	2,337	34.96%	529	1,250	42.30%	247	1,192	20.69%
Total	7,370	21,033		2,643	6,252		1,234	5,961	

This table presents the average number of forecasters, the average number of sample firms, and the average percentage of forecasters in an industry by calendar year for profit, investment, and profit & investment forecasts, respectively.

Table 2.4: Descriptive statistics

Panel A: Disclosure quantity sample

	Profit					Investment				
	N	Mean	Median	Stdev	Diff (Non-For)	N	Mean	Median	Stdev	Diff (Non-For)
FORECASTER	21,033	0.350	0	0.477		6,252	0.423	0	0.494	
NUM-FOR	21,033	1.151	0	1.963		6,252	1.025	0	1.495	
POTENT-COMP	21,033	-1.552	-0.642	2.180	-0.310 §	6,252	-2.141	-1.709	2.322	-0.295 §
EXIST-COMP	21,033	1.698	1.879	1.252	0.191 §	6,252	1.768	2.095	1.133	0.348 §
IND-PROFIT	21,033	-0.094	-0.107	0.742	-0.080 §	6,252	-0.229	-0.184	0.675	-0.039 ‡
SIZE	21,033	6.346	6.252	1.754	-1.018 §	6,252	6.417	6.302	1.678	-1.185 §
MTB	21,033	2.222	1.569	1.844	0.049 ‡	6,252	2.220	1.670	01.556	0.629 §
LEV	21,033	0.467	0.466	0.244	-0.038 §	6,252	0.452	0.437	0.247	-0.106 §
ANALYST	21,033	9.077	7	7.697	-3.293 §	6,252	10.16	8	8.217	-4.367 §
SHRINST	21,033	0.537	0.559	0.276	-0.131 §	6,252	0.554	0.581	0.271	-0.176 §
STDEV	21,033	0.105	0.040	0.184	0.058 §	6,252	0.031	0.019	0.035	0.002 §
ABSCH	21,033	0.085	0.085	0.187	0.050 §	6,252	0.028	0.011	0.046	0.002

Panel B: Disclosure quality sample

	Profit				Investment			
	N	Mean	Median	Stdev	N	Mean	Median	Stdev
ACCURACY	5,268	-1.728	-0.675	2.106	2,508	-2.417	-0.802	5.062
POTENT-COMP	5,268	-1.510	-0.687	2.018	2,508	-1.959	-1.223	2.266
EXIST-COMP	5,268	1.507	1.567	1.254	2,508	1.561	1.600	1.163
IND-PROFIT	5,268	-0.058	-0.073	0.641	2,508	-0.198	-0.156	0.644
SIZE	5,268	7.213	7.037	1.582	2,508	7.123	6.988	1.485
MTB	5,268	2.321	1.766	1.676	2,508	1.858	1.499	1.134
LEV	5,268	0.478	0.485	0.213	2,508	0.513	0.508	0.225
ANALYST	5,268	12.51	11	7.855	2,508	12.74	11	8.346
SHRINST	5,268	0.652	0.689	0.241	2,508	0.657	0.699	0.237

STDEV	5,268	0.066	0.028	0.124	2,508	0.030	0.018	0.034
HORIZ	5,268	3.155	3.280	1.190	2,508	3.001	3.180	1.150
SURPRS	5,268	-0.223	-0.035	1.054	2,508	0.022	0.320	6.157

This table presents summary statistics for disclosure quantity and quality samples. In Panel A, Column "Diff(Non-For)" compares sample means of the nonforecaster group with the forecaster group. A firm-year is classified as a forecaster if it issues at least one forecast for the subsequent fiscal year-end. [§], [‡] and [†] indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.5: List of industries ranked by competition measures

Panel A: Profit forecasts

Rank	POTENT-COMP		EXIST-COMP	
	SIC	FORECASTER%	SIC	FORECASTER%
Lowest	40,21,53,61,48,45	28.34%	21,14,52,75,10,31	48.05%
2	49,75,29,58,52,37,28	55.67%	20,29,53,41,32,12,72	48.34%
3	13,12,26,54,38,70,35	45.46%	23,1,22,54,25,33,34	38.12%
4	30,20,79,73,10,36	34.12%	82,26,37,8,44,51	31.68%
5	25,14,78,33,46,24,42	37.16%	79,35,76,46,17,50,24	48.93%
6	51,62,57,47,80,16,59	41.74%	39,55,40,57,30,61,16	40.45%
7	63,44,22,55,56,39	33.96%	78,47,36,27,80,45	37.98%
8	32,34,1,60,27,23,41	34.94%	56,59,83,15,28,42,73	38.17%
9	64,72,50,15,31,82,17	40.81%	65,38,49,13,87,48,70	32.75%
Highest	83,65,87,76,67,8	37.45%	62,67,63,60,64,58	26.69%

Panel B: Investment forecasts

Rank	POTENT-COMP		EXIST-COMP	
	SIC	FORECASTER%	SIC	FORECASTER%
Lowest	21,29,52,40,53	44.67%	21,10,52,14,31	33.33%
2	45,48,49,54,37,58	56.44%	20,12,8,72,25,1	26.55%
3	10,28,35,20,13	52.56%	29,53,22,34,32	62.01%
4	12,38,73,30,70,79	50.46%	37,82,44,24,26,35	53.13%
5	25,33,78,26,36	64.51%	40,54,33,79,16	71.00%
6	14,51,39,32,22,80	43.37%	30,57,79,50,45,39	46.20%
7	57,59,24,55,34,16	62.29%	47,17,83,46,27,36	34.18%
8	27,42,44,1,56	41.17%	51,80,55,59,38	50.77%
9	72,46,50,82,31,8	27.02%	73,28,49,13,48,70	53.88%
Highest	17,83,47,87,15	27.73%	56,87,15,42,58	41.31%

In this table, industries (two-digit SIC) are sorted into deciles according to competition measures POTENT-COMP and EXIST-COMP. Competition variables and percentages of forecasters are averaged across time within each industry.

Table 2.6: Industry-level competition and disclosure

	FORECASTER%				ACCURACY			
	Profit		Investment		Profit		Investment	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.015 §	(3.35)	0.033 §	(5.61)	0.129 §	(3.00)	0.220 §	(2.81)
EXIST-COMP	-0.045 §	(-6.97)	-0.032 §	(-2.78)	0.100 ‡	(1.85)	0.022	(0.15)
IND-PROFIT	0.010	(0.90)	-0.020	(-1.12)	-0.090	(-0.98)	-0.367 ‡	(-2.06)
ISSUE	0.017	(0.72)	-0.041	(-1.06)	0.169	(1.09)	0.087	(0.28)
SIZE	0.031 §	(3.22)	0.093 §	(6.14)	0.726 §	(8.69)	0.324 ‡	(2.01)
MTB	-0.005	(-0.71)	-0.064 §	(-4.47)	0.089 ‡	(2.03)	0.699 §	(6.25)
LEV	0.130 §	(2.78)	0.247 §	(3.19)	-2.115 §	(-4.08)	-2.732 §	(-3.15)
ANALYST	0.010 §	(3.88)	0.005	(1.33)	-0.023 ‡	(-1.96)	-0.005	(-0.28)
SHRINST	0.054	(1.22)	0.454 §	(5.96)	0.355	(1.07)	0.913	(1.13)
STDEV	-0.289 §	(-3.20)	-0.169	(-0.32)	0.205	(0.20)	-58.41 §	(-4.79)
DCH	0.028	(1.41)	-0.022	(-0.70)				
ABSCH	-0.275 §	(-4.71)	1.520 §	(3.00)				
OPTIM	-0.006	(-1.28)						
HORIZ					-0.607 §	(-8.37)	-0.247 §	(-2.45)
SURPRS					0.128	(1.05)	0.080	(0.79)
DIFFI					-0.088 §	(-4.64)		
STDRET					-0.292 §	(-3.64)		
DACCR					2.296 §	(2.42)		
LIT	0.066 §	(3.76)	0.058 ‡	(2.14)	-0.173	(-1.14)	-0.018	(-0.07)
N	3,649		1,105		1,987		811	
Adj-R ^{2}	15.55%		30.49%		26.74%		25.68%	

This table presents regression coefficients and t-statistics for Equations (2.1) and (2.2). Standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation. §, ‡ and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.7: Forecasting frequency, type and horizon

Panel A: Forecasting frequency

Frequency	Profit		Investment	
	#Obs	Obs%	#Obs	Obs%
0	13,663	64.96%	3,609	57.73%
1	1,952	9.28%	915	14.64%
2	1,123	5.34%	612	9.79%
3	1,046	4.97%	467	7.47%
4	1,322	6.29%	444	7.10%
5	8,42	4.00%	138	2.21%
＞5	1,085	5.16%	67	1.07%
Total	21,033	100%	6,252	100%

Panel B: Forecasting type

Type (Score)	Profit		Investment	
	#Obs	Obs%	#Obs	Obs%
Unidentifiable or no forecast (0)	13,687	65.07%	3,609	57.73%
Qualitative (1)	350	1.66%	228	3.65%
Open Range (2)	461	2.19%	84	1.34%
Close Range (3)	5,209	24.77%	983	15.72%
Point (4)	1,326	6.30%	1,348	21.56%
Total	21,033	100%	6,252	100%

Panel C: Forecasting horizon

Horizon	Profit		Investment	
	#Obs	Obs%	#Obs	Obs%
0 day or no forecast	13,664	64.96%	3,609	57.73%
1-100 days	534	2.54%	157	2.51%
101-200 days	652	3.10%	310	4.96%
201-300 days	1,142	5.43%	476	7.61%
301-400 days	3,499	16.64%	1,157	18.51%
401-500 days	1,063	4.00%	369	5.90%
＞500 days	479	5.16%	174	2.78%
Total	21,033	100%	6,252	100%

Table 2.8: Industry-level competition and forecasting frequency, type and horizon

	Profit						Investment					
	Frequency		Type		Horizon		Frequency		Type		Horizon	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.043 §	(2.22)	0.046 §	(3.34)	0.028 ‡	(1.85)	0.092 §	(4.55)	0.112 §	(5.16)	0.092 §	(4.46)
EXIST-COMP	-0.163 §	(-5.86)	-0.139 §	(-6.86)	-0.110 §	(-4.85)	-0.105 §	(-2.73)	-0.085 ‡	(-2.02)	-0.096 §	(-2.48)
IND-PROFIT	0.025	(0.62)	0.042	(1.30)	0.035	(1.01)	-0.048	(-0.73)	-0.028	(-0.44)	-0.069	(-1.14)
ISSUE	0.190 ‡	(1.77)	0.067	(0.90)	0.080	(0.96)	-0.215 †	(-1.73)	-0.128	(-0.98)	-0.185	(-1.47)
SIZE	0.178 §	(4.47)	0.077 §	(2.49)	0.125 §	(3.77)	0.277 §	(5.68)	0.361 §	(6.73)	0.313 §	(6.29)
MTB	-0.018	(-0.57)	-0.013	(-0.55)	-0.019	(-0.75)	-0.191 §	(-4.33)	-0.240 §	(-5.09)	-0.210 §	(-4.55)
LEV	0.546 §	(3.05)	0.476 §	(3.22)	0.443 §	(2.92)	0.769 §	(3.43)	0.693 §	(2.69)	0.863 §	(3.57)
ANALYST	0.033 §	(3.23)	0.033 §	(4.18)	0.033 §	(3.93)	0.026 ‡	(1.97)	0.005	(0.39)	0.021 ‡	(1.69)
SHRINST	-0.081	(-0.44)	0.164	(1.18)	0.201	(1.36)	1.274 §	(5.51)	1.314 §	(4.93)	1.555 §	(6.38)
STDEV	-1.462 §	(-4.50)	-0.943 §	(-3.34)	-1.046 §	(-3.91)	1.150	(0.71)	-0.548	(-0.30)	1.291	(0.72)
DCH	0.239 §	(3.19)	0.081	(1.30)	0.088	(1.35)	0.011	(0.11)	-0.019	(-0.16)	-0.050	(-0.48)
ABSCH	-0.894 §	(-4.50)	-0.793 §	(-3.94)	-0.593 §	(-3.00)	2.639 ‡	(1.86)	6.790 §	(3.67)	3.529 §	(2.24)
OPTIM	-0.022	(-1.41)	-0.015	(-1.03)	-0.003	(-0.21)						
LIT	0.302 §	(3.91)	0.216 §	(3.82)	0.210 §	(3.42)	0.169 †	(1.60)	0.259 §	(2.57)	0.172 ‡	(1.84)
N	3,649		3,649		3,649		1,105		1,105		1,105	
Pseudo(Adj)-R ^{2}	22.61%		15.24%		16.61%		31.78%		26.48%		36.06%	

This table presents regression coefficients and t-statistics for industry-level OLS regressions with year dummies. Dependent variables are forecasting frequency, type and horizon, respectively. Standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation. §, ‡ and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.9: Firm-level competition and disclosure quantity

	Profit						Investment					
	All		Followers		Leaders		All		Followers		Leaders	
	dy/dx	z-stat	dy/dx	z-stat	dy/dx	z-stat	dy/dx	z-stat	dy/dx	z-stat	dy/dx	z-stat
POTENT-COMP	0.083 §	(2.66)	0.071 §	(2.88)	0.059	(1.00)	0.047 ‡	(1.97)	0.038 ‡	(1.92)	0.033	(0.73)
EXIST-COMP	-0.076 ‡	(-2.08)	-0.066 §	(-2.45)	-0.060	(-0.86)	-0.086 §	(-2.72)	-0.088 §	(-3.32)	-0.054	(-0.86)
IND-PROFIT	-0.019	(-0.33)	0.0002	(0.00)	-0.005	(-0.04)	-0.053	(-0.96)	-0.032	(-0.69)	-0.069	(-0.67)
ISSUE	0.083 †	(1.51)	0.032	(0.63)	0.246 §	(2.66)	-0.155 §	(-3.23)	-0.140 §	(-2.84)	-0.134 †	(-1.64)
SIZE	0.186 §	(5.70)	0.127 §	(4.13)	0.220 §	(3.47)	0.204 §	(6.97)	0.191 §	(7.63)	0.203 §	(3.10)
MTB	-0.017	(-1.14)	-0.022 †	(-1.62)	0.034	(0.93)	-0.170 §	(-5.39)	-0.127 §	(-3.80)	-0.236 §	(-4.06)
LEV	0.343 §	(2.78)	0.176 †	(1.67)	0.844 §	(3.27)	0.706 §	(7.49)	0.509 §	(5.64)	0.859 §	(4.29)
ANALYST	0.004	(0.75)	0.010 ‡	(1.90)	-0.005	(-0.49)	0.004	(1.08)	0.007 †	(1.52)	0.006	(0.80)
SHRINST	0.511 §	(6.09)	0.348 §	(4.83)	0.697 §	(3.74)	0.782 §	(6.95)	0.553 §	(6.42)	0.676 §	(2.67)
STDEV	-0.745 §	(-3.50)	-0.461 §	(-3.75)	-1.918 ‡	(-2.16)	3.200 §	(3.98)	2.831 §	(4.32)	3.486	(1.44)
DCH	0.072 ‡	(2.40)	0.080 §	(2.47)	0.016	(0.33)	0.033	(1.06)	0.044 †	(1.59)	-0.017	(-0.25)
ABSCH	-0.753 §	(-6.24)	-0.492 §	(-4.70)	-1.738 §	(-4.99)	0.950 †	(1.44)	0.553	(1.10)	2.696 ‡	(1.92)
OPTIM	-0.018 §	(-2.57)	-0.009	(-1.42)	-0.053 §	(-3.16)						
LIT	0.291 §	(2.39)	0.221 ‡	(2.15)	0.434 §	(2.26)	0.033	(0.34)	0.117 †	(1.51)	-0.129	(-1.53)
					Difference (Followers - Leaders)							
POTENT-COMP			0.012 §	(2.52)					0.005	(1.17)		
EXIST-COMP			-0.006 ‡	(-1.96)					-0.034 §	(-2.38)		
N	21,033		13,774		7,259		6,252		4,061		2,191	
Pseudo-R ^{2}	5.99%		5.55%		4.09%		9.12%		10.99%		3.58%	

This table presents regression marginal effects (at means) and z-statistics for Equation (2.3). Firms are divided into sub-groups according to their market shares. A firm-year is classified as industry leader if its market share ranks in the top quartile. Standard errors are clustered by industry. All variables are defined in Appendix 2.A. [§], [‡],and [†] indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.10: Firm-level competition and disclosure quality

	Profit						Investment					
	All		Followers		Leaders		All		Followers		Leaders	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.095 §	(2.92)	0.115 §	(2.48)	0.060 †	(1.53)	0.265 §	(3.29)	0.183 §	(2.45)	0.314 §	(2.66)
EXIST-COMP	0.097 ‡	(2.08)	0.146 ‡	(2.09)	0.013	(0.23)	-0.208	(-1.55)	-0.406 §	(-3.00)	-0.031	(-0.17)
IND-PROFIT	-0.110	(-1.44)	-0.057	(-0.52)	-0.190 †	(-1.78)	-0.347	(-1.05)	-0.675	(-1.39)	0.003	(0.01)
ISSUE	0.295 §	(3.20)	0.343 §	(2.88)	0.178	(1.48)	-0.038	(-0.17)	0.236	(0.61)	-0.159	(-0.62)
SIZE	0.560 §	(9.33)	0.799 §	(8.34)	0.423 §	(6.05)	0.469 §	(3.41)	0.552 §	(3.03)	0.530 §	(2.86)
MTB	0.188 §	(6.41)	0.228 §	(5.59)	0.136 §	(4.65)	0.621 §	(7.95)	0.773 §	(7.11)	0.398 §	(4.37)
LEV	-1.790 §	(-5.37)	-2.256 §	(-4.79)	-1.446 §	(-4.19)	-2.653 §	(-4.61)	-3.075 §	(-4.23)	-2.504 §	(-3.31)
ANALYST	-0.028 §	(-3.49)	-0.022	(-1.63)	-0.015 †	(-1.90)	-0.030 †	(-1.68)	-0.021	(-0.74)	-0.044 †	(-1.86)
SHRINST	0.767 §	(3.65)	0.674 §	(2.40)	0.669 §	(2.45)	1.343 §	(2.60)	1.701 §	(2.37)	0.601	(0.94)
STDEV	-0.176	(-0.37)	-0.223	(-0.38)	-0.065	(-0.10)	-42.97 §	(-5.89)	-46.84 §	(-6.01)	-28.66 §	(-3.33)
HORIZ	-0.509 §	(-10.25)	-0.629 §	(-8.01)	-0.402 §	(-7.81)	-0.316 §	(-3.25)	-0.435 §	(-3.00)	-0.227 ‡	(-1.96)
SURPRS	0.030	(0.35)	-0.107	(-1.02)	0.240 ‡	(2.0)	0.088	(1.35)	-0.006	(-0.08)	0.219 ‡	(2.16)
DIFFI	-0.081 §	(-5.53)	-0.085 §	(-4.89)	-0.082 §	(-4.78)						
STDRET	-0.387 §	(-7.23)	-0.398 §	(-5.84)	-0.340 §	(-4.74)						
DACCR	2.907 §	(4.58)	2.438 §	(3.36)	3.322 §	(3.40)						
LIT	0.046	(0.37)	0.092	(0.48)	-0.166	(-1.26)	1.100 §	(2.93)	1.412 §	(3.03)	0.911 ‡	(2.03)
N	5,268		2,546		2,722		2,508		1,269		1,239	
Adj-R^2	24.05%		25.97%		22.76%		21.61%		22.18%		24.48%	

This table presents regression coefficients and t-statistics for Equation (2.4). Firms are divided into sub-groups according to their market shares. A firm-year is classified as industry leader if its market share ranks in the top quartile. Standard errors are clustered by industry. All variables are defined in Appendix 2.A. §, ‡, and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.11: Firm-level competition and forecast error

	Profit						Investment					
	All		Followers		Leaders		All		Followers		Leaders	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Panel A: All forecasts												
POTENT-COMP	0.017	(0.57)	0.017	(0.39)	0.016	(0.42)	-0.124 †	(-1.73)	-0.117 †	(-1.49)	-0.102	(-1.19)
EXIST-COMP	0.105 ‡	(1.97)	0.138 ‡	(1.77)	0.048	(0.77)	0.253	(1.36)	0.345 †	(1.89)	0.167	(0.92)
Mean(Median) ERROR	-0.907	(-0.051)	-1.020	(-0.088)	-0.801	(-0.028)	0.358	(-0.076)	0.574	(-0.047)	0.136	(-0.113)
N	5,268		2,546		2,722		2,508		1,269		1,239	
Adj-R ^{2}	13.22%		13.40%		14.31%		16.33%		16.79%		16.14%	
Panel B: Pessimistic forecasts (ERROR > 0)												
POTENT-COMP	-0.048 §	(-2.73)	-0.060 †	(-1.82)	-0.032 †	(-1.79)	-0.271 §	(-2.55)	-0.257 §	(-2.26)	-0.239 †	(-1.84)
EXIST-COMP	0.042	(1.47)	0.024	(0.58)	0.058 †	(1.89)	0.402 †	(1.60)	0.532 §	(2.27)	0.281	(1.05)
Mean(Median) ERROR	0.844	(0.428)	0.998	(0.476)	0.705	(0.373)	2.800	(0.974)	3.353	(1.264)	2.169	(0.765)
N	2,415		1,147		1,268		1,152		614		538	
Pseudo-R ^{2}	2.03%		1.93%		3.06%		6.00%		6.03%		6.48%	
Panel C: Optimistic forecasts (ERROR < 0)												
POTENT-COMP	0.035	(0.73)	0.030	(0.47)	0.021	(0.37)	0.030	(0.51)	-0.013	(-0.16)	0.074	(1.36)
EXIST-COMP	0.202 §	(2.65)	0.254 §	(2.39)	0.137	(1.54)	0.095	(0.73)	0.084	(0.51)	0.113	(1.00)
Mean(Median) ERROR	-2.471	(-1.216)	-2.747	(-1.340)	-2.202	(-1.036)	-1.721	(-0.702)	-2.030	(-0.732)	-1.430	(-0.650)
N	2,758		1,362		1,396		1,353		655		698	
Pseudo-R ^{2}	4.92%		4.93%		5.39%		3.31%		3.63%		3.74%	

This table presents regression coefficients and t-statistics for firm-level regressions with year dummies. The dependent variable is forecast error. Firms are divided into sub-groups according to their market shares. A firm-year is classified as industry leader if its market share ranks in the top quartile. The dependent variables are left-censored at 0 in Panel B and are right-censored at 0 in Panel C. The Tobit model is used for the regressions in Panels B and C. Standard errors are clustered by industry. All variables are defined in Appendix A. §, ‡, and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.12: Robustness analysis: using alternative competition measures

	FORECASTER%				ACCURACY			
	Profit		Investment		Profit		Investment	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Panel A: Factors from exploratory factor analysis								
POTENT-COMP$_{EFA}$	0.017 §	(3.94)	0.026 §	(4.24)	0.108 §	(2.53)	0.238 §	(3.06)
EXIST-COMP$_{EFA}$	-0.039 §	(-6.52)	-0.029 §	(-2.79)	0.075 †	(1.48)	-0.005	(-0.04)
IND-PROFIT$_{EFA}$	0.050 §	(4.07)	0.06	(0.32)	-0.111	(-1.17)	-0.370 ‡	(-1.96)
N	3,649		1,105		1,987		811	
Adj-R^2	16.35%		29.98%		26.49%		25.91%	
Panel B: Original competition variables								
IND-PPE	-0.007 §	(-3.42)	-0.009 §	(-3.17)	-0.046 ‡	(-2.40)	-0.098 §	(-2.83)
IND-CON4	0.245 §	(6.62)	0.153 §	(2.50)	-0.499 †	(-1.54)	0.095	(0.12)
IND-MGN	-0.087 ‡	(-1.93)	-0.289 §	(-2.91)	-0.200	(-0.44)	-1.172	(-1.28)
N	3,649		1,105		1,987		811	
Adj-R^2	15.81%		30.32%		26.33%		25.57%	
IND-CPX	-0.034 ‡	(-1.86)	-0.075 §	(-2.84)	-0.616 §	(-3.16)	-1.113 §	(-3.24)
IND-NUM	-0.001 §	(-5.34)	-0.001 §	(-2.72)	0.006 §	(2.73)	0.007 †	(1.42)
IND-ROA	0.444 §	(4.56)	0.104	(0.71)	-0.670	(-0.89)	-2.562 †	(-1.72)
N	3,649		1,105		1,987		811	
Adj-R^2	15.88%		29.65%		26.79%		26.27%	

This table presents regression coefficients and t-statistics for industry-level OLS regressions with year dummies. In Panel A, POTENT-COMP$_{EFA}$, EXIST-COMP$_{EFA}$, and IND-PROFIT$_{EFA}$ are proxies for competition from potential entrants, competition from existing rivals and industry profitability. They are constructed from three common factors retained from exploratory factor analysis (EFA) of the nine industry-level competition variables as described in Table 2.2. EXIST-COMP$_{EFA}$ is the inverse of the first common factor, with larger EXIST-COMP$_{EFA}$ indicating higher competition from existing rivals; POTENT-COMP$_{EFA}$ is the inverse of the second common factor, with larger

POTENT-COMP$_{EFA}$ indicating higher competition from potential entrants; IND-PROFIT$_{EFA}$ is the third common factor, with larger IND-PROFIT$_{EFA}$ indicating higher industry profitability. In Panel B, the coefficients on IND-PPE and IND-CPX are multiplied by 1000 for expository purposes. Standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation. Coefficients on control variables are omitted. §, ‡, and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.13: Robustness analysis: Granger causality test

	FORECASTER $_t$ %			
	Profit		Investment	
	Coef.	t-stat	Coef.	t-stat
FORECASTER$_{t-1}$%	0.457 §	(19.07)	0.349 §	(6.14)
FORECASTER$_{t-2}$%	0.175 §	(7.22)	0.208 §	(4.02)
POTENT-COMP$_{t-1}$	0.030 ‡	(2.00)	-0.038	(-0.96)
POTENT-COMP$_{t-2}$	-0.018	(-1.19)	0.053	(1.35)
EXIST-COMP$_{t-1}$	-0.027	(-0.79)	-0.026	(-0.33)
EXIST-COMP$_{t-2}$	0.010	(0.29)	0.008	(0.10)
IND-PROFIT$_{t-1}$	-0.002	(-0.15)	-0.019	(-0.62)
IND-PROFIT $_{t-2}$	-0.003	(-0.19)	-0.005	(-0.15)
		F-test		
	Coef.	**F-stat**	**Coef.**	**F-stat**
POTENT-COMP$_{t-1}$+POTENT-COMP$_{t-2}$	0.012 §	(11.48)	0.014 ‡	(4.33)
EXIST-COMP$_{t-1}$+EXIST-COMP$_{t-2}$	-0.017 §	(8.65)	-0.018 †	(2.06)
IND-PROFIT$_{t-1}$+IND-PROFIT$_{t-2}$	-0.005	(0.22)	-0.023	(1.15)
N	2,600		509	
Adj-R ^{2}	40.16%		48.54%	

This table presents regression coefficients and t-statistics for Equation (2.6). Standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation. Coefficients on control variables are omitted. §, ‡, and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 2.14: Other robustness analyses

	FORECASTER%				ACCURACY			
Panel A: Industry-level analysis on investment forecasts disclosed in MD&A								
	MD&A		All		MD&A		All	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.023 §	(2.24)	0.028 §	(3.51)	0.202 †	(1.38)	0.369 §	(2.29)
EXIST-COMP	-0.038 ‡	(-1.99)	-0.040 §	(-2.30)	-0.127	(-0.42)	0.029	(0.10)
N	364		364		288		325	
Adj-R ^{2}	15.40%		30.32%		14.45%		20.13%	
Panel B: Industry-level analysis based on firms with a single segment								
	Profit		Investment		Profit		Investment	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.019 §	(3.60)	0.026 §	(3.65)	0.097 ‡	(1.68)	0.274 §	(2.83)
EXIST-COMP	-0.041 §	(-5.64)	-0.025 ‡	(-1.96)	0.100 †	(1.33)	0.068	(0.35)
N	2,989		904		1,384		610	
Adj-R ^{2}	15.27%		29.03%		25.27%		20.13%	
Panel C: Industry-level analysis after deleting regulated industries								
	Profit		Investment		Profit		Investment	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.011 §	(2.40)	0.037 §	(5.99)	0.135 §	(2.97)	0.250 §	(3.00)
EXIST-COMP	-0.034 §	(-4.50)	-0.032 §	(-2.59)	0.100 †	(1.45)	0.061	(0.42)
N	3,303		1,050		1,913		758	
Adj-R ^{2}	16.47%		30.76%		27.22%		23.90%	
Panel D: Cross-sectional firm-level analysis								
	Profit		Investment		Profit		Investment	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
POTENT-COMP	0.103 §	(3.93)	0.027 †	(1.26)	0.122 §	(2.19)	0.201 §	(2.32)
EXIST-COMP	-0.074 §	(-2.28)	-0.120 §	(-3.30)	0.191 §	(2.68)	-0.150	(-0.90)
N	4,553		1,900		1,669		1004	
Adj-R ^{2}	18.79%		28.81%		32.39%		25.21%	

In Panel A, "MD&A" indicates that management forecasts are collected from the MD&A section of SEC filings, and "All" indicates that forecasts are collected from both MD&A and Factiva. Standard errors are adjusted for Newey-West heteroscedasticity and autocorrelation for industry-level analysis (Panels A, B, and C) and are clustered by industry for firm-level analysis (Panel D). §, ‡, and † indicate significance at 1%, 5%, and 10% levels, respectively.

Table 3.1: Summary statistics: conservatism and other country variables

Country	$\beta_2+\beta_3$	β_3	$IncR^2$	CIV_COM	LAW	SECREG	FLOW	CRED
Australia	0.529	0.517	0.067	Common	2	0.77	0	1
Austria	0.312	0.321	0.028	Civil	2.1	0.18	1	3
Belgium	0.606	0.488	0.066	Civil	1.64	0.34	1	2
Brazil	0.108	0.083	0.009	Civil	-0.15	0.39	0	1
Canada	0.533	0.533	0.068	Common	2.01	0.91	1	1
Switzerland	0.485	0.428	0.036	Civil	2.22	0.48	1	1
Chile	0.323	0.213	0.019	Civil	1.33	0.5	0	2
Germany	0.536	0.474	0.045	Civil	1.91	0.21	1	3
Denmark	0.483	0.381	0.042	Civil	1.97	0.5	1	3
Spain	0.314	0.284	0.033	Civil	1.38	0.5	1	2
Finland	0.514	0.387	0.025	Civil	2.13	0.49	1	1
France	0.600	0.548	0.073	Civil	1.49	0.58	1	0
UK	0.493	0.500	0.061	Common	1.93	0.73	1	4
Hong Kong	0.505	0.503	0.041	Common	1.66	0.81	1	4
Indonesia	0.298	0.201	0.016	Civil	-0.9	0.59	0	4
India	0.177	0.102	0.006	Common	0.23	0.75	0	4
Italy	0.435	0.460	0.028	Civil	0.94	0.46	1	2
Japan	0.206	0.143	0.010	Civil	1.82	0.47	1	2
South Korea	0.318	0.250	0.017	Civil	0.65	0.55	0	3
Mexico	0.706	0.604	0.064	Civil	-0.37	0.35	0	0
Malaysia	0.380	0.311	0.024	Common	0.55	0.78	0	4
Netherlands	0.360	0.323	0.049	Civil	1.97	0.62	1	2
Norway	0.295	0.204	0.018	Civil	2.01	0.43	1	2
New Zealand	0.403	0.381	0.068	Common	1.99	0.48	0	3
Philippines	0.069	0.010	0.006	Civil	-0.5	0.89	0	0
Singapore	0.483	0.362	0.037	Common	2.12	0.84	1	4
Sweden	0.674	0.616	0.067	Civil	1.98	0.45	1	2
Thailand	0.464	0.242	0.010	Common	0.43	0.62	0	3
Taiwan	0.343	0.335	0.041	Civil	0.87	0.64	0	2
USA	0.407	0.398	0.057	Common	1.92	0.97	1	1
South Africa	0.299	0.138	0.005	Common	0.3	0.58	0	3

This table lists country-level variables over 31 countries. $\beta_2+\beta_3$, β_3, and $IncR^2$ are three alternative measures for conservatism, estimated by using all the firms within each country over the period 1991 to 2006. All variables are defined in Appendix 3.B.

Table 3.2: Summary statistics: cost of capital variables by country

Country	Cost of Debt Sample					Cost of Equity Sample				
	Firm-Years	**Country-Years**	R_D	R_{DR}	*Rating*	**Firm-Years**	**Country-Years**	R_E	R_{ER}	R_{Ret}
Australia	4,474	16	0.082	0.057	6.617	2,152	16	0.123	0.098	0.163
Austria	557	14	0.070	0.050	4.708	188	12	0.124	0.102	0.234
Belgium	677	16	0.072	0.052	7.167	366	15	0.111	0.091	0.170
Brazil	1,079	11	0.175	0.108	11.44	128	6	0.314	0.229	0.281
Canada	5,475	16	0.076	0.057	10.297	2,854	16	0.125	0.106	0.114
Switzerland	2,054	16	0.061	0.049	7.146	1,073	16	0.120	0.107	0.188
Chile	376	13	0.078	0.029	7.167	162	13	0.128	0.081	0.218
Germany	4,183	16	0.093	0.073	5.615	1,841	16	0.124	0.104	0.167
Denmark	1,127	16	0.079	0.059	4.762	560	16	0.114	0.095	0.176
Spain	934	16	0.086	0.051	4.563	576	15	0.112	0.076	0.257
Finland	869	14	0.072	0.058	8.625	418	10	0.144	0.133	0.371
France	3,685	16	0.068	0.051	6.688	1,945	16	0.113	0.096	0.155
UK	12,895	16	0.083	0.063	6.578	7,182	16	0.121	0.102	0.103
Hong Kong	1,140	16	0.064	0.039	7.403	412	16	0.128	0.102	0.199
Indonesia	1,522	14	0.094	0.029	14.75	357	13	0.191	0.126	0.191
India	1,899	13	0.112	0.018	7.8	712	13	0.152	0.058	0.460
Italy	1,522	16	0.082	0.053	7.209	447	14	0.126	0.096	0.173
Japan	37,727	16	0.030	0.028	5.028	9,427	16	0.091	0.089	0.225
South Korea	1,812	14	0.085	0.048	8.385	128	7	0.208	0.177	0.331
Mexico	533	12	0.104	0.019	7.810	209	10	0.141	0.051	0.322
Malaysia	5,180	16	0.068	0.040	7.037	1,359	16	0.118	0.089	0.194
Netherlands	1,107	15	0.080	0.058	6.808	806	14	0.124	0.102	0.194
Norway	1,047	16	0.075	0.055	9	477	15	0.152	0.132	0.298
New Zealand	509	16	0.078	0.057	7.083	322	16	0.121	0.101	0.162
Philippines	664	14	0.089	0.028	12.48	126	10	0.151	0.093	0.239
Singapore	2,848	16	0.051	0.038	10.67	965	16	0.118	0.105	0.347
Sweden	2,167	16	0.082	0.066	6.36	984	16	0.138	0.123	0.257
Thailand	2,576	15	0.070	0.034	10.19	612	13	0.163	0.126	0.320
Taiwan	3,220	13	0.046	0.033	7.8	563	10	0.125	0.117	0.116
USA	35,621	16	0.077	0.050	8.46	24,159	16	0.108	0.081	0.136
South Africa	1,295	16	0.147	0.107	-	782	16	0.152	0.112	0.234
Total	140,774	466	-	-	-	62,292	430	-	-	-

This table presents mean statistics of cost of capital variables over 31 countries from 1991 to 2006. R_D (R_{DR}) and R_E (R_{ER}) are the cost of debt and equity (in real terms) averaged over all the years for each country. For each country-year, they are measured as country medians for all the firms.

Table 3.3: Correlation matrix for cost of capital measures

Variables	R_{CT}	R_{GLS}	R_{OJ}	R_{PEG}	R_{Ret}	R_D	*Rating*
R_E	0.915 §	0.860 §	0.961 §	0.966 §	0.089	0.438 §	0.236 §
R_{CT}	-	0.790 §	0.888 §	0.585 §	0.101 †	0.490 §	0.243 §
R_{GLS}	-	-	0.761 §	0.783 §	0.009	0.369 §	0.159 §
R_{OJ}	-	-	-	0.966 §	0.119 ‡	0.417 §	0.248 §
R_{PEG}	-	-	-	-	0.070	0.390 §	0.255 §
R_{Ret}	-	-	-	-	-	0.026	0.057
R_D	-	-	-	-	-	-	0.238 §

R_{CT}, R_{GLS}, R_{OJ} and R_{PEG} are derived as the internal rate of return in the Claus and Thomas (2001), the Gebhardt, Lee, and Swaminathan (2001), the Ohlson and Juettner-Nauroth (2005) and the Easton (2004) models, respectively. These models are described in detail in Appendix 3.A. All variables are defined in Appendix B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.4: Pearson correlation for regression variables

Variables	$\beta_2+\beta_3$	β_3	$IncR^2$	N
R_D	-0.210 §	-0.210 §	-0.171 §	466
Rating	-0.181 §	-0.200 §	-0.149 §	280
R_E	-0.271 §	-0.311 §	-0.330 §	430
R_{Ret}	-0.138 ‡	-0.201 §	-0.257 §	430
LAW	0.415 §	0.500 §	0.504 §	31
SECREG	-0.113	-0.072	0.045	31
FLOW	0.364 ‡	0.464 §	0.368 §	31
CRED	-0.124	-0.157	-0.263	31

$\beta_2+\beta_3$, β_3 and $IncR^2$ are three alternative measures for conservatism, estimated by using all the firms within each country over the period 1991 to 2006. All variables are defined in Appendix 3.B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.5: Distributional statistics for regression variables

Variable	*Panel A: Cost of debt sample*							
	N	**Mean**	**Min.**	**Q1**	**Median**	**Q3**	**Max.**	**Std. dev.**
R_D	466	0.080	0.017	0.060	0.075	0.092	0.372	0.033
$\beta_2+\beta_3$	466	0.416	0.069	0.314	0.435	0.514	0.706	0.146
β_3	466	0.352	0.010	0.242	0.381	0.488	0.616	0.155
$IncR^2$	466	0.037	0.005	0.018	0.036	0.061	0.073	0.022
BTM	466	0.870	0.003	0.571	0.738	0.990	4.309	0.524
LEVERAGE	466	0.258	0.090	0.211	0.254	0.290	0.650	0.076
STDRET	466	0.104	0.042	0.078	0.096	0.118	0.325	0.038
STDEARN	466	0.030	0.005	0.018	0.027	0.037	0.097	0.015
SIZE	466	7.410	3.583	5.662	6.734	8.578	14.26	2.437
INTCOV	466	3.40	0.283	2.037	3.080	4.304	13.152	1.903
GROWTH	466	0.082	-0.100	0.039	0.077	0.117	0.409	0.066
ROA	466	0.036	-0.091	0.023	0.035	0.050	0.095	0.020
INF	466	0.030	-0.039	0.014	0.023	0.037	0.206	0.029
Rating	280	7.597	1	5	8	9	17	3.018
Variable	*Panel B: Cost of equity sample*							
	N	**Mean**	**Min.**	**Q1**	**Median**	**Q3**	**Max.**	**Std. dev.**
R_E	430	0.132	0.058	0.111	0.124	0.144	0.454	0.038
$\beta_2+\beta_3$	430	0.423	0.069	0.314	0.435	0.514	0.706	0.141
β_3	430	0.360	0.010	0.242	0.381	0.488	0.616	0.152
$IncR^2$	430	0.039	0.005	0.018	0.037	0.061	0.073	0.022
BTM	430	0.649	0.002	0.495	0.596	0.758	3.137	0.269
LEVERAGE	430	0.228	0.054	0.180	0.225	0.269	0.601	0.072
STDRET	430	0.097	0.053	0.075	0.090	0.110	0.286	0.033
STDEARN	430	0.026	0.005	0.017	0.024	0.032	0.072	0.011
SIZE	430	8.073	4.829	6.134	7.307	9.414	14.94	2.514
FBIAS	430	0.007	-0.026	-0.000	0.002	0.006	0.362	0.025
INF	430	0.029	-0.039	0.014	0.022	0.035	0.206	0.029
R_{Ret}	307	0.212	0.002	0.070	0.175	0.298	0.931	0.172

Panels A and B present descriptive statistics of regression variables over 31 countries from 1991 to 2006 for the cost of debt and equity samples, respectively. $\beta_2+\beta_3$, β_3 and $IncR^2$ are three alternative measures for conservatism, estimated by using all the firms within each country over the period 1991 to 2006. Country-year medians are used for the computations of other variables. All variables are defined in Appendix 3.B.

Table 3.6: Regression analysis of cost of capital on conservatism

Variables	Cost of Debt (R_D)						Cost of Equity (R_E)					
	$\beta_2+\beta_3$		β_3		$IncR^2$		$\beta_2+\beta_3$		β_3		$IncR^2$	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONSERV	-0.059 §	(0.00)	-0.053 §	(0.00)	-0.234 ‡	(0.02)	-0.051 §	(0.01)	-0.042 §	(0.00)	-0.374 §	(0.00)
BTM	-0.002	(0.36)	-0.002	(0.32)	-0.005	(0.21)	0.010	(0.21)	0.010	(0.24)	0.006	(0.33)
LEVERAGE	-0.135 §	(0.00)	-0.141 §	(0.00)	-0.127 §	(0.00)	0.061 ‡	(0.03)	0.063 ‡	(0.02)	0.071 §	(0.01)
STDRET	0.078 †	(0.07)	0.074 §	(0.09)	0.082 †	(0.06)	0.100 †	(0.06)	0.096 †	(0.06)	0.073	(0.11)
STDEARN	0.228 §	(0.01)	0.197 ‡	(0.03)	0.162 †	(0.06)	1.050 §	(0.00)	1.017 §	(0.00)	1.038 §	(0.00)
SIZE	-0.001	(0.12)	-0.001	(0.21)	0.001	(0.28)	-0.001	(0.20)	-0.0004	(0.34)	-0.001	(0.15)
INTCOV	-0.006 §	(0.00)	-0.007 §	(0.00)	-0.007 §	(0.00)	-	-	-	-	-	-
GROWTH	0.042	(0.13)	0.042	(0.13)	0.032	(0.82)	-	-	-	-	-	-
ROA	0.123	(0.13)	0.092	(0.21)	0.107	(0.17)	-	-	-	-	-	-
FBIAS	-	-	-	-	-	-	0.162 ‡	(0.03)	0.159 ‡	(0.04)	0.152 ‡	(0.04)
INF	0.175 ‡	(0.02)	0.196 §	(0.01)	0.208 §	(0.01)	0.295 §	(0.01)	0.311 §	(0.01)	0.309 §	(0.01)
CIV_COM	-0.020 §	(0.00)	-0.020 §	(0.00)	-0.017 §	(0.00)	-0.002	(0.34)	-0.003	(0.31)	0.001	(0.40)
CRED	-0.005 §	(0.00)	-0.005 §	(0.00)	-0.005 §	(0.00)	-	-	-	-	-	-
LAW	-0.013 §	(0.00)	-0.012 §	(0.00)	-0.012 §	(0.00)	-0.007 ‡	(0.04)	-0.006 †	(0.07)	-0.004	(0.19)
SECREG	-0.128 §	(0.00)	-0.122 §	(0.00)	-0.108 §	(0.00)	-0.102 §	(0.00)	-0.093 §	(0.00)	-0.093 §	(0.00)
FLOW	-0.045 §	(0.00)	-0.043 ‡	(0.02)	-0.043 ‡	(0.03)	-0.052 ‡	(0.02)	-0.047 §	(0.02)	-0.059 §	(0.01)
SECREG×FLOW	0.083 §	(0.00)	0.080 §	(0.00)	0.072 §	(0.01)	0.086 §	(0.01)	0.080 §	(0.01)	0.093 §	(0.01)
Year dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Adj-R^2	52.2%		51.2%		49.0%		47.1%		46.5%		47.3%	

The cost of debt (equity) sample comprises 466 (430) country-year medians from 31 countries over 1991 to 2006. The table reports OLS regression coefficients and, in parentheses, one-tailed *p*-values based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. $\beta_2+\beta_3$, β_3 and $IncR^2$ are three alternative measures for conservatism, estimated by using all the firms within each country over the period 1991 to 2006. All variables are defined in Appendix 3.B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.7: Robustness: alternative measures for cost of capital

Variables	Cost of Debt *(Rating)*						Cost of Equity *(R_{Ret})*					
	$\beta_2+\beta_3$		β_3		$IncR^2$		$\beta_2+\beta_3$		β_3		$IncR^2$	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONSERV	-2.994 §	(0.03)	-3.427 §	(0.00)	-18.39 ‡	(0.05)	-0.107 ‡	(0.05)	-0.206 §	(0.00)	-1.72 §	(0.00)
BTM	1.196 §	(0.00)	1.142 §	(0.00)	0.948 §	(0.01)	0.049 ‡	(0.03)	0.053 ‡	(0.02)	0.040 ‡	(0.05)
LEVERAGE	-2.954	(0.11)	-3.227 †	(0.09)	-2.783	(0.12)	0.160	(0.16)	0.144	(0.18)	0.182	(0.12)
STDRET	14.89 ‡	(0.02)	14.73 ‡	(0.02)	15.14 ‡	(0.02)	0.614 †	(0.06)	0.517 †	(0.09)	0.503 †	(0.09)
STDEARN	25.58 §	(0.01)	25.70 §	(0.01)	23.21 §	(0.01)	-0.047	(0.47)	0.143	(0.42)	0.202	(0.38)
SIZE	-0.210 ‡	(0.05)	-0.216 ‡	(0.04)	-0.207 ‡	(0.05)	0.002	(0.33)	0.001	(0.42)	-0.002	(0.36)
INTCOV	-0.006	(0.25)	-0.006	(0.23)	-0.008	(0.20)	-	-	-	-	-	-
GROWTH	0.600 §	(0.00)	0.575 §	(0.00)	0.618 §	(0.00)	-	-	-	-	-	-
ROA	-0.869	(0.45)	-1.662	(0.40)	-0.997	(0.44)	-	-	-	-	-	-
INF	-	-	-	-	-	-	1.207 §	(0.00)	1.204 §	(0.00)	1.226 §	(0.00)
CIV_COM	-0.288	(0.37)	-0.452	(0.31)	-0.148	(0.43)	-0.031	(0.20)	-0.031	(0.20)	-0.014	(0.35)
CRED	-0.469 §	(0.01)	-0.490 §	(0.01)	-0.464 §	(0.01)	-	-	-	-	-	-
LAW	-1.038 §	(0.00)	-1.029 §	(0.00)	-0.958 §	(0.01)	0.016	(0.22)	0.019	(0.17)	0.028 †	(0.08)
SECREG	0.506	(0.41)	0.326	(0.44)	1.185	(0.30)	-0.164 †	(0.09)	-0.194 †	(0.06)	-0.195 †	(0.06)
FLOW	-1.519	(0.17)	-1.539	(0.16)	-1.753	(0.14)	-0.028	(0.38)	-0.044	(0.32)	-0.097	(0.16)
SECREG×FLOW	3.192 †	(0.07)	3.370 †	(0.06)	3.369 †	(0.07)	0.029	(0.42)	0.076	(0.30)	0.128	(0.20)
Year dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Adj-R^2	35.0%		35.3%		34.3%		29.8%		31.3%		32.1%	

The cost of debt (*Rating*) sample comprises 280 country-year medians from 30 countries over 1991 to 2006 and the cost of equity (R_{Ret}) sample comprises 307 country-year medians from 31 countries over 1991 to 2006. The table reports OLS regression coefficients and, in parentheses, one-tailed *p*-values based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. $\beta_2+\beta_3$, β_3 and $IncR^2$ are three alternative measures for conservatism, estimated by using all the firms within each country over the period 1991 to 2006. All variables are defined in Appendix 3.B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.8: Robustness: country risk indices and risk-free rate

	Panel A: Country risk indices as proxies for the cost of capital							
	Credit risk (R_{Credit})				**Financial risk($R_{Financial}$)**			
	$\beta_2+\beta_3$		β_3		$\beta_2+\beta_3$		β_3	
CONSERV	-0.152 §	(0.00)	-0.143 §	(0.00)	-0.217 §	(0.00)	-0.270 §	(0.00)
N	324		324		120		120	
Adj- R^2	89.1%		88.8%		88.7%		89.5%	
	Panel B: Using risk-free rates (R_f) to replace inflation rates							
	Cost of debt(R_D)				**Cost of equity(R_E)**			
	$\beta_2+\beta_3$		β_3		$\beta_2+\beta_3$		β_3	
CONSERV	-0.028 ‡	(0.02)	-0.028 ‡	(0.02)	-0.041 §	(0.01)	-0.037 §	(0.00)
N	456		456		420		420	
Adj- R^2	65.0%		65.0%		49.1%		48.9%	

Panel A presents OLS regression results of country risk indices on conservatism and control variables as in Equation (3.4). Credit risk sample comprises 324 country-year medians from 31 countries over 1996 to 2006. Financial risk sample comprises 120 country-year medians from 30 country over 2001 to 2006. Panel B presents OLS regression results of cost of debt and equity on conservatism and control variables as in Equations (3.4) and (3.5) by replacing inflation rate with risk-free rate. $\beta_2+\beta_3$ and β_3 are two measures for conservatism, estimated by using all the firms within each country over the period 1991 to 2006. One-tailed *p*-values are based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. Year dummies are included in all regressions. Coefficients and one-tailed *p*-values for other regression variables are omitted. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.9: Robustness: conservatism measures using alternative cumulating horizons

	Panel A: Cost of debt (R_D)			
	Cumulating horizon			
	$j = 3$	$j = 2$	$j = 1$	$j = 0$
CONSERV($\beta_2+\beta_3$)	-0.052 §	-0.064 §	-0.059 §	-0.037 §
***p*-value**	(0.00)	(0.00)	(0.00)	(0.01)
Adj-R²	59.8%	54.8%	52.2%	48.5%
CONSERV(β_3)	-0.034 §	-0.056 §	-0.053 §	-0.022 ‡
***p*-value**	(0.00)	(0.00)	(0.00)	(0.04)
Adj-R²	57.9%	52.3%	51.2%	47.9%
N	408	452	466	490
	Panel B: Cost of equity (R_E)			
	Cumulating horizon			
	$j = 3$	$j = 2$	$j = 1$	$j = 0$
CONSERV($\beta_2+\beta_3$)	-0.025 ‡	-0.039 §	-0.051 §	-0.047 §
***p*-value**	(0.02)	(0.01)	(0.01)	(0.01)
Adj-R²	59.0%	47.1%	47.1%	45.5%
CONSERV(β_3)	-0.007	-0.029 §	-0.042 §	-0.031 ‡
***p*-value**	(0.21)	(0.00)	(0.00)	(0.02)
Adj-R²	58.3%	46.1%	46.5%	44.8%
N	377	418	430	448

Panels A and B presents OLS regression results of cost of debt and equity on conservatism, respectively. $\beta_2 + \beta_3$ and β_3 are estimated from Equation (3.2) by using all the firms within each country over the period 1991 to 2006. Cumulating horizons 0, 1, 2, and 3 indicate that earnings and stock returns are cumulated over one, two, three and four years, respectively. One-tailed *p*-values are based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. Year dummies are included in all regressions. Coefficients and *p*-values for other regression variables are omitted. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.10: Robustness: conservatism measures from non-price-based model

Variables	Cost of debt (R_D)				Cost of equity (R_E)			
	β_3		$IncR^2$		β_3		$IncR^2$	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONSERV	-0.021 §	(0.01)	-0.098 ‡	(0.02)	-0.031 §	(0.00)	-0.221 §	(0.00)
BTM	-0.003	(0.29)	-0.004	(0.22)	0.011	(0.22)	0.007	(0.31)
LEVERAGE	-0.110 §	(0.00)	-0.109 §	(0.00)	0.069 ‡	(0.02)	0.086 §	(0.00)
STDRET	0.114 ‡	(0.03)	0.102 ‡	(0.04)	0.150 §	(0.01)	0.122 ‡	(0.03)
STDEARN	0.136 †	(0.09)	0.182 ‡	(0.04)	1.033 §	(0.00)	1.154 §	(0.00)
SIZE	-0.0002	(0.40)	-0.000	(0.48)	-0.0001	(0.43)	-0.0002	(0.43)
INTCOV	-0.006 §	(0.00)	-0.006 §	(0.00)	-	-	-	-
GROWTH	0.029	(0.22)	0.024	(0.27)	-	-	-	-
ROA	0.100	(0.16)	0.107	(0.15)	-	-	-	-
FBIAS	-	-	-	-	0.163 ‡	(0.04)	0.149 ‡	(0.03)
INF	0.195 ‡	(0.02)	0.196 ‡	(0.02)	0.295 §	(0.01)	0.268 ‡	(0.02)
CIV_COM	-0.016 §	(0.01)	-0.020 §	(0.00)	0.002	(0.36)	-0.004	(0.24)
CRED	-0.005 §	(0.00)	-0.005 §	(0.00)	-	-	-	-
LAW	-0.015 §	(0.00)	-0.013 §	(0.00)	-0.008 ‡	(0.03)	-0.003	(0.20)
SECREG	-0.092 §	(0.00)	-0.094 §	(0.00)	-0.071 §	(0.01)	-0.076 §	(0.01)
FLOW	-0.035 ‡	(0.04)	-0.035 ‡	(0.04)	-0.047 ‡	(0.03)	-0.055 §	(0.01)
SECREG ×FLOW	0.056 ‡	(0.03)	0.055 ‡	(0.03)	0.068 ‡	(0.03)	0.073 ‡	(0.02)
Year dummies	Yes		Yes		Yes		Yes	
Adj-R^2	48.9%		48.5%		46.4%		48.0%	

Cost of debt (equity) sample comprises 466 (430) country-year medians from 31 countries over 1991 to 2006. The table reports OLS regression coefficients and, in parentheses, one-tailed *p*-values based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. β_3 is estimated from Equation (6). $IncR^2$ is estimated from Equations (3.6) and (3.7). All other variables are defined in Appendix 3. B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.11: Robustness: controlling for additional country characteristics

Variables	Cost of debt (R_D)				Cost of equity (R_E)			
	$\beta_2+\beta_3$		β_3		$\beta_2+\beta_3$		β_3	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONSERV	-0.151 §	(0.00)	-0.060 §	(0.00)	-0.100 §	(0.00)	-0.117 §	(0.00)
BTM	0.002	(0.24)	0.003	(0.18)	0.033 §	(0.00)	0.036 §	(0.00)
LEVERAGE	-0.126 §	(0.00)	-0.128 §	(0.00)	0.056 §	(0.02)	0.050 ‡	(0.03)
STDRET	0.114 §	(0.01)	0.110 §	(0.01)	0.036	(0.27)	0.029	(0.30)
STDEARN	-0.232 ‡	(0.02)	-0.266 §	(0.01)	0.551 §	(0.00)	0.515 §	(0.00)
SIZE	-0.0001	(0.47)	0.000	(0.49)	0.001	(0.19)	0.002 ‡	(0.05)
INTCOV	-0.006 §	(0.00)	-0.006 §	(0.00)	-	-	-	-
GROWTH	0.031	(0.22)	0.031	(0.21)	-	-	-	-
ROA	-0.157 †	(0.06)	-0.176 ‡	(0.04)	-	-	-	-
FBIAS	-	-	-	-	0.129 †	(0.10)	0.131†	(0.10)
INF	0.181 §	(0.00)	0.193 §	(0.00)	0.341 §	(0.00)	0.367 §	(0.00)
CIV_COM	-0.011 ‡	(0.03)	-0.010 ‡	(0.03)	-0.021 ‡	(0.04)	-0.031 §	(0.01)
CRED	-0.0001	(0.47)	0.0001	(0.44)	-	-	-	-
LAW	-0.026 §	(0.00)	-0.031 §	(0.00)	-0.029 §	(0.00)	-0.036 §	(0.00)
SECREG	-0.132 §	(0.00)	-0.126 §	(0.00)	-0.196 §	(0.00)	-0.194 §	(0.00)
FLOW	-0.083 §	(0.00)	-0.079 §	(0.00)	-0.057 §	(0.01)	-0.038 §	(0.01)
SECREG×FLOW	0.141 §	(0.00)	0.129 §	(0.03)	0.095 §	(0.01)	0.066 §	(0.00)
DEBTMKT	-0.017 §	(0.01)	-0.016 §	(0.01)	-	-	-	-
EQUITYMKT	-	-	-	-	-0.006 †	(0.10)	-0.001 ‡	(0.03)
ACCESS	-	-	-	-	-0.011 †	(0.08)	-0.009	(0.11)
GDP	-0.017 §	(0.00)	-0.015 §	(0.00)	-0.002	(0.33)	0.004	(0.28)
JUDIMP	0.034 §	(0.00)	0.035 §	(0.00)	0.030 §	(0.00)	0.032 §	(0.00)
PUBLENF	0.011	(0.21)	0.020 †	(0.09)	0.027 †	(0.04)	0.042 §	(0.01)

RISKEXP	0.012 §	(0.00)	0.017 §	(0.00)	0.012 ‡	(0.02)	0.015 §	(0.00)
SOE	0.011 ‡	(0.02)	0.011 ‡	(0.02)	0.002	(0.39)	0.001	(0.44)
TAXBURD	-0.032 §	(0.00)	-0.034 §	(0.00)	0.002	(0.34)	-0.000	(0.50)
BANKMKT	-0.011 §	(0.01)	-0.013 §	(0.01)	-0.037 §	(0.00)	-0.043 §	(0.00)
PRIVDEBT	0.015 §	(0.00)	0.013 §	(0.00)	0.011 §	(0.01)	0.007 ‡	(0.04)
OWNCONC	0.043 §	(0.00)	0.047 §	(0.00)	0.005	(0.40)	-0.003	(0.49)
ITENF	-0.009 §	(0.00)	-0.010 §	(0.00)	0.017 §	(0.00)	0.015 §	(0.01)
Year dummies	Yes		Yes		Yes		Yes	
Adj-R^2	66.4%		66.5%		60.7%		60.9%	

Cost of debt (equity) sample comprises 445 (430) country-year medians from 30 (31) countries over 1991 to 2006. The table reports OLS regression coefficients and, in parentheses, one-tailed *p*-values based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. All variables are defined in Appendix 3.B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.12: Robustness: alternative sample selection

Variables	Cost of debt (R_D)				Cost of equity (R_E)			
	$\beta_2+\beta_3$		β_3		$\beta_2+\beta_3$		β_3	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONSERV	-0.048 ‡	(0.02)	-0.066 §	(0.00)	-0.054 §	(0.00)	-0.027 ‡	(0.04)
BTM	0.002	(0.35)	0.001	(0.42)	0.016 †	(0.08)	0.016 †	(0.08)
LEVERAGE	-0.151 §	(0.00)	-0.142 §	(0.00)	0.097 §	(0.01)	0.086 ‡	(0.02)
STDRET	0.091 ‡	(0.04)	0.088 ‡	(0.05)	0.047	(0.25)	0.064	(0.17)
STDEARN	0.252 §	(0.01)	0.294 §	(0.00)	1.002 §	(0.00)	0.963 §	(0.00)
SIZE	-0.003 §	(0.01)	-0.003 §	(0.00)	-0.005 §	(0.00)	-0.004 §	(0.00)
INTCOV	-0.007 §	(0.00)	-0.007 §	(0.00)	-	-	-	-
GROWTH	0.026	(0.32)	0.023	(0.34)	-	-	-	-
ROA	0.138	(0.13)	0.128	(0.13)	-	-	-	-
FBIAS	-	-	-	-	0.121 †	(0.10)	0.123 †	(0.10)
INF	0.338 §	(0.00)	0.349 §	(0.00)	0.488 ‡	(0.02)	0.504 ‡	(0.02)
CIV_COM	-0.019 §	(0.01)	-0.021	(-0.94)	0.0005	(0.48)	0.003	(0.38)
CRED	-0.007 §	(0.00)	-0.009 §	(0.00)	-	-	-	-
LAW	-0.013 §	(0.00)	-0.013 §	(0.00)	-0.004	(0.21)	-0.006	(0.13)
SECREG	-0.226 §	(0.00)	-0.212 §	(0.00)	-0.260 §	(0.00)	-0.248 §	(0.00)
FLOW	-0.102 §	(0.00)	-0.092 §	(0.00)	-0.158 §	(0.00)	-0.157 §	(0.00)
SECREG×FLOW	0.163 §	(0.00)	0.149 §	(0.00)	0.223 §	(0.00)	0.223 §	(0.00)
Year dummies	Yes		Yes		Yes		Yes	
Adj-R^2	60.5%		61.7%		60.9%		60.1%	

The cost of debt (equity) sample comprises 336 (312) country-year medians from 22 countries over 1991 to 2006. The table reports OLS regression coefficients and, in parentheses, one-tailed *p*-values based on standard errors, adjusted for Newey-West heteroscedasticity and autocorrelation. $\beta_2+\beta_3$ and β_3 are obtained from Ball, Robin, and Sadka (2008). All other variables are defined in Appendix 3.B. §, ‡, and † indicate 1%, 5%, and 10% significance, respectively.

Table 3.13: Robustness: cross-sectional regression

Variables	Cost of debt (R_D)				Cost of equity (R_E)			
	$\beta_2+\beta_3$		β_3		$\beta_2+\beta_3$		β_3	
	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value	Coeff.	*p*-value
CONSERV	-0.056 ‡	(0.04)	-0.048 †	(0.07)	-0.093 ‡	(0.03)	-0.070 †	(0.09)
BTM	-0.010	(0.21)	-0.013	(0.16)	-0.041 †	(0.09)	-0.070 †	(0.09)
LEVERAGE	-0.174 ‡	(0.02)	-0.190 ‡	(0.02)	-0.074	(0.29)	-0.058	(0.34)
STDRET	0.148	(0.34)	0.137	(0.36)	0.183	(0.39)	0.226	(0.32)
STDEARN	0.235	(0.50)	0.160	(0.37)	1.521 †	(0.06)	1.358 †	(0.09)
SIZE	0.001	(0.38)	0.001	(0.33)	-0.002	(0.34)	-0.0004	(0.46)
INTCOV	-0.010 ‡	(0.04)	-0.012 ‡	(0.03)	-	-	-	-
GROWTH	0.059	(0.38)	0.045	(0.42)	-	-	-	-
ROA	0.894 ‡	(0.04)	0.812 †	(0.06)	-	-	-	-
FBIAS	-	-	-	-	1.615 †	(0.08)	1.557 †	(0.10)
INF	0.147	(0.40)	0.218	(0.28)	0.522	(0.12)	0.620 †	(0.09)
CIV_COM	-0.016	(0.17)	-0.016	(0.18)	0.012	(0.28)	0.011	(0.30)
CRED	-0.005 †	(0.10)	-0.005	(0.11)	-	-	-	-
LAW	-0.013	(0.12)	-0.011 †	(0.16)	-0.009	(0.28)	0.013	(0.79)
SECREG	-0.079 †	(0.06)	-0.072 †	(0.08)	-0.113 †	(0.06)	-0.093 †	(0.10)
FLOW	-0.003	(0.47)	-0.004	(0.46)	-0.071 †	(0.07)	-0.060	(0.12)
SECREG†FLOW	0.032	(0.28)	0.032	(0.30)	0.112 †	(0.07)	0.094	(0.11)
INTERCEPT	0.197 §	(0.01)	0.197 §	(0.01)	0.197 §	(0.04)	0.153 †	(0.08)
Adj-R^2	58.8%		55.4%		57.8%		53.6%	

The cost of debt (equity) sample comprises 31 country-level observations. The regression variables are averaged across the period from 1991 to 2006 within each country. The table reports OLS regression coefficients and, in parentheses, one-tailed *p*-values. All variables are defined in Appendix B. §, ‡ and † indicate 1%, 5%, and 10% significance, respectively.

Table 4.1: Exploratory principal component analysis

Factor	Cumulative variance explained	Component	Component loading	Mean	Std. Dev.
F-InsiderPower (board independence)	13.91%	*%Board Inside*	58%	0.218	0.124
		%Insider Non-top Own	92%	0.008	0.027
		%Insider Top Own	65%	0.009	0.019
		%Insider Own	99%	0.017	0.039
F-Block (block holder governance)	23.87%	*%Block Own*	99%	0.161	0.140
		#Block	88%	1.872	1.541
		%Largest Own	85%	0.089	0.054
F-Affiliated (board independence)	33.41%	*%AC Affiliated*	85%	0.090	0.175
		%CC Affiliated	73%	0.122	0.217
		AC Chair Affiliated	74%	0.056	0.230
		CC Chair Affiliated	54%	0.093	0.290
F-BoardSize (board size)	41.57%	*#AC*	85%	3.510	1.032
		#CC	86%	3.364	1.189
		#Directors	74%	8.443	2.648
F-Active (activist holder governance)	46.79%	*#Activists*	75%	6.326	4.294
		%Activists Own	74%	0.018	0.015
		Insider Chairman	44%	0.713	0.453
		%Outsider Own	-41%	0.002	0.003
		%Affiliated Own	-43%	0.008	0.021
F-InsiderAppt (board independence)	51.92%	*%Affiliated Appointed*	63%	0.377	0.450
		% Outsiders Appointed	78%	0.754	0.306
		Insider Chairman	43%	0.713	0.453
F-Busy (board expertise)	56.13%	*%Outsiders Busy*	59%	0.066	0.123
		%Affiliated Busy	66%	0.039	0.162
		%Insiders Busy	56%	0.235	0.381
F-Old (board expertise)	60.16%	*%Outsiders Old*	76%	0.098	0.160
		%Affiliated Old	64%	0.071	0.220
		%Insiders Old	53%	0.029	0.107

This table presents output factors from an exploratory Principal Component Analysis. We retain all factors with an eigenvalue greater than one. For each of the eight factors (reported in order of total variance explained), we retain the original governance variables with a factor loading higher than 40%. The sample mean and standard deviation for each individual governance variable are also reported. *%Board Inside* is the percentage of board comprised of inside directors. *%Insider Non-top Own* is the percentage of outstanding shares held by the average non-top executive director. *%Insider Top Own* is the percentage of outstanding shares held by the average top executive director. *%Insider Own* is the percentage of outstanding shares held by the average inside director. *%Block Own* is the percentage of outstanding shares owned by blockholders. *#Block* is the number of blockholders. *%Largest Own* is the percentage of outstanding shares owned by the largest institutional shareholder. *%AC Affiliated* is the percentage of audit committee comprised of affiliated directors. *%CC Affiliated* is the percentage of compensation committee comprised of affiliated directors. *AC Chair Affiliated* is a dummy variable indicating that the chairperson of the audit committee is affiliated. *CC Chair Affiliated* is a dummy variable indicating that the chairperson of the compensation committee is affiliated. *#AC* is the number of directors serving on the audit committee. *#CC* is the number of directors serving on the compensation committee. *#Directors* is the total number of directors serving on the board. *#Activists* is the number of activist holders. *%Activists Own* is the percentage of outstanding shares owned by activist holders. *Insider Chairman is* a dummy variable indicating that an insider holds the position of chairperson of the board. *%Outsider Own* is the percentage of outstanding shares held by the average outside director. *%Affiliated Own* is the percentage of outstanding shares held by the average affiliated director. *%Affiliated Appointed* is the percentage of affiliated directors who were appointed by existing

insiders. *%Outsiders Appointed* is the percentage of outside directors who were appointed by existing insiders. *%Outsiders Busy* is the percentage of outside directors who serve on four or more boards. *%Affiliated Busy* is the percentage of affiliated directors who serve on four or more boards. *%Insiders Busy* is the percentage of inside directors who serve on two or more boards. *%Outsiders Old* is the percentage of outside directors who are older than 70. *%Affiliated Old* is the percentage of affiliated directors who are older than 70. *%Insiders Old* is the percentage of inside directors who are older than 70.

Table 4.2: Summary statistics

Panel A: Public bonds

	N	Mean	Std. Dev.	Min	Max
Corporate governance variables					
F-InsiderPower	3,306	-0.238	0.541	-0.732	5.028
F-Block	3,306	-0.040	0.866	-1.338	3.091
F-BoardSize	3,306	0.504	0.833	-2.313	3.224
F-Affiliated	3,306	-0.032	0.707	-0.410	3.762
F-Active	3,306	0.429	0.450	-2.290	1.335
F-Busy	3,306	0.439	0.857	-0.464	3.823
F-InsiderAppt	3,306	0.105	0.610	-1.624	0.941
F-Old	3,306	-0.021	0.658	-0.401	3.364
Firm specific variables					
Leverage ratio	3,306	0.304	0.152	0.025	0.709
Log(Firm size)	3,306	8.668	1.555	4.924	12.211
MTB	3,306	3.215	3.164	0.495	19.771
Tangible ratio	3,306	0.360	0.266	0.001	0.917
Interest coverage	3,306	6.175	7.853	-1.056	47.599
Bond specific variables					
# Restrictions	3,306	6.862	3.972	0.000	20.000
# Covenants	3,306	6.841	3.990	0.000	20.000
Covenant index	3,306	3.892	3.771	0.000	15.000
Covenant violation	3,306	0.145	0.352	0.000	1.000
Subordinate	3,306	0.019	0.138	0.000	1.000
Maturity	3,306	11.125	7.798	2.000	31.000
Spread	3,306	213.656	183.664	-379.793	835.053
Log(Bond size)	3,306	12.637	0.820	9.469	14.626
Log(Credit rating)	3,306	2.130	0.492	0.000	2.833

Panel B: Syndicated loans

	N	Mean	Std. Dev.	Min	Max
Corporate governance variables					
F-InsiderPower	5,011	-0.200	0.622	-0.732	5.514
F-Block	5,011	0.079	0.848	-1.338	3.231
F-BoardSize	5,011	0.344	0.807	-2.061	3.224
F-Affiliated	5,011	-0.037	0.709	-0.410	3.762
F-Active	5,011	0.358	0.490	-2.290	1.335

F-Busy	5,011	0.264	0.753	-0.464	3.823
F-InsiderAppt	5,011	0.044	0.627	-1.624	0.941
F-Old	5,011	-0.048	0.593	-0.401	3.364
		Firm specific variables			
Leverage ratio	5,011	0.286	0.153	0.000	0.701
Log(Firm size)	5,011	7.843	1.479	4.251	11.137
MTB	5,011	3.281	3.978	0.392	30.875
Tangible ratio	5,011	0.350	0.245	0.003	0.907
Interest coverage	5,011	7.959	14.013	-4.067	97.094
		Loan specific variables			
# Restrictions	5,011	4.871	4.611	0.000	17.000
# Covenants	5,011	4.068	4.017	0.000	16.000
# Financial covenants	5,011	1.433	1.485	0.000	7.000
Covenant violation	5,011	0.225	0.418	0.000	1.000
Revolver	5,011	0.775	0.418	0.000	1.000
Maturity	5,011	3.542	2.159	0.503	10.000
Log(Spread)	5,011	4.592	0.914	2.862	6.830
Log(Loan size)	5,011	19.552	1.008	16.811	21.556
Log(#Prev loans)	5,011	2.041	0.832	0.000	3.584
Log(# Lenders)	5,011	2.037	0.877	0.000	3.664
Term mix	5,011	0.184	0.331	0.000	1.000
Log(Credit rating)	5,011	2.259	0.351	1.099	2.833

Panel A presents descriptive statistics for variables used in the regressions for public bonds. Panel B presents descriptive statistics for variables used in the regressions for syndicated loans. *F-InsiderPower*, *F-Block*, *F-BoardSize*, *F-Affiliated*, *F-Active*, *F-Busy*, *F-InsiderAppt*, and *F-Old* are corporate governance factors constructed from an exploratory Principal Component Analysis on measures of board governance and shareholder governance. Definitions of these variables are presented in the caption of Table 1. *Leverage ratio* is long-term debt divided by total assets. *Firm size* is a firm's market value of equity. *MTB* is the ratio of the market value of equity to the book value of equity. *Tangible ratio* is net PP&E divided by total assets. *Interest coverage* is earnings before interests and taxes divided by interest expenses. In Panel A, *#Restrictions* is the sum of the number of covenants, the dummy for put feature, the dummy for convertibility feature, and the dummy for asset-backed feature in public bonds contract. *#Covenants* is the number of commonly used covenants in public bond contracts. *Covenant index* is constructed from Principal Component Analysis on individual covenant indices. *Covenant violation* is a dummy variable equal to one if the borrower had a covenant violation before the current bond was issued. S*ubordinate* is a dummy variable equal to one if the current bond issue is subordinated. *Maturity* is the number of years from the date of bond issuance until the date of maturity. *Spread* is the yield spread in basis points at bond issuance. *Bond size* is the total offering amount. *Credit rating* is the credit rating provided by S&P or Moody's for the bond issue. In Panel B, *#Restrictions* is the sum of the number of financial and general covenants, the dummy for a performance pricing provision, and the dummy for secured feature in syndicated loan contracts. *#Covenants* is the number of financial and general covenants used in loan contracts. *#Financial covenant* is the number of financial covenants. *Covenant violation* equals one if the borrower had covenant violation before the current loan is issued. *Revolver* is equal to one if the loan comprises a renewal option. *Maturity* is the number of years from the date of loan issuance until the date of maturity. *Spread* is the yield spread in basis points at loan issuance. *Loan size* is the facility amount issued. *#Prev loans is* the number of loans previous issued. *#Lenders* is the number of individual banks participating in the deal. *Term mix* is the percentage of term loans in the loan package. *Credit rating* is the credit rating provided by S&P or Moody's for the loan.

Table 4.3: Correlation matrix

Panel A: Public bonds

	F-InsiderPower	F-Block	F-BoardSize	F-Affiliated	F-Active	F-Busy	F-InsiderAppt	F-Old	# Restrictions	# Covenants	Covenant index
F-Block	-0.006	1.000									
F-BoardSize	-0.293	-0.155	1.000								
F-Affiliated	0.043	0.016	-0.060	1.000							
F-Active	-0.136	-0.129	0.306	-0.269	1.000						
F-Busy	-0.145	0.002	0.250	0.033	0.199	1.000					
F-InsiderAppt	0.188	-0.047	-0.033	0.131	0.210	0.046	1.000				
F-Old	0.211	-0.053	-0.170	0.033	-0.043	-0.147	0.205	1.000			
# Restrictions	0.172	0.235	-0.398	0.094	-0.435	-0.218	-0.019	-0.002	1.000		
# Covenants	0.172	0.227	-0.397	0.091	-0.432	-0.222	-0.017	-0.003	0.999	1.000	
Covenant index	0.187	0.240	-0.419	0.104	-0.462	-0.241	-0.020	0.025	0.955	0.955	1.000
Leverage ratio	0.127	0.178	-0.241	0.153	-0.357	-0.113	0.007	-0.055	0.432	0.430	0.437
Log(Firm size)	-0.125	-0.330	0.396	-0.080	0.458	0.313	0.090	-0.029	-0.557	-0.554	-0.581
MTB	0.016	-0.088	0.072	0.014	0.030	0.141	0.029	-0.110	-0.002	-0.002	-0.045
Interest coverage	-0.017	-0.040	0.047	0.087	-0.108	-0.047	-0.028	-0.129	0.025	0.023	0.020
Tangible ratio	0.004	-0.130	0.088	-0.048	0.212	0.117	0.000	-0.072	-0.220	-0.218	-0.238
Covenant violation	0.005	0.113	-0.148	-0.002	-0.187	-0.098	-0.094	-0.053	0.328	0.329	0.341
Subordinate	-0.035	0.218	0.032	0.052	-0.010	0.171	-0.070	-0.016	-0.133	-0.157	-0.099
Maturity	-0.067	-0.076	0.160	-0.026	0.084	0.052	-0.042	-0.098	-0.161	-0.163	-0.171
Spread	0.119	0.241	-0.285	0.058	-0.382	-0.166	-0.076	-0.096	0.623	0.623	0.641
Log(Bond size)	-0.029	-0.052	0.176	0.000	0.144	0.189	0.000	-0.158	-0.107	-0.102	-0.134
Log(Credit rating)	0.129	0.314	-0.380	0.072	-0.381	-0.280	-0.068	0.024	0.629	0.629	0.632

Panel B: Syndicated loans

	F-InsiderPower	F-Block	F-BoardSize	F-Affiliated	F-Active	F-Busy	F-InsiderAppt	F-Old	# Restrictions	# Covenants	# Financial covenants
F-Block	-0.002	1.000									
F-BoardSize	-0.295	-0.134	1.000								
F-Affiliated	0.051	0.025	-0.078	1.000							
F-Active	-0.160	-0.066	0.334	-0.229	1.000						
F-Busy	-0.165	-0.046	0.246	-0.009	0.245	1.000					
F-InsiderAppt	0.188	-0.028	-0.027	0.128	0.209	0.033	1.000				
F-Old	0.177	0.022	-0.083	0.106	-0.078	-0.118	0.169	1.000			
# Restrictions	0.113	0.138	-0.274	0.095	-0.266	-0.189	-0.019	0.048	1.000		
# Covenants	0.112	0.134	-0.270	0.096	-0.266	-0.188	-0.021	0.047	0.995	1.000	
# Financial covenants	0.116	0.129	-0.267	0.097	-0.242	-0.179	-0.012	0.061	0.898	0.902	1.000
Leverage ratio	0.100	0.071	-0.113	0.095	-0.265	-0.115	0.020	0.024	0.177	0.181	0.131
Firm size	-0.166	-0.254	0.410	-0.098	0.525	0.370	0.081	-0.105	-0.399	-0.393	-0.371
MTB	0.010	-0.033	0.001	0.037	0.003	0.071	0.001	-0.068	-0.046	-0.043	-0.051
Tangible ratio	-0.006	-0.122	0.073	0.025	-0.076	-0.073	-0.029	-0.025	-0.029	-0.034	-0.054
Interest coverage	-0.013	-0.060	-0.063	-0.004	0.107	0.006	0.003	0.028	-0.065	-0.065	-0.030
Covenant violation	0.027	0.131	-0.148	0.035	-0.211	-0.112	-0.051	0.017	0.211	0.206	0.171
Revolver	-0.087	-0.077	0.159	-0.075	0.174	0.070	-0.009	-0.021	-0.144	-0.170	-0.063
Maturity	0.123	0.171	-0.218	0.056	-0.215	-0.128	0.025	0.060	0.256	0.254	0.204
Log(Spread)	0.156	0.210	-0.361	0.095	-0.407	-0.245	-0.046	0.096	0.405	0.405	0.346
Log(Loan size)	-0.098	-0.092	0.263	-0.032	0.309	0.229	0.070	-0.062	-0.119	-0.120	-0.143
Log(#Prev loans)	-0.010	0.052	0.036	-0.034	0.124	0.067	0.050	0.044	-0.048	-0.050	-0.050
Log(# Lenders)	-0.044	-0.061	0.142	-0.026	0.202	0.117	0.024	-0.046	0.118	0.111	0.135
Term mix	0.127	0.099	-0.208	0.098	-0.238	-0.120	0.004	0.047	0.239	0.256	0.157
Log(Credit rating)	0.168	0.245	-0.405	0.084	-0.418	-0.286	-0.048	0.088	0.441	0.431	0.389

This table presents Pearson correlation coefficients among regression variables. See the captions of Tables 4.1 and 4.2 for variable definitions.

Table 4.4: Regression results on the number of restrictions

Panel A: Public bonds

	(1)		(2)		(3)		(4)	
	Coef.	**z**	**Coef.**	**z**	**Coef.**	**z**	**Coef.**	**z**
Corporate governance variables								
F-InsiderPower					0.039	1.38	0.024	1.49
F-Block					0.098§	3.54	0.029‡	2.31
F-BoardSize					-0.174§	-8.38	-0.082§	-5.45
F-Affiliated					-0.001	-0.05	0.019	1.30
F-Active					-0.353§	-11.42	-0.046†	-1.91
F-Busy					-0.069§	-2.59	-0.003	-0.24
F-InsiderAppt					0.059‡	1.94	0.018	0.91
F-Old					-0.065	-1.48	-0.002	-0.10
Firm specific variables								
Leverage ratio			0.520§	5.65			0.387§	4.14
Firm size			-0.136§	-11.35			-0.112§	-9.39
MTB			0.013§	3.66			0.013§	3.69
Tangible ratio			-0.099‡	-2.00			-0.076	-1.58
Interest coverage			0.001	0.38			-0.001	-0.45
Bond specific variables								
Covenant violation	0.147§	3.70	0.086§	2.77			0.096§	3.24
Subordinate	-0.669§	-8.63	-0.670§	-7.92			-0.688§	-7.66
Maturity	-0.010§	-7.98	-0.006§	-5.41			-0.005§	-4.38
Spread	0.002§	28.60	0.001§	16.40			0.001§	16.07
Log(Bond size)	-0.046§	-2.97	0.058§	3.22			0.056§	3.39
Res (Credit rating)	0.394§	6.98	0.479§	8.16			0.476§	8.15
Year Fixed Effects	Yes		Yes		Yes		Yes	
N	3,306		3,306		3,306		3,306	
Pseudo-R^2	18.63%		22.12%		11.89%		22.81%	

Panel B: Syndicated loans								
	(1)		**(2)**		**(3)**		**(4)**	
	Coef.	**z**	**Coef.**	**z**	**Coef.**	**z**	**Coef.**	**z**
Corporate governance variables								
F-InsiderPower					0.005	0.18	-0.005	-0.22
F-Block					0.107§	6.03	0.013	0.83
F-BoardSize					-0.214§	-8.68	-0.102§	-4.88
F-Affiliated					0.044‡	2.29	0.032†	1.89
F-Active					-0.277§	-8.04	-0.004	-0.12
F-Busy					-0.153§	-5.61	-0.058§	-2.76
F-InsiderAppt					0.035	1.32	0.003	0.12
F-Old					0.010	0.37	-0.006	-0.24
Firm specific variables								
Leverage ratio			0.013	0.11			-0.037	-0.33
Firm size			-0.227§	-13.81			-0.199§	-11.30
MTB			0.004	1.18			0.003	0.89
Tangible ratio			-0.148‡	-2.36			-0.132‡	-2.12
Interest coverage			0.003§	2.89			0.002†	1.67
Loan specific variables								
Covenant violation	0.133§	3.73	0.053	1.59			0.061†	1.85
Revolver	0.167§	3.61	0.107‡	2.40			0.103‡	2.30
Maturity	0.046§	5.69	0.031§	3.83			0.026§	3.25
Log(Spread)	0.455§	17.94	0.316§	11.56			0.300§	11.12
Log(Loan size)	-0.104§	-5.27	0.052‡	2.33			0.058§	2.65
Log(#Prev loans)	-0.070§	-3.90	-0.043§	-2.47			-0.047§	-2.67
Log(# Lenders)	0.334§	14.92	0.315§	14.60			0.311§	14.58
Term mix	0.115†	1.85	0.154§	2.51			0.142‡	2.32
Res(Credit rating)	0.681§	6.58	0.735§	8.14			0.741§	8.24
Year Fixed Effects	Yes		Yes		Yes		Yes	
N	5,011		5,011		5,011		5,011	
Pseudo-R^2	17.02%		20.09%		9.93%		20.55%	

This table presents pooled Poisson regression results for Equations (4.1) and (4.3), respectively. Standard errors are clustered at firm level. †, ‡, and § denote statistical significance at 10%, 5% and 1% levels (two-tailed), respectively. See the captions of Tables 4.1 and 4.2 for variable definitions.

Table 4.5: Alternative measures for restrictions in debt contracts

	Public Bonds				Syndicated Loans			
	# Covenants		Covenant index		# Covenants		# Financial covenants	
	Coef.	z	Coef.	z	Coef.	z	Coef.	z
Corporate governance variables								
F-InsiderPower	0.024	1.49	0.037	1.52	-0.003	-0.14	0.007	0.32
F-Block	0.027‡	2.13	0.063§	3.60	0.012	0.77	0.029	1.57
F-BoardSize	-0.083§	-5.42	-0.163§	-6.60	-0.102§	-4.71	-0.122§	-5.06
F-Affiliated	0.018	1.23	0.050§	2.57	0.033†	1.87	0.038‡	2.00
F-Active	-0.045†	-1.88	-0.027	-0.77	-0.007	-0.20	-0.021	-0.54
F-Busy	-0.004	-0.30	-0.047‡	-2.25	-0.062§	-2.87	-0.063§	-2.51
F-InsiderAppt	0.019	0.95	0.009	0.34	-0.002	-0.10	0.010	0.40
F-Old	-0.003	-0.18	0.025	0.98	-0.007	-0.25	0.013	0.47
Firm specific variables								
Leverage ratio	0.385§	4.12	0.746§	5.50	-0.015	-0.13	-0.044	-0.33
Log(Firm size)	-0.112§	-9.41	-0.209§	-11.10	-0.202§	-11.06	-0.185§	-9.26
MTB	0.013§	3.70	0.005	1.13	0.003	0.78	0.002	0.43
Tangible ratio	-0.078†	-1.61	-0.155‡	-2.30	-0.158§	-2.45	-0.238§	-3.36
Interest coverage	-0.001	-0.47	-0.005†	-1.89	0.002†	1.84	0.003‡	2.28
Bond/Loan specific variables								
Covenant violation	0.095§	3.23	0.143§	3.64	0.058†	1.71	0.057	1.50
Subordinate	-0.945§	-6.64	-0.906§	-5.07				
Revolver					0.044	0.95	0.192§	3.97
Maturity	-0.005§	-4.53	-0.008§	-4.87	0.023§	2.77	0.040§	4.54
Spread	0.001§	16.53	0.002§	20.61	0.303§	10.97	0.280§	9.02
Log(Bond/Loan size)	0.061§	3.69	0.086§	3.34	0.057§	2.49	-0.018	-0.74
Log(Prev loan issue)					-0.050§	-2.77	-0.038†	-1.85
Log(# Lenders)					0.319§	14.31	0.374§	15.57
Term mix					0.155§	2.41	0.033	0.48
Res(Credit rating)	0.481§	8.24	1.152§	10.42	0.730‡	7.91	0.738§	7.50
Year Fixed Effects	Yes		Yes		Yes		Yes	
N	3,306		3,306		5,011		5,011	
Pseudo-R^2	23.26%		36.31%		20.16%		14.51%	

This table presents pooled Poisson regression results. For public bonds, the dependant variables are the number of covenants (*#Covenants*), defined as the number of commonly used covenants in public bond contracts, and *covenant index*, constructed from exploratory Principal Component Analysis on individual covenant indices. For syndicated loans, the dependant variables are the number of covenants (*#Covenants*), defined as the number of financial and general covenants used in loan contracts, and the number of financial covenants (*#Financial covenant*). Standard errors are clustered at firm level. †, ‡, and § denote statistical significance at 10%, 5% and 1% levels (two-tailed), respectively. See the captions of Tables 1 and 2 for variable definitions.

Table 4.6: Additional corporate governance variables

	Public Bonds		Syndicated Loans	
	Coef.	**z**	**Coef.**	**z**
Corporate governance variables				
F-InsiderPower	0.004	0.24	-0.006	-0.21
F-Block	0.003	0.20	0.016	0.73
F-BoardSize	-0.082§	-4.76	-0.063§	-2.32
F-Affiliated (Comp)	0.035‡	2.25	0.006	0.26
F-Active	-0.016	-0.81	0.025	0.99
F-Affiliated (Audit)	-0.003	-0.22	-0.004	-0.20
F-Busy	0.013	0.77	-0.068‡	-2.33
F-InsiderAppt	0.009	0.46	0.011	0.45
F-Old	0.008	0.36	0.020	0.61
F-Anti-1	0.046‡	2.10	0.001	0.02
F-Mix	-0.012	-0.84	-0.067§	-3.36
F-Anti-2	0.020	0.69	-0.027	-0.86
Firm specific variables				
Leverage ratio	0.424§	3.36	-0.108	-0.68
Log(Firm size)	-0.125§	-8.59	-0.260§	-11.29
MTB	0.019§	4.22	0.009	1.58
Tangible ratio	-0.175§	-2.79	-0.160†	-1.84
Interest coverage	0.001	0.72	0.003§	2.44
Bond/Loan specific variables				
Covenant violation	0.130§	3.31	0.069	1.60
Subordinate	-0.456‡	-2.16		
Revolver			0.080	1.29
Maturity	-0.003§	-3.23	0.015	1.52
Spread	0.001§	11.16	0.316§	9.86
Log(Bond/Loan size)	0.047§	2.40	0.083§	2.80
Log(Prev loan issue)			-0.037†	-1.72
Log(# Lenders)			0.321§	11.19
Term mix			0.138†	1.68
Res(Credit rating)	0.337§	5.76	0.660	6.16
Year Fixed Effects	Yes		Yes	
N	2,586		3387	
Pseudo-R^2	17.71%		19.86%	

This table presents pooled Poisson regression results for Equations (4.1) and (4.3), respectively. *F-InsiderPower*, *F-Block*, *F-BoardSize*, *F-Affiliated (Comp)*, *F-Active*, *F-Affiliated (Audit)*, *F-Busy*, *F-InsiderAppt*, *F-Old, F-Anti-1, F-Mix* and *F-Anti-2* are corporate governance factors constructed from exploratory Principal Component Analysis on measures of board governance, shareholder governance, executive compensation mix and anti-takeover provisions. Standard errors are clustered at firm level. †, ‡, and § denote statistical significance at 10%, 5% and 1% levels (two-tailed), respectively. See the captions of Tables 4.1 and 4.2 for variable definitions.

Table 4.7: Sub-sample analysis: financially-distressed firms vs. non-distressed firms

	Public Bonds						Syndicated Loans					
	Distressed		Non-distressed		Diff (Dis – Non-dis)		Distressed		Non-distressed		Diff (Dis – Non-dis)	
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
Corporate governance variables												
F-InsiderPower	-0.002	-0.07	0.036†	1.92	-0.038	-1.07	-0.001	-0.02	0.001	0.04	-0.002	0.14
F-Block	0.063§	3.16	-0.010	-0.58	0.073§	2.47	-0.002	-0.06	0.013	0.65	-0.014	-0.79
F-BoardSize	-0.139§	-5.47	-0.068§	-3.82	-0.071‡	-2.19	-0.140§	-4.07	-0.064§	-2.55	-0.075‡	-1.95
F-Affiliated	0.025	1.14	0.011	0.61	0.013	0.75	0.032	1.20	0.025	1.24	0.006	0.38
F-Active	-0.025	-0.67	-0.032	-1.11	0.007	0.50	-0.088†	-1.64	0.022	0.52	-0.110	-1.49
F-Busy	-0.037†	-1.80	0.002	0.14	-0.039	-1.42	-0.086‡	-2.25	-0.080§	-3.10	-0.006	0.13
F-InsiderAppt	0.044	1.29	-0.008	-0.37	0.053	1.30	0.037	0.97	-0.024	-0.87	0.061	1.06
F-Old	0.033	0.82	0.006	0.26	0.027	0.37	0.014	0.31	0.006	0.19	0.009	0.18
Firm specific variables												
Leverage ratio	0.414§	2.92	0.326§	2.75			0.043	0.27	0.182	1.20		
Firm size	-0.133§	-5.93	-0.116§	-7.18			-0.157§	-6.35	-0.179§	-7.44		
MTB	0.005	0.91	0.013§	3.06			-0.001	-0.15	0.000	-0.06		
Tangible ratio	-0.131	-1.57	-0.117†	-1.73			-0.273§	-2.81	-0.211§	-2.69		
Interest coverage	-0.005	-0.53	-0.003†	-1.76			0.001	0.57	0.001	1.18		
Bond/Loan specific variables												
Covenant violation	0.107§	2.99	0.066†	1.77			0.036	0.69	0.045	1.09		
Subordinate	-0.596§	-4.03	-0.660§	-6.12								
Revolver							0.026	0.40	0.167§	2.97		
Maturity	-0.006§	-3.01	-0.005§	-4.53			0.020	1.47	0.020†	1.80		

Spread	0.001§	9.40	0.001§	12.90	0.344§	7.13	0.333§	9.81
Log(Bond/Loan size)	0.091§	3.25	0.059‡	2.16	0.060†	1.90	0.027	0.91
Log(Prev loan issue)					-0.025	-0.94	-0.063§	-2.88
Log(# Lenders)					0.288§	8.68	0.325§	11.39
Term mix					-0.044	-0.45	0.252§	3.33
Res(Credit rating)	0.686§	4.01	0.388§	6.20	0.692§	3.73	0.693§	6.61
Year Fixed Effects	Yes		Yes		Yes		Yes	
N	962		1,735		1,471		3,061	
Pseudo-R^2	26.18%		20.56%		20.34%		21.65%	

This table presents pooled Poisson regression results for Equations (4.1) and (4.3), respectively. The sample is split into financially-distressed and non-distressed firms according to Altman's (1968) Z-score. Standard errors are clustered at firm level. †, ‡, and § denote statistical significance at 10%, 5% and 1% levels (two-tailed), respectively. See the captions of Tables 4.1 and 4.2 for variable definitions.