TWO ESSAYS ON CONSERVATISM, AUDITOR CHOICE AND DEBT CONTRACTING

by

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Abstract

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Essay 1: The private and public debt markets differ in monitoring functions and covenant features. This paper empirically examine whether these differences impact accounting conservatism. I find that firms report more conservatively in the years following the issuance of private debt than the years before. I also find that firms report more conservatively following initial public debt offerings (bond IPOs). However, there is no change in the degree of conservatism around seasoned bond offerings. Firms even report less conservatively when the relative deal size is large. I interpret the results as reflecting differences in monitoring functions of the public and private debt markets.

Essay 2: I examine the impact of a firm's debt structure on its choice of an auditor. The objective is to analyze whether an efficient debt contracting or a managerial opportunism hypothesis better explains a firm's auditor choice. I find that firms with high leverage are less likely to have brand name/specialist auditors, which is consistent with the managerial opportunism hypothesis. I further find that the negative relation turns positive for firms that also have public debt while it holds for firms that have only private debt. This reversal suggests the dominant role of the efficient debt contracting hypothesis for firms that have public debt. I also find that the negative relation is more pronounced for short-term debt than for long-term debt. The findings hold after I control for the potential reciprocal causation between auditor choice and leverage using two-stage procedures.

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Essay 1

The Differential Impact of Private and Public Debt on Accounting Conservatism

1.1. INTRODUCTION

The role of debt in financial reporting has been extensively studied in the accounting literature. Earlier studies examine how closeness to covenant violation affects accounting choices (e.g. Christie 1990; Press and Weintrop 1990; Sweeney 1994; DeFond and Jiambalvo 1994; Dichev and Skinner 2002). More recently, a number of studies focus on the demand from the debt market for conservatism (e.g. Watts 2003; Ahmed, Billings, Morton, and Stanford-Harris 2002; Zhang 2008). In this study, I differentiate the impact of private and public debt on accounting conservatism. The purpose is to shed light on the mechanism that drives firms' application of accounting conservatism.

This research question is motivated by differences between private and public debt with respect to monitoring and covenant features. Private debt is typically held by banks that are monitoring experts. They have better access to private information and better information processing ability and so are more efficient in monitoring debt contracts (Denis and Mihov 2003). Alternatively, the monitoring by the diffuse holders of public debt is weak due to the "free rider" problem (Strahan 1999). In terms of covenant features, there are more accounting-based covenants in private debt agreements and the covenants are set tighter. Technical violations are common, which give lenders' the option to step in and take necessary actions (Dichev and Skinner 2002). Public debt contracts, on the other hand, rarely have accounting-based constraints. For those that do, covenants are set looser and covenant violation is rare (Begley and Freeman 2004). These differences between private and public debt give rise to differences in the

demand from the private and public debt holders for accounting conservatism and differences in debt holders' ability to enforce accounting conservatism.

Prior studies provide evidence that more conservative reporting leads to lower cost of debt (Ahmed et al. 2002; Zhang 2008) and the degree of conservatism is positively associated with leverage (Ahmed et al. 2002) and the debt market size (Ball, Robin and Sadka 2008). Beatty et al. 2008) find the use of income escalator, their proxy for the conservative adjustment to covenants, is positively associated with conservatism in financial reporting, suggesting that debt holders demand accounting conservatism even if they have the alternative of adjusting debt contracts conservatively. Nikolaev (2010) also finds reliance on covenants is positively associated with accounting conservatism. Ahmed et al. 2002 and Nikolaev (2010) use public debt samples and Beatty et al. (2008) use a private debt sample. Overall, the results suggest that both private and public debt holders demand accounting conservatism. In addition, compared to private debt holders, public debt holders' demand for accounting conservatism might be stronger because their own monitoring is weaker and they do not have the protection of conservative covenants.

On the other hand, enforcement of accounting conservatism is potentially conditional on an effective monitoring system including the use of maintenance covenants to gain control rights when situations arise, which is lacking for public debt holders. Managers of borrowing firms might be against conservatism and therefore enforcement requires monitoring because (1) conservatism leads to accelerated covenant violation (Zhang 2008); (2) managers have limited horizon and their compensation is tied to their current reported levels of income (Watts 2003); (3) conservatism increases earnings volatility (Givoly and Hayn 2000) but income smoothness if preferred by managers (Graham, Harvey and Rajgopal 2005); and (4) equity holders have other

reporting preferences[1]. It is then an empirical question to examine whether the potentially stronger demand from public debt holders for conservatism drives more conservative reporting for firms that access the pubic debt market or their lack of effective monitoring fails to enforce more conservative reporting.

To identify the differential impact of the public and private debt markets on accounting conservatism, I take an incremental approach and examine the change in accounting conservatism subsequent to the issuance of new debt. This approach allows me to compare the impact of different type of debt financing. Separate analyses are performed for the issuance of private debt and public debt. The conservatism model developed in Basu (1997) is used. I include a *Post* indicator variable to capture changes in levels of conservatism before and after debt issuance.

Using a private debt sample drawn from LPC's Dealscan, I find that borrowing firms further accelerate their recognition of bad news and delay their recognition of good news following the issuance of private debt. The result holds for the full sample, the leveraged loan sub-sample and the investment-grade loan sub-sample. The results imply that after they take on more debt and the agency conflicts between debt holders and managers/shareholders become more severe, borrowing firms have to report more conservatively.

Using a public debt sample obtained from the SDC platinum, I fail to find any change in reporting conservatism for the full sample. A further breakdown of the full sample into investment-grade and high-yield sub-samples suggests that firms report bad news more quickly

[1] The attitude of the equity market on asymmetric timeliness recognition of gains and losses is subject to debate. Ball et al. (2008) argue that the equity market prefers symmetric treatment of gains and losses, while LaFond and Watts (2008) argue that the equity market also prefers asymmetric recognition.

following the issuance of investment-grade bonds. The results suggest that the change towards being more conservative is weaker following the issuance of public debt than private debt

Because the external monitoring from the financial intermediaries such as credit rating agencies, auditors and underwriters and the regulatory scrutiny are stronger in the context of bond IPOs, I also test whether firms report more conservatively following the initial public debt offerings and whether the results for the public debt sample (including both bond IPOs and seasoned bonds) still hold for the seasoned bond offerings. I find that firms indeed report more conservatively following the issuance of bond IPOs. But there is no change in conservative reporting for the seasoned bond full sample as well as the investment-grade and high-yield sub-samples.

Although the median deal size for the seasoned bond sample is comparable to that of the bond IPO sample and the private debt sample, the ratio of the deal amount to total assets, however, is much smaller (2.1% vs 13% for the private debt sample and 6.6% for the bond IPO sample). To address the question whether the absence of an increase in conservatism following the issuance of seasoned bonds is caused by a lack of materiality of the deal relative to the size of the company, I break down the seasoned bond sample into two sub-samples by the median of the deal amount to total assets for the IPO bond sample (6.6%)[2] and repeat the tests for the two sub-samples. I find that there is no change in accounting conservatism for the below-median sub-sample. For the above-median sub-sample, I find that firms even report ***less*** conservatively following the issuance.

Overall, the results suggest the important role of debt holders' monitoring functions including the use of maintenance covenants in enforcing accounting conservatism. The direct monitoring by private debt holders and the external monitoring in the context of bond IPOs are

[2] 13% is also used for sensitivity tests and the results are qualitatively the same.

effective in enforcing accounting conservatism. The limited monitoring in the case of seasoned bonds fails to do so. Firms might even take advantage of the weak monitoring and report more aggressively.

This paper contributes to the stream of research on the role of debt in financial reporting. It provides evidence that changes in conservatism around debt issuance differ between private debt, bond IPOs and seasoned bonds. There are two key differences between this paper and prior studies on the relation between debt contracting and conservatism. First, this paper recognizes the cost of conservatism to managers and considers the importance of having an effective monitoring system in place for debt holders to enforce conservatism. Second, this paper differentiates the impact of public and private debt on firms' financial reporting. This distinction is important because it has long been recognized that monitoring functions and covenant restrictions imposed in debt agreements of the two markets are very different. Additionally, using an incremental approach and taking advantage of the rich details available in LPC Dealscan and SDC Platinum database, I also capture the differential impact on financial reporting by different types of debt along other dimensions (bond IPOs vs. seasoned bonds, investment-grade loans/bonds vs. high-yield loans/bonds, syndicated vs. single-lender loans).

Ahmed et al. (2002) examine the relation between conservatism and leverage and their study is closely related to this paper. Besides the two key differences identified above, other differences of this paper from Ahmed et al. (2002) are that I examine new debt issuance (debt financing), while Ahmed et al. (2002) focus on existing debt (debt structure) and I focus on conditional conservatism that is argued to be more relevant in the debt contracting setting (Ball and Shivakumar 2005; Basu 2005).

This paper also contributes to the studies on the role of accounting-based debt covenants. On one hand, the existence of such covenants is an important part of the debt holders' monitoring system to constrain borrowers' behaviors including financial reporting. On the other hand, it has the adverse effect of providing additional incentives for managers to manipulate earnings. Many accounting choices studies focus on a specific accounting method or combination of accounting methods. To a certain degree, the asymmetric timeliness is an aggregate measure of managers' discretion over such estimates and timing. Therefore, this paper can be considered as a complement to prior accounting choice research. Using the asymmetric timeliness measure of conservatism, I find that in general firms report more conservatively, rather than aggressively after they take on more private debt. The existence of accounting-based covenants has an overall effect of protecting private debt holders' interests[3].

The results have implications for the standard setters. In the joint project between IASB and FASB to improve the conceptual framework[4], standard setters explicitly discuss leaving conservatism off the list of qualitative characteristics of reporting because it clashes with concepts like neutrality. They might want to reconsider the decision if they still identify the primary users of financial statements as capital providers including both equity investors and creditors. First, accounting conservatism plays an important role in debt contracting; second, public debt holders have less covenant protection and my results suggest that they also do not have a strong monitoring function to enforce conservatism that is much at managers' discretion. Therefore, they rely heavily on conservatism imposed by accounting standards. The move away from conservatism might have a negative effect on the credit supply by the public debt market.

[3] Although I find that firms report less conservatively following the issuance of seasoned bonds with deal amounts above 6.6% of total assets, I do not attribute the result to the incentive of avoiding covenant violation given the findings in prior studies that the majority of public debt does not have accounting-based covenants or covenants are set looser.

[4] The latest exposure draft was issued on May 29, 2008.

The rest of the paper is organized as follows: section 2 is the literature review and development of the hypotheses; section 3 discusses the research design and the sample selection procedure; section 4 presents the results; section 5 provides some additional analyses and discussions; section 6 concludes.

1.2. LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

1.2.1. The Debt Contracting Role of Conservatism

Conservatism is a long-existing principle of accounting whose origin can be traced back to as early as the 15th century. The principle of conservatism is reflected in the old adage of "anticipate no profits, but anticipate all losses" (Basu, 1997). This is interpreted by Basu (1997) as a higher degree of verification to recognize good news as gains than to recognize bad news as losses. Some papers refer to this interpretation as *conditional* conservatism on the grounds that it is news dependent, meaning that book values of assets are written down under sufficiently adverse circumstances but not written up under favorable circumstances. In contrast, *unconditional* conservatism is news independent, meaning that the aspects of the accounting procedure determined at the inception of assets and liabilities yield expected unrecorded goodwill (e.g. Beaver and Ryan 2005).

Several papers review various explanations for the existence of conservatism (e.g. Watts 2003). Debt contracting is one of the most important. This line of research argues that debt contracting drives the existence and degree of conservatism. The debt market demands conservatism because debt holders have asymmetric payoffs – their payoffs are more sensitive to downside risk than upside gains. Consequently, debt holders are more concerned with the lower ends of the earnings and assets distributions, which are used to evaluate the creditworthiness of a business and its debt-repaying ability. Conservatism provides a more timely and reliable estimate

of the lower bound of a firm's assets-in-place. Debt holders' preference for conservatism also arises due to their concern over managers' over-optimism engendered either by compensation incentives (the management's compensation is dependent upon accounting numbers) or by corporate governance incentives (the potential to lose jobs because of poor financial performance makes the management tend to avoid reporting losses) [5]. Conservatism constrains managers from behaving opportunistically to increase their own welfare and the benefits of other claimholders (e.g. shareholders) at the expense of debt holders.

Basu (2005) argues that unconditional conservatism primarily arose to mitigate tax, regulation and political costs. Qiang (2007) finds that greater conditional conservatism is positively associated with contracting and litigation costs and greater unconditional conservatism is positively associated with regulation and reduction in tax costs, which is largely consistent with Basu (2005). Ball and Shivakumar (2005) and Ball et al. (2008) argue that conditional conservatism (the asymmetric timeliness measure of conservatism) is more relevant in the debt contracting setting. For unconditional conservatism, if the magnitude of the understatement is known, lender and borrowers can contract around it; if the amount is unknown, it introduces randomness and reduces contracting efficiency. Unconditional conservatism does not introduce new information and has no effect on deal terms and on covenant violation. Conditional conservatism on the other hand can quickly trigger covenant violation, giving debt holders the control right.

Several streams of research empirically examine the debt contracting role of conservatism. One stream posits that the contracting benefits resulting from conservatism (either an increase in firm values or a reduction of deadweight losses) are shared by the contracting

[5] One exception is "big bath", making poor income results even worse in bad years to enhance the next year's earnings.

parties. Ahmed et al. (2002) and Zhang (2008) identify the *ex ante* benefit of conservatism to borrowers as lower cost of debt. Zhang (2008) also provides evidence that the *ex post* benefit of conservatism to lenders is timely signal of borrowers' default risk through accelerated violation of debt covenants.

Another empirical implication drawn from the debt contracting role of conservatism is that the level of accounting conservatism is positively related to the severity of the agency conflict between debt holders and managers/shareholders. Ahmed et al. (2002) test the relation between conservatism and the severity of dividend policy conflicts where the latter is measured by operating uncertainty, the level of dividends and leverage. When a market-to-book-based measure of conservatism is used, they find a positive relation between conservatism and leverage. But the positive relation does not hold when an accruals-based measure of conservatism is used. Their measures of conservatism do not distinguish between conditional and unconditional conservatism. Using a cross-sectional sample from 22 countries, Ball et al. (2008) find a significant positive relation between conditional conservatism estimates and the debt market size, but a negative and insignificant relation with equity market size and conclude that conditional conservatism exists for the efficiency of contracting in debt markets.

Alternatively, critics of using accounting conservatism in financial reporting to mitigate agency conflicts argue that the demand for conservatism from the debt markets can be realized through conservative adjustments to debt covenants. It is not necessary to introduce conservative bias in financial reporting. Beatty et al. (2008) consider the use of income escalator as one type of conservative adjustments to net worth covenant thresholds. Specifically, income escalator allows only a portion of positive income to increase covenant slack, but the full amount of losses to reduce covenant slack. Using a syndicated loan (private debt) sample, Beatty et al. (2008) find

the use of income escalator is positively associated with conservatism in financial rporting. The result suggests that conservative adjustments in debt contracts and accounting conservatism are complements in their sample rather than substitutes. Nikolaev (2010) also test the relation between debt covenants[6] and accounting conservatism. Using a public debt sample constructed from Mergent Fixed Investment Securities Database, he finds that the reliance on covenants is positively associated with accounting conservatism, again suggesting the two are complements.

1.2.2. Private Debt versus Public Debt: Monitoring and Covenants

Continuous review of financial reporting is an important component of debt holders' monitoring system. They use it to evaluate the creditworthiness of a business and its debt paying ability. Many debt contracts have covenant restrictions that are also based on accounting numbers. Managers are often required to certify the accuracy of accounting information and to provide monthly or quarterly covenant compliance reports (FITCH IBCA 1999). Various debt management consulting groups recommend timely communication of adverse situations to lenders to facilitate potential future renegotiation and reduce the likelihood of serious consequences.

The close monitoring of financial reporting by debt holders can then affect borrowers' financial reporting behaviors including the application of accounting conservatism. Through close monitoring, lenders can identify less conservative reporting behaviors and enforce more conservative reporting as borrowers take on additional debt. Borrowers have to yield to the demand for more conservative reporting if their financing structure is more debt-oriented, which means their survival depends more on debt and they have more incentive to maintain a strong relation with lenders. Ignoring the demand from the debt market could cause them to lose

[6] Covenants in this paper are defined very broadly, including any restrictions that limit firms' investment, payout, capital expenditure and financing decisions. Accounting-based restriction is just one component.

credibility with lenders, which in turn jeopardizes other lending relations and future credit accessibility.

The consequences of ignoring the demand from the debt market for more conservative reporting are more serious with the existence of covenant restrictions and frequent covenant violations. Any technical violation of covenants causes a firm to hand over part of the control rights to lenders who could then step in and take necessary actions. Serious consequences resulting from technical covenant violations include the following: stopping future credit, increasing the interest rate on the loan, accelerating the loan, seizing the collateral, reducing the available funds, asset divestiture, restriction of further borrowing and directly intervening in the firm's investment decisions. The threat of such serious consequences forces firms to yield to the demand from the debt market for more conservative reporting. Yielding to the demand from the debt market for more conservative reporting builds their credibility with lenders, which further helps them reduce time and costs associated with obtaining waivers or amendments in case of covenant violations.

Private debt and public debt differ in their monitoring functions. First, the investor base and liquidity of the two markets affect the incentives for monitoring. Private debt holders have more incentives to monitor because the lending is concentrated and the debt is more likely to be held to maturity[7]. In contrast, public debt is held by diffuse creditors and their incentives to engage in monitoring are weak due to the "free rider" problem (Strahan 1999). The incentive is further reduced when there is an active secondary market and investor holding is more transient (Armstrong 2003). Private debt holders are also more efficient in monitoring. The majority of

[7] Rule 144a allows the resale of unregistered securities to qualified institutional buyers. But it does not have much impact on the analyses and results of this paper. Out of over 100,000 facilities, Dealscan has around 10,000 facilities identified as private placements. But only 1816 are Rule 144a private placements. The total number of private placements (non-rule 144a and rule 144a) in my sample is 350, out of a total of 8774 deals.

private debt is held by banks that are monitoring experts and have better information processing ability. They also have better access to a firm's private information. For example, besides reviewing the annual and interim pubic financial reports, they can write contracts that require managers' forecast on sales and cash flow. They may also request monthly internal financial statements. They can even require firms to provide weekly or daily updates on certain accounts (Standard & Poor's 2009; Wittenberg-Moerman 2009). Such close monitoring of financial information by private debt holders is expected to have significant influence on a firm's public financial reports. The monitoring functions of the public debt market are less effective than the private debt market. Although external monitoring forces such as rating agencies, underwriters, auditors and regulatory scrutiny can partially offset this problem, the external monitoring from these intermediaries is expected to be weaker than the direct monitoring by private debt holders because the monitoring is less timely and intensive (Datta, Iskandar-Datta and Patel 1999).

Private and public debt contracts also differ in the use of accounting-based debt constraints. Debt contracts typically contain affirmative and negative covenants to preserve the seniority, collateral and cash flow. Affirmative covenants require borrowers to meet some basic standards such as timely payments, accurate financial disclosure, maintenance of a certain insurances etc. Negative covenants restrain borrowers from taking certain actions including paying dividends, taking additional debt, undertaking mergers and acquisitions, pledging security to other creditor, selling assets and purchasing certain securities. Many debt agreements have mandatory prepayment requirements such excess cash flow sweep, asset sale sweep, debt issuance sweep and equity sweep (Smith and Warner 1979; Leftwich 1983; Strahan 1999; FITCH IBCA 1999; Beatty et al. 2008). Many of these restrictions are conditional on firms'

financial positions that are typically measured in such accounting numbers as debt to EBITDA, interest coverage, tangible net worth and current ratio.

Private debt agreements typically have more negative and financial covenants. FITCH IBCA's study reports that their sample of leveraged bank loan agreements on average contain 20 covenants, while the same issuers' high-yield indentures have only 6 covenants on average (FITCH IBCA 1999). The financial covenants in private debt are set tightly and quarterly covenant compliance reports are required, giving private debt holders considerable control (Milken Institute 2004). Smith (1993) and Dichev and Skinner (2002) find that private lenders set debt constraints just below the actual current value. Covenant violation occurs frequently. Such technical violation serves as "trip-wire" that gives debt holders the option to step in and affect a firm's investing, financing and reporting activities. Dichev and Skinner (2002) document that over 30% observations violate debt covenants for their large sample of syndicated loans. Such tight covenant restrictions and frequent violations of debt covenants suggest that lenders have significant power in enforcing their preferred managerial behaviors including the application of more conservative accounting. Public debt contracts, on the other hand, typically do not have financial covenants that require quarterly compliance. Even if they do, the covenants are set looser and technical violations are rare [8](Begley and Freedman 2004).

The existence of accounting-based constraints in debt contracts, however, potentially has opposing effects on a firm's financial reporting behaviors. On one hand, it is an important part of the monitoring system a debt holder could impose; on the other hand, it gives managers additional incentives to manage earnings upward with a purpose of avoiding covenant violations.

The negative effect of managerial opportunism resulting from having accounting numbers in debt contracts has been extensively studied in prior literature. This line of research

[8] Chen and Wei (1993) find only four out of total 128 covenant violations are for public debt.

argues that firms make income increasing accounting choices to circumvent accounting-based constraints imposed by debt agreements (the debt covenant hypothesis). The incentives of such opportunistic behaviors depend on the costs of covenant violation. Several studies find that the costs associated with covenant violations can be substantial including increased collateralization, increased interest rates and restricted borrowing (Beneish and Press 1993; Chen and Wei 1993; Sweeney 1994). Recent empirical evidence from the corporate finance literature suggests that the costs of covenant violation could go beyond these direct costs to affect a firm's investment decision and corporate governance (e.g. management turnover) (Chava and Roberts 2008; Nini et al. 2009; Nini et al. 2009).

The debt covenant hypothesis is extensively tested empirically. Using debt to equity ratio as a proxy for closeness to debt covenant violation, early studies run cross-sectional regressions and find that firms with larger debt to equity ratio are more likely to make income-increasing accounting choices (see Christie 1990). Time-series studies by Sweeney (1994) and DeFond and Jiambalvo (1994) show that firms approaching covenant violation are more likely to make income-increasing accounting choices. However, Healy and Palepu (1990) document that firms cut dividends instead of making accounting changes to circumvent the dividend restriction with tightening dividend constraints. Similarly, DeAngelo et al. (1994) find that firms actually acknowledge their financial difficulty through accounting choices such as write-offs, rather than attempt to inflate reported income. One limitation with these earlier studies is their small sample size and sample selection bias[9] and the other is the lack of accuracy of using leverage as proxy

[9] The samples are normally selected from firms that *ex post* fail to circumvent covenant constraint and have around 100 observations.

for closeness of covenant violation[10]. Dichev and Skinner (2002) use a large sample from Loan Pricing Corporations' Dealscan database that contains actual covenant ratios to calculate more accurately closeness to covenant violation. Their results are consistent with the debt covenant hypothesis.

1.2.3. Development of Hypotheses

Based on prior research, it is unclear whether there is a change in the degree of conservatism around the issuance of private debt and if there is the direction of the change. First of all, if it is true that the debt market values conservatism and thus lowers cost of debt for firms reporting more conservatively, borrowing firms might voluntarily bond themselves to conservative reporting to reduce the cost of borrowing. It is then expected that this is done *ex ante* and borrowers will not become less conservative *ex post*. Zhang (2008) and Ahmed et al. (2002) propose that managers' concern over reputation cost constrains them from deviating from their ex ante financial reporting commitment. Therefore, the studies by Ahmed et al. (2002) and Zhang (2008) suggest that there will not be a significant change in the degree of conservatism around debt issuance.

Second, the costs of being conservative might prevent firms from reporting more conservatively *ex ante*. The managers of borrowing firms might be against conservatism because (1) conservatism leads to accelerated covenant violation (Zhang 2008); (2) managers have limited horizon and their compensation is tied to their current reported levels of income (Watts 2003); (3) conservatism increases earnings volatility (Givoly and Hayn 2000) but income smoothness if preferred by managers (Graham, Harvey and Rajgopal 2005); and (4) equity holders have other reporting preferences (Ball and Shivakumar 2008). However, with an increase

[10] In their samples from Dealscan, Dichev and Skinner (2002) find that leverage accounts for, at most, about 18% of the variation in the ranks of actual covenant slack, suggesting that leverage is a noisy proxy for closeness to covenants.

in the level of debt, firms become more debt-oriented and the agency conflict between debt holders and owners/managers becomes more severe. Given conservatism is a preferred reporting mechanism for the debt market, *ex post* debt holders might force firms to report more conservatively through their monitoring mechanism, although borrowers might have other reporting preferences. This hypothesis is based on the assumption that the debt market has an effective monitoring and enforcement mechanism.

Third, the debt covenant hypothesis suggests that firms might also report less conservatively following debt issuance. Because the probability and cost of covenant violation are higher for firms with an increase in their debt level, firms have more incentives to make income-increasing accounting choices to avoid covenant violation, which is in direct contrast with conservatism that delays recognition of gains and accelerates recognition of losses when uncertainty is involved.

The private debt market has a strong monitoring function including the use of accounting-based covenants, but on the other hand, the existence of accounting-based constraints is more prevalent in private debt contracts and therefore the debt covenant hypothesis is more relevant. It is an empirical issue then to investigate whether there is a change in the degree of conservatism around the issuance of private debt, and if there is, which direction the change is. I present the following hypothesis in the null form:

H1: There is no change in a firm's conservative reporting following the issuance of private debt.

A finding of a decline in accounting conservatism which is effectively an adaptation of an accounting policy that increases earnings is consistent with the debt covenant hypothesis. Alternatively, an increase in the use of accounting conservatism is consistent with the notion that

the private debt market has a strong monitoring mechanism to enforce more accounting conservatism.

The monitoring function of the public debt market is weaker. The external monitoring from financial intermediaries such as rating agencies is also expected to be weaker than direct monitoring from banks. Therefore, if it is indeed the monitoring function of the debt market that makes borrowers report more conservatively, I expect the change toward being more conservative following debt issuance to be weaker for the public debt sample, hence the following hypothesis:

H2: Any change towards being more conservative in financial reporting is weaker for firms getting public debt than firms borrowing from the private debt market.

There are also significant differences between bond IPOs and seasoned bond offerings. The external monitoring from rating agencies, auditors and underwriters are expected to be stronger for initial bond offerings than subsequent bond issuance. The initial issuance is also subject to more regulatory scrutiny. Therefore, I expect the impact of bond IPO issuance on the enforcement of accounting conservatism is stronger than the issuance of seasoned bonds. I then have the following hypothesis:

H3: Any change towards being more conservative in financial reporting is stronger for the bond IPO sample than the seasoned bond sample.

1.3. RESEARCH DESIGN AND SAMPLE SELECTION

The main tests are to compare the reported level of conservatism three years before and after debt issuance. Although different measures of conservatism have been developed in prior literature, the main measure of conservatism used in this paper is calculated from the model

developed in Basu (1997). I use this interpretation and measure of conservatism because conditional conservatism is argued to be more relevant in the debt contracting setting (Basu 2005; Ball and Shivakumar 2005; Qiang 2007; Ball et al. 2008) and Basu (1997) model is considered the best measure of this asymmetric timeliness (Ryan 2006).

Basu (1997) operationalizes this interpretation of conservatism by running an earnings-return regression with earnings as the dependent variable. Return is taken as a proxy for news, and earnings are expected to reflect bad news (negative return) more quickly than good news (positive return). The following model is used[11]:

$$Earnings = \alpha + \beta_1 DR + \beta_2 Return + \beta_3 Return*DR + \varepsilon \quad (1)$$

To capture changes in the reported level of conservatism, I adjust the model with a *Post* indicator variable. To be specific, the following model is used:

$$Earnings = \alpha + \beta_1 DR + \beta_2 Return + \beta_3 Return*DR + \beta_4 Post + \beta_5 DR*Post + \beta_6 Return*Post + \beta_7 Return*DR*Post + \varepsilon \quad (2)$$

Earnings is defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if a year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses. All variables are for firm i and period t.

α, the intercept is expected to be positive according to Basu (1997) because it captures realized gains reflecting previous good news. β_2 represents the sensitivity of earnings to good news and is expected to be positive. β_3 captures the incremental response of earnings to bad

[11] I omit subscripts t and i from equations for presentation simplicity.

news over good news and it is expected to be positive for conservative reporting. The incremental sensitivity of earnings to bad news over good news after the debt is issued is $\beta_3 + \beta_7$. If firms report more conservatively following the debt issuance, β_7 is expected to be positive, meaning that firms further accelerate the recognition of bad news. The sensitivity of earnings to good news following debt issuance is $\beta_2 + \beta_6$. If conservatism is also reflected as further delay of recognizing unrealized gains, β_6 is expected to be negative.

I obtain the private debt sample from Loan Pricing Corporation's Dealscan. Dealscan is a historical database that contains pricing and non-pricing contract features of lending agreements of a large number of loan and bond transactions. The observations in Dealscan are organized by "facility". A large deal can have multiple facilities with different features and terms and is set up at the same date. For example, the deal made by Allegis Corp on Dec 18, 1987 is comprised of a term loan facility, a revolver facility and a standby line of credit facility. The analyses in this paper are carried out on the "deal" level[12]. For the periods of 1987 to 2005, 157,717 facilities are available that comprise 112,372 deals and have 46,501 firms represented. The number of deals made each year increases dramatically from 916 deals in 1987 to an average of 2,000 deals per year from 1988 to 1992 and then to an average of 6,500 deals per year from 1993 to 1997. The number of deals peaks in1997 with 10,036 deals made and then dropped to 7,887 in 1998 and stayed around that level before going up again from 2004 to over 9,500 deals. Table 1 Panel A presents the frequency of deals by year.

U.S. borrowers account for 55.02% of the deals (61,822) over the periods of 1987 to 2005. Out of the 102,954 deals with broad industry groups identified, non-financial corporate borrowers account for 71.48% of the deals. Bank and non-bank financial institutions account for 22.17% of the deals. The rest deals are made by utility companies and governments. Loan

[12] Only the first deal is kept in the sample if a firm made more than one deal in a specific year.

purposes vary. The top three purposes identified are general corporate purpose (53,619 facilities), debt repayment (24,162 facilities) and working capital (14,755 facilities).

Dealscan mainly covers loans that are syndicated. Out of all the 157,717 facilities covered, 14,195 are bonds and 5,031 are notes. Out of the 100,926 deals with distribution methods identified, 75.84% (76,547) are syndicated. The majority of the rest deals are sole lender deals, private placement and club deals. A syndicated loan has at least two lenders and at least one of them serves as "lead arranger" that establishes a relationship with the borrowing firm. The loan, however, is based on common loan documentation. A syndicated loan differs from a club deal. For a club deal, a few banks are brought together by the borrower to share a large loan. There may not be a lead arranger and may or may not be a common loan documentation. The median (mean) deal amount, spread and maturity for the syndicated loans are $110 million ($311 million), 144 (170) basis points and 36 (46) months. The median (mean) number of lenders in the syndicate is 4 (7).

There are different types of loans. For revolvers, borrowers have the option to draw down some portion of the revolving credit line. Revolvers are typically used for funding general working capital. Revolvers can be less or more than one year. A term loan is often bundled with a revolver as part of a deal. Unlike a revolver, a term loan is typically fully funded at the beginning. It has a fixed amortization schedule and a fixed tenor (usually longer than a revolver). Other types of facilities include bridge loans, CDs, standby letter of credit. For the periods of 1987 to 2005, 66,657 facilities are revolvers 48,404 are term loans.

Syndicated loans can also be classified as leveraged and investment-grade. Standard & Poor's defines leveraged loans as those with spreads of 125 basis points or more and those with spreads of 500 basis points or more as high-octane loans. Following this definition, out of the

106,927 facilities with spreads available, 38,519 (36.02%) are investment grade and 63,482 (59.37%) are leveraged loans and 4,926 (4.6%) are high-octane loans[13]. Over 34.40% of leveraged loans have financial covenants, compared with 24.38% for all the facilities.

The most commonly used financial covenant is debt to cash flow. 13,241 facilities have this financial covenant. Other commonly used financial covenants include interest coverage (11,084), fixed charge coverage (10,393), tangible net worth (5,977), net worth (5,781), leverage ratio (4,233), debt to tangible net worth (3,721), debt service coverage (3,761), current ratio (3,039) and senior debt to cash flow (2,985).

The majority of syndicated loans have large banks as their lead arrangers. A lead arranger acts like an investment bank earning fees from leading syndication. Selection of the lead arranger is a bidding process. The borrower will pick the lead bank that proposes the most favorable loan package in terms of borrowing rate, fees, underwriting method etc. The lead bank is then responsible for selecting participating institutions and negotiating the credit agreements. The members of the syndicate have the rights to review and comment on the final agreements. After the loan is syndicated, the lead bank performs such administrative functions as documentation and debt repayment. Important matters, such as significant changes to the terms of the loan and declaring a borrower to be in default, however, require the approval of a majority of syndicate members (Armstrong 2003; Sufi 2007). A lead arranger also differs significantly from bond underwriters in that it has a significant position in the loan and even the largest position in some deals. Therefore, the lead arranger still has strong incentives to monitor the borrowers.

Syndicated loans have some features of public debt. In recent years, more and more loans are rated by the major ratings agencies[14]. A secondary market that facilitates portfolio adjustment

[13] Bloomberg defines leveraged as loans with spreads over LIBOR of 250 basis points or more. Following this definition, 66,602 facilities are investment grade and 40,325 are leveraged.

has been growing rapidly. As a result of these developments, more institutional investors have been drawn to this loan market, especially the leveraged part (Standard & Poor's 2005). Different from the bond market, however, loan participant institutions hold the loan rather than resell it to other investors, although they might engage in secondary market transactions to adjust their portfolio (Armstrong 2003). Armstrong (2003) also points out other differences between the bond and the syndicated loan markets. First, the syndicated loan secondary market is much less liquid than the bond market. Second, banks are still the largest purchasers of the loans. These differences all suggest stronger monitoring incentives and mechanism by syndicated loan holders than the bond holders.

The syndicated loan market is an effective setting for my tests. First of all, this market is increasing in economic significance, rapidly growing from $137 million in 1987 to over a $1 trillion each year today. Sufi (2007) reports that syndicated lending represents 51% of U.S. corporate finance originated and generates more underwriting revenues for the financial sector than both equity and bond underwriting. Firms across the credit spectrum all utilize this form of financing. Second, as a hybrid form of financing, the connection between the demand for and the actual supply of conservatism is more likely to hold in the syndicated loan market. It is not purely relationship based and therefore the syndicate still has the demand for public financial reports. On the other hand, the syndicate is still concentrated enough to have a strong monitoring mechanism. According to Armstrong (2003), loan participant banks still do their own credit assessments, supplemented by the research from rating agencies and the information from the

[14] Standard & Poor's does not rate any syndicated loans before 1996 (Standard & Poor's 2002). The number of loans rated, especially large and leveraged loans grow rapidly since then. Now, around 70% of leveraged syndicated loans are rated by Standard & Poor's (Standard & Poor's 2009). But rating is still more pervasive for public debt offerings. According to Cantor and Packer (1997), "both agencies (S & P and Moody's) currently have a policy of rating ALL taxable corporate bonds publicly issued in the United States regardless of whether they have been asked by an issuer for a rating".

secondary market. Third, syndicated loans, especially leveraged loans, have tightly drawn financial covenants that have to be maintained on a quarterly basis (Standard & Poor's 2005; Milken Institute 2004). Financial covenants have an important role in debt holders' monitoring system as we argue in the literature review and hypothesis development section.

The sample selection procedure starts with all facilities in the Dealscan database for the period from 1987 to 2005, totaling 157,717 observations. These observations are matched to COMPUSTAT to obtain borrowers' attributes. Tickers provided in Dealscan are used for matching. Since tickers are not provided for all facilities, the sample is reduced to 47,383 facilities. I keep one deal for each firm each year and have 26,022 observations. Because a firm's ticker can change over time, this identifier cannot produce exact match. I then manually compare company names from the two databases to identify any discrepancy. Discrepancy in names, however, doesn't necessarily mean that the two firms are not the same because some firms might have changed their names. I then use SEC Edgar online CIK search function to identify former names used and the current names. After this step, 22,630 deals are matched to COMPUSTAT. Since earnings and return data are required to calculate the asymmetric timeliness measure of conservatism, deals without borrowers' return and earnings data available have to be deleted. 20,993 deals are left. Following Basu (1997), I truncate deals with borrowers' return and earnings per share (EPS) scaled by the prior year closing price being in the top and bottom 1% to reduce the effect of outliers on the regression results. This step leaves 20,773 deals. To improve comparability, I test the hypotheses using a constant sample. The constant sample is constructed to include only deals whose borrowers have all seven years data (3 years before, the issuance year and 3 years after) available. The final sample consists of 8,774 deals, representing 2,863

different borrowing firms. This sample formation procedure is presented in panel A of table 2.[15][16]

To test hypothesis 2 and 3, I use Securities Data Company's SDC platinum to identify all non-convertible public debt issued from 1970 to 2005. A bond IPO is identified as the first issuance of public debt by each firm in the SDC platinum. I have a total of 6,296 bond IPOs. Similar to the private debt sample, I construct a constant sample that consists of 890 bond IPOs. To construct the seasoned bond sample, I keep only one deal for each firm each year excluding the bond IPO. The sample period is limited to 1987 – 2005 to match the private debt sample. CUSIP is used to match SDC platinum with COMPUSTAT. For this sample I again require that financial data should be available for all seven years of interest. Similar to the selection procedure for the private debt sample, I delete deals with borrowers' return and earnings per share scaled by the prior year close price being in the top and bottom 1%. The final constant sample of seasoned bonds has 1,968 deals, representing 579 unique firms. The sample formation procedure for the public debt is presented in panel B and panel C of table 2.

1.4. RESULTS

Table 3 presents the descriptive statistics for the private debt sample, the bond IPO sample and the seasoned bond sample. Comparison of the medians shows that firms in the seasoned bond sample are, on average, much larger (median total assets are $7,947 million vs $1,100 million for the private debt sample and $1,628 for the bond IPO sample). The other

[15] I also carry out the main tests using broader samples that do not require the availability of all seven years data. The results are in the same direction and significance with the following exceptions: (1) for the full public debt sample, β_6 , the coefficient for the positive news, is not significant for the high-yield sub-sample (vs. significantly positive for the constant sample); (2) for the bond IPO sample, β_6 is significantly positive at the 5% level (vs. not significant for the constant sample).

[16] Although any debt issuance and the close scrutiny involved potentially affect a firm's financial reporting, the influence is expected to be stronger if the deal issuance is not a pure refinancing. The primary purpose of a deal is available in Dealscan. Excluding deals with a primary purpose of debt repayment does not change the results for the private debt samples.

financial attributes of the private debt and seasoned bond samples are comparable. Median market to book is around 2, leverage around 23%, ROA about 4%, earnings per share scaled by price around 0.06 and fiscal year return about 12%. The Bond IPO sample has lower market to book ratio (1.575).

Table 3 also shows that the additional borrowings in the samples are economically important for the borrowing firms. The median deal size in the private debt sample is $150 million, representing about 13% of total assets and about 59% of total long-term debt for a firm. The median deal size of the bond IPO is $100 million, representing about 6.6% of total assets and 34.9% of total long-term debt. The materiality of the deals makes it possible that a firm might change its reporting practice for the purpose of debt contracting. The median deal amount for the seasoned bond sample is $150 million, the same as the private debt sample. However, it represents only 2.1% of the total assets and about 10.5% of total long-term debt because the median size of the borrowing firms in the seasoned bond sample is much larger. I address the potential effect of the relative deal size difference in the section of additional analyses and discussions. The private debt sample has an average maturity length of 3 years. The length of maturity is much longer for the public debt sample - 10 years for both the bond IPO sample and the seasoned bond sample. Sensitivity analyses are also performed to address this difference.

The results of testing hypothesis 1 regarding changes in conservatism around private debt issuance are reported in table 4. For comparison purpose, I also present the results using the Basu basic model (model 1). The sign and magnitude of the intercept (+ 0.052), coefficients for good news (+ 0.011) and incremental sensitivity of bad news to good news (+ 0.251) are all consistent with Basu (1997). Overall, the results show that the samples are representative and confirm that

bad news is reflected more quickly in earnings than good news, as predicted by the conservatism literature.

The *Post* indicator variable allows me to compare the degree of conservatism across periods. $\beta_{6,}$ the coefficient for the incremental sensitivity of earnings to good news, is significantly negative (-0.014) while $\beta_{7,}$ the coefficient on *Return*DR*Post* is positive 0.146, highly significant. The results indicate that firms further delay their recognition of good news and accelerate their recognition of bad news following the issuance of private debt. This supports the argument that there is a change in the level of conservatism around private debt issuance and financial reporting becomes more conservative following private debt contracting. The results imply that private debt holders have a monitoring system that is effective to a certain degree to affect borrowing firms' financial reporting..

I further break down the full sample into an investment grade sub-sample and a leveraged sub-sample. I have this segregation because a few papers document differences in earnings management behaviors around the issuance of these two types of debt (e.g. Anthony, Dettinghaus and Farber 2009). Following the definition of Standard & Poor's, 125 basis points are used as the cutoff point for the segregation. For both the investment-grade and leveraged sub-samples, I find that the coefficient on *Return*Post* is significantly negative, suggesting that firms further delay their recognition of good news. The coefficient on *Return*DR*Post* is significantly positive for both sub-samples (0.105 and 0.180), suggesting that firms further accelerate their recognition of bad news. Overall, firms report more conservatively following the issuance of both investment-grade and leveraged private debt[17][18].

[17] I also use the classification practice by Bloomberg that consider leveraged as those loans with spread of 250 basis points or more. 33,864 observations are investment-grade and 8,376 are leveraged. The results hold.

[18] Standard & Poor's classifies loans with spreads above 500 as high octane. The coefficients on both *Return*Post* and *Return*DR*Post* are not significant for this sub-sample.

To further test the hypothesis that it is the monitoring mechanism from the debt market that drives more conservative reporting, I use SDC platinum to identify new bond market issues and compare the public debt samples with the private debt samples. Compared with the private debt market, the monitoring function of the public debt market is potentially weaker, and there are fewer accounting-based debt constraints in their lending agreements. I then expect the change towards being more conservative is weaker for firms borrowing from the public debt market than firms borrowing from the private debt market (H2).

Table 5 presents the results using the full public debt sample (the first two columns). Contrary to the private debt results, the coefficients on *Return*Post* and *Return*DR*Post* are not statistically significant, meaning there is no change in the reported level of conservatism around the issuance of public debt. This is consistent with the notion that the monitoring function of the public debt market is weaker. I also break down the full sample into an investment-grade bond sample and a high-yield bond sample, following the designation in SDC Platinum which is based on S&P ratings. I find that the coefficient on *Return*DR*Post* is significantly positive for the investment-grade sub-sample, suggesting an increase in accounting conservatism. For the high-yield sub-sample, the coefficients on *Return*Post* is significantly positive, suggesting high-yield bond issuers engage in aggressive reporting and accelerate their recognition of gains.

To test H3, I first run the regression using the bond IPO sample and then the seasoned bond sample. Table 6 presents the results for the bond IPO sample. The coefficients on *Return*Post* is not significant, but the coefficient on *Return*DR*Post* is significantly positive, meanings firms further delay the recognition of bad news. The level of conservatism increases following the issuance of bond IPOs. The results hold for the full bond IPO sample as well as the investment grade sub-sample. On the other hand, I do not find any change in the degree of

conservatism following the issuance of seasoned bonds. As shown in table 7, the results of no change hold for both the full seasoned bond sample and the sub-samples broken down into investment-grade and high-yield bonds. Therefore, the result of being more conservative following the issuance of investment grade bonds reported in table 5 is driven by bond IPOs. Table 6 and 7 also indicate there is no change in reported levels of conservatism following the issuance of high-yield bonds. Overall, the results suggest that external monitoring from financial intermediaries is stronger around the initial public debt offerings compared with the subsequent offerings.

1.5. ADDITIONAL ANALYSES AND DISCUSSIONS

Although the absolute value of the median deal size for the seasoned bond sample is comparable to that of the bond IPO sample and the private debt sample, the ratio of the deal amount to total assets, however, is much smaller (2.1% vs 13% for the private debt sample and 6.6% for the bond IPO sample). A question arises then whether the absence of an increase in conservatism following the issuance of seasoned bonds actually results from lack of materiality of the deal relative to the size of the company. To test this alternative explanation, I break down the seasoned bond sample into two sub-samples by the relative size of the deal and repeat the tests. I use the median of deal amount to total assets for the bond IPO sample (6.6%) as the cutoff point. The results are presented in table 8. There is no change in accounting conservatism for the seasoned bond sample with a deal size less than 6.6% of total asset. For the seasoned bond sample with a deal size equal to or greater than 6.6% of total assets, the coefficient on *Return*Post* is POSITIVE (0.021), significant at 10% level. The coefficient on *Return*DR*Post*, is significantly NEGATIVE (-0.095)[19]. Both coefficients suggest that firms actually report less

[19] I also use 13%, the relative deal size for the private debt sample, as cutoff point. Both the coefficients on *Return*Post* and *Return*DR*Post* are not significant for the sub-sample with deal amount/total assets less than

conservatively following the issuance. The result further confirms the argument that the monitoring function in the context of seasoned public debt offerings is weak and cannot enforce accounting conservatism. Firms actually take advantage of the weak monitoring and engage in aggressive reporting behaviors.

I also construct an increase in leverage sample to test whether firms report more conservatively following a material increase in leverage. The studies of the debt covenant hypothesis traditionally use leverage as the proxy for closeness to covenant violation. Therefore, it is hypothesized that firms with high leverage are closer to covenant violation and therefore are more likely to engage in income increasing accounting procedures. I form a sample of firms from COMPUSTAT for the period of 1987 to 2005 that have a change of leverage of more than 20% from one year to the next. Leverage is defined as long-term debt (COMPUSTAT item # 9) divided by total assets (COMPUSTAT item # 6). The results are presented in table 9. The coefficient for my focus variable, *Return*DR*Post*, is 0.195, statistically significant. Firms become more conservative with a material increase in leverage.

I use a three-year window to test my hypotheses in the main analyses. To check the robustness of my results, I also repeat the tests using a two-year and one-year window. The results are presented in table 10 and table 11 respectively. The results for both windows confirm the main results. Firms report more conservatively following the issuance of private debt, bond IPOs. But there is no change in accounting conservatism around the issuance of seasoned bonds.

In this paper, I use an incremental approach to study the change in conservatism. There are two advantages of using this approach. First, I can get clean public and private debt samples. Second, I can use the rich details provided in LPC Dealscan and SDC Platinum and take a closer

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13%. For the sub-sample with the relative deal size equal or greater than 13%, the coefficient on *Return*DR*Post* is significantly negative at 10% level.

look at the within sample differences. The disadvantage is that I ignore the existing debt level a firm has. To mitigate this concern, I sort the private debt sample, the bond IPO sample and the seasoned bond sample into quintiles based on the existing leverage the year before the issuance. The results are presented in table 13. For all leverage intervals of the private debt sample, the coefficient on *Return*DR*Post* is significantly positive, suggesting that firms report more conservatively following the issuance of private debt. For all leverage intervals of the seasoned bond sample, there is no change in conservatism around debt issuance. For the bond IPO sample, the coefficient on *Return*DR*Post* is significantly positive for the lowest and the middle leverage intervals only. The overall results suggest the differential impacts of public and private debt on accounting conservatism hold regardless of the existing debt level.

Another disadvantage of using the incremental approach is that I ignore the existing debt mix. In other words, firms that issue private debt might also have public debt outstanding. To address this concern, I break down the private debt sample into two sub-samples: one that has public debt outstanding at the same time and one that doesn't. I use the availability of Standard & Poor's credit ratings as the indicator whether firms have public debt outstanding, following the practice of Faulkender and Peterson (2006). If a firm has an S&P long-term domestic issuer credit rating (Compustat item #280) or a short-term domestic issuer credit rating (Compustat item #283) for that year, it is considered to have public debt outstanding. The results are reported in table 13. For both the sub-sample that has public debt outstanding and the one that does not, the coefficient estimates on *Return*Post* are significantly negative and the coefficient estimates on *Return*DR*Post* are significantly positive, suggesting that firms report more conservatively following the issuance of private debt.

The private and public debt samples also differ significantly in their terms of maturity. The median length of the private debt is 36 months, while it is 122 months for the public debt. To test whether the differential impact on conservatism of the public and private debt is driven by the differences in maturity structure, I break down the private debt sample by maturity and 36 months are used as the cutoff point. The results reported in table 14 show that firms report more conservatively for both sub-samples.

I also break down the full private debt sample into a syndicated loan sub-sample and a single-lender loan sub-sample. The reason for this segregation is that single-lender loans are expected to be more relationship-based. The demand for accounting conservatism is therefore weaker and the impact of single-lender borrowing on firms' accounting conservatism is also predicted to be weaker. The results, however, suggest that both the syndicate lenders and the single-lenders demand accounting conservatism and firms report more conservatively following the issuance of both types of loans.

In this paper, I consider the existence of accounting-based covenants as part of the debt holders' monitoring system. To test whether the existence of such covenants is a necessary condition to have the monitoring system to be effective in enforcing accounting conservatism, I break down the full private debt sample into a sub-sample that has financial covenants and a sub-sample that does not have financial covenants. As presented in table 15, firms report more conservatively for both sub-samples. The results suggest that financial covenants can complement the effectiveness of debt holders' monitoring system, but they are not the only means that debt holders have to effectively monitor borrowers.

Time to issue private and public debt might also affects the results. It is a lengthy process to issue public debt and therefore firms issuing public debt have more time to become more

conservative before debt issuance and therefore their financial reporting will not become more conservative after debt is issued. To test this alternative explanation, I estimate firms' reported level of conservatism around private debt and seasoned bond issuance by year. The results are presented in table 17. Panel B suggests that firms do not become conservative gradually for the three years before debt issuance. The sensitivity of earnings to bad news over the sensitivity of earnings to good news actually decreases during the years before seasoned bond issuance (from 2.85 times of good news in year -3 to 1.25 in year 0).

An alternative explanation for the results of increased accounting conservatism following private debt issuance might be that borrowers manage earnings upwards before debt issuance with the purpose of getting better loan terms similar to the research findings in the context of IPO and SEO issuance (Teoh et al. 1998a and 1998b), but the managed earnings could not be sustained afterwards. Ball and Shivakumar (2008) question the results of Teoh et al. (1998a) and show that their methodology is weak. They argue that the monitoring by auditors, analysts, press, regulators and potential litigation concern prevent firms from engaging opportunistic behaviors. In addition, such earnings management behaviors in the debt market are not well documented. One possible reason is that covenant constraints might weaken borrowers' incentives to engage in ex ante earnings management since it increases the possibility of violating covenants afterwards. The benefits they might gain ex ante are offset by the costs incurred ex post. Also, more and more syndicated loans take the form of market flex pricing. The price of a loan changes periodically with the change of market conditions and firm risks. This again puts a limit to the benefits a firm might get from managing earnings ex ante. The use of three-year data to calculate the conservatism level can also partially mitigate this concern.

1.6. CONCLUSION

This paper examines the differential impact of public and private debt on accounting conservatism. I test whether firms increase their degree of accounting conservatism following an increase in debt levels resulting from the issuance of private debt, bond IPOs and seasoned bonds. I find that firms report more conservatively following the issuance of private debt. They also report more conservatively following the issuance of bond IPOs. But I do not find that firms change their degree of accounting conservatism following the issuance of seasoned bonds. I attribute the results to the monitoring effectiveness of the debt market. The debt market demands conservative reporting. The direct monitoring of the private debt holders including the use of accounting-based constraints is strong for the private debt market and therefore I find a positive relation between an increase in debt levels and an increase in accounting conservatism. The external monitoring from the financial intermediaries is also strong in the context of bond IPOs. I therefore also find a positive relation using the bond IPO sample. In the case of seasoned bonds, however, the monitoring function is weak for the diffuse holders of public debt and the external monitoring is also not very strong and thus there is no change in accounting conservatism.

This paper contributes to the studies on the relation between debt contracting and financial reporting. I provide additional evidence that the debt market demands accounting conservatism. More importantly, I find that the impact of the public and private debt markets on accounting conservatism is different. I also complement the literature on the managerial opportunism behavior resulting from the use of accounting-based numbers in debt covenants. I find that in general firms report more conservatively, rather than aggressively after they take on more private debt, which is most likely to contain such numbers.

Finally, I would like to propose a couple of related future research ideas. First of all, as I point out earlier, one possible explanation of the results is that firms report aggressively before

debt issuance similar to the argument in Teoh et al. (1998a and 1998b) for initial and seasoned equity offerings. It might be interesting to explore the possibility of managerial opportunistic behavior prior to debt issuance and the possibility of covenant violations and market flex pricing as constraints to ex ante managerial opportunism. Second, it is interesting to study the cost of conservatism. One possibility is to study the informational role of conservatism and relate conservatism to the information demand of the equity market. On one hand, Ball et al. (2008) hypothesize that the equity market prefers symmetric treatment of gains and losses; on the other hand, LaFond and Watts (2008) argue that conservatism is a preferred attribute for the equity market too. If conservatism indeed plays a significant informational role for the equity market, why are so many equity analysts arguing for fair value accounting? In the letter to Financial Accounting Standard Boards, Jane Adams et al. (2004), representing the Financial Accounting Policy Committee of CFA institute, comment "we commend the Board for undertaking this critical project (of adopting fair value measurements) because we believe that fair value measurement is essential for financial reporting". The lack of consistency in research findings and the ongoing arguments on the pro and cons of fair value accounting demand more research on the informational role of conservatism.

TABLE 1
About the Dealscan Database

Panel A: Deal Frequency by Year	
1987	916
1988	1,737
1989	1,790
1990	1,920
1991	1,960
1992	2,767
1993	3,958
1994	5,006
1995	5,760
1996	7,737
1997	10,036
1998	7,887
1999	7,755
2000	8,361
2001	8,329
2002	8,130
2003	8,886
2004	9,831
2005	9,606

Panel B: Deal Frequency By Type of Borrowers	
Corporates (including Media/Communication)	73,595
Banks	10,726
Non-Bank Financial Institutions	12,105
Utilities	4,755
Government	1,776
Unidentified	9,418

Panel C: Facility Frequency By Purpose	
Corp. purposes	53,619
Debt Repay.	24,162
Work. cap.	14,755
Takeover	8,985
LBO/MBO	8,617
Acquis line	6,819
Proj. finance	6,066
CP backup	5,577
Recap.	3,075
Others	13,541
Unidentified	11,482
Undisclosed	1,019

Panel D: Deal Frequency by Distribution Method	
Syndication	76,547
Unidentified	11,174
Sole Lender	9,084
Private Placement	7,045
Club Deal	2,244
Rule 144A Private Placement	1,816
Non-Rule 144A Private Placement	1,203
Bilateral	1,041
Public Underwriting	1,765
Retail	119
Syndication (Bond)	62
Undisclosed (Bond)	239
Undisclosed (Loan)	33

Panel E: Frequency of Each Type of Facilities	
Bonds	14,195
Revolvers	66,657
Term loans	48,404
Revolver/Term Loans	2,293
Notes	5,031
CDs	3,237
Standby Letter of Credit	2,929
Bridge loans	2,365
Securitisation	2,316
Others	10,290

Panel F: Frequency of Each Type of Financial Covenant	
Debt to Cash Flow	13,241
Interest Coverage	11,084
Fixed Charge Coverage	10,393
Tangible Net Worth	5,977
Net Worth	5,781
Leverage Ratio	4,233
Debt to Tangible Net Worth	3,721
Debt Service Coverage	3,761
Current Ratio	3,039
Senior Debt to Cash Flow	2,985
Cash Interest Coverage	544
Debt to Equity	354
Maximum Loan to Value	75

TABLE 2
Sample Formation Procedure

Panel A: The Dealscan private debt sample

Selection criteria	No. of Obs
Total number of facilities from January 1987 to December 2005	157,717
Of facilities above, those with tickers available for matching to COMPUSTAT	47,383
Of facilities above, keep one deal for each firm each year	26,022
Of deals above, those that can be matched to COMPUSTAT	22,630
Of deals above, those with return and earnings data available	20,993
Of deals above, those that do not have returns and earnings fall into the top and bottom 1%	20,773
Of deals above, those with all seven year earnings and return data available (three years before, issuance year and three years after) - private constant sample	8,774
Number of borrowing firms represented	2,863

Panel B: The SDC bond IPO sample

Selection criteria	No. of Obs
Total number of deals from SDC from January 1970 to December 2008	178,854
Total number of bond IPOs	6,296
Of deals above, those with return and earnings data available	1,852
Of all the bond IPOs above, those with all seven year earnings and return data available (three years before, issuance year and three years after) - constant sample	890

Panel C: The SDC seasoned bond sample

Selection criteria	No. of Obs
Total number of deals from SDC from January 1970 to December 2008 excluding bond IPOs	172,558
Of deals above, those that are issued from January 1987 to December 2005	141,648
Of deals above, keep one deal for each firm each year	10,006
Of deals above, those with return and earnings data	3,442
Of deals above, those that do not have returns and earnings fall into the top and bottom 1%	3,408
Of deals above, those with all seven year earnings and return data available (three years before, issuance year and three years after) - constant sample	1,968
Of deals above, number of firms represented	579

TABLE 3
Descriptive Statistics

Panel A: The private debt sample

Variable	N	Mean	Median	75%	25%
Size (in millions)	52640	9,195	1,100	4,409	270
Market to book	52572	2.842	1.926	3.054	1.275
Leverage	52591	0.242	0.223	0.348	0.101
ROA	52640	0.031	0.039	0.071	0.012
Earnings	52644	0.034	0.056	0.083	0.025
Return	52644	0.17	0.106	0.364	-0.129
Deal month	46782	39	36	60	12
Deal size (in millions)	52638	397	150	380	45
Deal size/long term debt	49739	22.567	0.590	1.475	0.231
Deal size/total assets	52634	0.235	0.130	0.272	0.055

Panel B: The bond IPO sample

Variable	N	Mean	Median	75%	25%
Size (in millions)	5340	11,326	1,628	4,773	561
Market to book	5338	1.988	1.575	2.336	1.076
Leverage	5311	0.233	0.212	0.342	0.099
ROA	5339	0.043	0.041	0.066	0.014
Earnings	5340	0.077	0.075	0.109	0.05
Return	5340	0.145	0.103	0.324	-0.086
Deal month	5340	174	122	304	86
Deal size (in millions)	5340	190	100	200	40
Deal size/long term debt	5230	1.304	0.349	0.739	0.152
Deal size/total assets	5340	0.109	0.066	0.122	0.025

Panel C: The seasoned bond sample

Variable	N	Mean	Median	75%	25%
Size (in millions)	11804	37,231	7,947	22,309	2,937
Market to book	11794	2.937	2.026	3.072	1.477
Leverage	11804	0.250	0.237	0.345	0.133
ROA	11804	0.040	0.035	0.062	0.012
Earnings	11806	0.064	0.065	0.089	0.044
Return	11806	0.153	0.129	0.314	-0.038
Deal month	11806	145	122	146	61
Deal size (in millions)	11806	278	150	300	88
Deal size/long term debt	11777	0.270	0.105	0.241	0.035
Deal size/total assets	11804	0.042	0.021	0.051	0.006

This table presents the descriptive statistics of the private debt sample, the bond IPO sample and the seasoned bond sample. The private debt sample and the seasoned bond sample cover the time horizon of 1987 to 2005. Bond IPOs are identified as the first non-convertible bond issued by a firm as covered in SDC Platinum from 1970.
Size is total assets (Compustat item #6). *Market to book* is the market value of equity (Compustat item #199*Compustat item #25) divided by the book value of the equity (Compustat item #60). *Leverage* is long-term debt (Compustat item #9) divided by total assets. *ROA* is net income (Compustat item #172) divided by total assets. *Return* is fiscal year buy-and-hold return. *Deal month* is the length of the deal in months. *Deal size* is the borrowing amount of the deal in millions. *Deal size/long term debt* is the size of the deal divided by total long-term debt. *deal size/total assets* is the size of the deal divided by total assets.

TABLE 4

Changes in Accounting Conservatism around Private Debt Issuance

Variable	Full		Investment Grade		Leveraged	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.052 (0.00)	0.054 (0.00)	0.057 (0.00)	0.059 (0.00)	0.037 (0.00)	0.039 (0.00)
DR	0.009 (0.00)	0.004 (0.17)	0.001 (0.72)	-0.003 (0.21)	0.011 (0.02)	0.007 (0.27)
Return	0.011 (0.00)	0.018 (0.00)	0.024 (0.00)	0.026 (0.00)	0.011 (0.00)	0.017 (0.00)
*Return*DR*	0.251 (0.00)	0.176 (0.00)	0.128 (0.00)	0.063 (0.00)	0.265 (0.00)	0.186 (0.00)
Post		-0.004 (0.07)		-0.004 (0.03)		-0.003 (0.51)
*DR*Post*		0.008 (0.05)		0.003 (0.35)		0.010 (0.28)
*Return*Post*		**-0.014 (0.00)**		**-0.007 (0.05)**		-0.011 (0.09)
*Return*DR*Post*		**0.146 (0.00)**		**0.105 (0.00)**		**0.180 (0.00)**
Adj R^2	7.36%	7.99%	8.26%	9.13%	6.98%	7.81%

This table presents the results of testing whether there is a change in conservatism around private debt issuance. The results obtained with Basu (1997) basic model (model 1) are also reported as comparison. The sample is further broken down to two subsamples: investment-grade loans and leveraged loans. Loans with spread greater than 125 basis points are classified as leveraged loans following the classification practice by Standard & Poor's. The full sample has 52,644 observations. 42,240 observations have spread available: 18,996 classified as leveraged and 23,244 investment-grade. The samples cover the time horizon of 1987 to 2005.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 5
Changes in Accounting Conservatism around Public Debt Issuance

Variable	Full		Investment Grade		High Yield	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.059 (0.00)	0.064 (0.00)	0.060 (0.00)	0.064 (0.00)	0.041 (0.00)	0.049 (0.00)
DR	0.003 (0.09)	-0.001 (0.55)	0.002 (0.19)	0.000 (0.89)	-0.006 (0.60)	-0.029 (0.06)
Return	0.051 (0.00)	0.046 (0.00)	0.049 (0.00)	0.048 (0.00)	0.072 (0.00)	0.045 (0.01)
*Return*DR*	0.066 (0.00)	0.058 (0.00)	0.053 (0.00)	0.036 (0.00)	0.065 (0.06)	0.079 (0.11)
Post		-0.009 (0.00)		-0.008 (0.00)		-0.015 (0.25)
*DR*Post*		0.007 (0.02)		0.003 (0.25)		0.052 (0.02)
*Return*Post*		0.008 (0.07)		0.000 (0.96)		**0.058 (0.02)**
*Return*DR*Post*		**0.014 (0.30)**		**0.032 (0.01)**		-0.018 (0.79)
Adj R^2	11.73%	12.05%	11.62%	12.22%	12.85%	13.67%

This table presents the results of testing whether there is a change in conservatism around public debt issuance. The results obtained using Basu (1997) basic model (model 1) are also reported as comparison. The sample is further broken down to two subsamples: one has only public debt of investment grade and the other has only public debt of high yield. The full sample has 14,022 observations. 12,798 can be identified as investment-grade and 978 are high-yield. The samples cover the time horizon of 1987 to 2005.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 6
Changes in Accounting Conservatism around the Initial Public Debt Offerings

Variable	Full		Investment Grade		High Yield	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.079 (0.00)	0.082 (0.00)	0.079 (0.00)	0.082 (0.00)	0.066 (0.00)	0.074 (0.00)
DR	0.003 (0.50)	-0.006 (0.30)	0.002 (0.50)	-0.010 (0.05)	-0.005 (0.81)	0.003 (0.92)
Return	0.041 (0.00)	0.044 (0.00)	0.044 (0.00)	0.042 (0.00)	0.049 (0.00)	0.063 (0.00)
*Return*DR*	0.131 (0.00)	0.054 (0.01)	0.078 (0.00)	0.005 (0.81)	0.253 (0.00)	0.185 (0.03)
Post		-0.005 (0.22)		-0.006 (0.11)		-0.009 (0.67)
*DR*Post*		0.014 (0.08)		0.020 (0.00)		-0.022 (0.57)
*Return*Post*		-0.009 (0.33)		0.004 (0.62)		-0.049 (0.17)
*Return*DR*Post*		**0.130 (0.00)**		**0.120 (0.00)**		**0.130 (0.24)**
Adj R^2	9.42%	10.05%	9.31%	9.99%	12.75%	13.98%

This table presents the results of testing whether there is a change in conservatism around bond IPO issuance. The results obtained using Basu (1997) basic model (model 1) are also reported as comparison. The sample is further broken down into two subsamples: one has bond IPOs of investment grade and the other has bond IPOs of high yield. The full sample has 5,340 observations, among which 4,560 are investment-grade and 762 are high-yield. The sample covers the time horizon of 1970 to 2003.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals to 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 7
Changes in Accounting Conservatism around Seasoned Bond Offerings

Variable	Full		Investment Grade		High Yield	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.059 (0.00)	0.063 (0.00)	0.059 (0.00)	0.064 (0.00)	0.040 (0.00)	0.045 (0.00)
DR	0.002 (0.16)	0.001 (0.82)	0.001 (0.51)	0.000 (0.99)	-0.004 (0.82)	-0.018 (0.43)
Return	0.049 (0.00)	0.046 (0.00)	0.047 (0.00)	0.044 (0.00)	0.083 (0.00)	0.068 (0.00)
*Return*DR*	0.061 (0.00)	0.063 (0.00)	0.052 (0.00)	0.051 (0.00)	0.062 (0.24)	0.086 (0.26)
Post		-0.009 (0.00)		-0.009 (0.00)		-0.017 (0.35)
*DR*Post*		0.003 (0.35)		0.001 (0.64)		0.032 (0.33)
*Return*Post*		0.006 (0.26)		0.004 (0.40)		0.038 (0.32)
*Return*DR*Post*		-0.004 (0.78)		0.002 (0.89)		-0.045 (0.68)
Adj R^2	11.00%	11.43%	10.83%	11.44%	12.89%	12.61%

This table presents the results of testing whether there is a change in conservatism around the issuance of seasoned bonds. The results obtained using Basu (1997) basic model (model 1) are also reported as comparison. The sample is further broken down to two subsamples: one has only seasoned bonds of investment grade and the other has only seasoned bonds of high yield. The full sample has 11,806 observations. 11,038 can be identified as investment grade and 546 are high yield. The sample covers the time horizon of 1987 to 2005.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 8

Seasoned Bonds: the Deal Size Effect

Variable	Seasoned Bonds Deal Size/Total Assets >=6.6%	Seasoned Bonds Deal Size/Total Assets < 6.6%
Intercept	0.061 (0.00)	0.001 (0.00)
DR	0.006 (0.22)	0.003 (0.70)
Return	0.036 (0.00)	0.004 (0.00)
*Return*DR*	0.121 (0.00)	0.012 (0.00)
Post	-0.021 (0.00)	0.002 (0.00)
*DR*Post*	0.000 (1.00)	0.004 (0.21)
*Return*Post*	0.021 (0.09)	0.005 (0.98)
*Return*DR*Post*	**-0.095 (0.00)**	0.016 (0.17)
Adj R^2	10.66%	11.90%

This table presents the results of addressing the concern that the no change results found in table 7 for the seasoned bond sample is caused by the small deal amount relative to the size of the company. We break the full seasoned bond sample into one with deal size/total assets >= 6.6% and one with deal size/total assets < 6.6%. 6.6% is the median relative deal size for the bond IPO sample. The above median sample has 2,253 observations and the below median sample has 9,553 observations. The samples cover the time horizon of 1987 to 2005.
The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses. P-values are reported in parenthesis.

TABLE 9

Changes in Accounting Conservatism around Significant Increase in Leverage

Variable	Model 1	Model 2
Intercept	0.065 (0.00)	0.080 (0.00)
DR	-0.006 (0.29)	-0.026 (0.00)
Return	-0.037 (0.00)	-0.034 (0.00)
*Return*DR*	0.386 (0.00)	0.268 (0.00)
Post		-0.029 (0.00)
*DR*Post*		0.035 (0.00)
*Return*Post*		-0.006 (0.42)
*Return*DR*Post*		**0.195 (0.00)**
Adj R^2	9.44%	10.57%

This table presents the results of testing whether firms increase their reported level of conservatism following a material increase in leverage (>20%). The sample has 11,142 observations, covering the time horizon of 1987 to 2005.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses. P-values are reported in parenthesis.

TABLE 10
Changes in Accounting Conservatism: Two-year Window

Variable	Private	Bond IPO	Seasoned Bond
Intercept	0.054 (0.00)	0.094 (0.00)	0.062 (0.00)
DR	0.004 (0.12)	-0.017 (0.04)	0.001 (0.70)
Return	0.018 (0.00)	0.002 (0.85)	0.050 (0.00)
*Return*DR*	0.176 (0.00)	0.103 (0.00)	0.058 (0.00)
Post	-0.003 (0.22)	-0.019 (0.00)	-0.005 (0.02)
*DR*Post*	0.003 (0.49)	0.020 (0.08)	0.002 (0.54)
*Return*Post*	**-0.015 (0.00)**	**0.041 (0.00)**	-0.006 (0.30)
*Return*DR*Post*	**0.100 (0.00)**	**0.073 (0.07)**	0.026 (0.12)
Adj R^2	8.20%	6.25%	11.24%

This table presents the results of testing whether there is a change in conservatism around debt issuance using a two-year window.
The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses. P-values are reported in parenthesis.

TABLE 11
Changes in Accounting Conservatism: One-year Window

Variable	Private	Bond IPO	Seasoned Bond
Intercept	0.053 (0.00)	0.082 (0.00)	0.059 (0.00)
DR	0.006 (0.06)	-0.020 (0.10)	0.006 (0.11)
Return	0.019 (0.00)	0.041 (0.95)	0.051 (0.00)
*Return*DR*	0.188 (0.00)	-0.003 (0.09)	0.063 (0.00)
Post	0.002 (0.47)	-0.015 (0.34)	-0.004 (0.21)
*DR*Post*	-0.006 (0.27)	0.072 (0.08)	-0.002 (0.66)
*Return*Post*	**-0.019 (0.00)**	**0.019 (0.00)**	-0.005 (0.51)
*Return*DR*Post*	**0.055 (0.00)**	**0.432 (0.00)**	0.017 (0.42)
Adj R^2	8.42%	6.25%	10.90%

This table presents the results of testing whether there is a change in conservatism around debt issuance using a one-year window.
The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses. P-values are reported in parenthesis.

TABLE 12
Control the Effect of Existing Leverage Level

Panel A: the Private Debt Sample

Variable	Lev 1 (Lowest)	Lev 2	Lev 3	Lev 4	Lev 5 (Highest)
Intercept	0.055 (0.00)	0.058 (0.00)	0.051 (0.00)	0.054 (0.00)	0.050 (0.00)
DR	0.003 (0.68)	0.002 (0.71)	0.000 (0.99)	0.004 (0.52)	0.007 (0.38)
Return	0.014 (0.00)	0.028 (0.00)	0.025 (0.00)	0.035 (0.00)	-0.006 (0.44)
*Return*DR*	0.205 (0.00)	0.123 (0.00)	0.112 (0.00)	0.125 (0.00)	0.260 (0.00)
Post	0.008 (0.09)	-0.011 (0.00)	-0.008 (0.06)	-0.005 (0.33)	-0.010 (0.15)
*DR*Post*	-0.013 (0.17)	0.022 (0.00)	0.009 (0.26)	0.021 (0.02)	0.013 (0.29)
*Return*Post*	**-0.045 (0.00)**	-0.005 (0.49)	0.003 (0.69)	-0.006 (0.50)	0.008 (0.47)
*Return*DR*Post*	**0.101 (0.00)**	**0.196 (0.00)**	**0.093 (0.00)**	**0.230 (0.00)**	**0.139 (0.00)**
Adj R^2	9.04%	11.26%	7.57%	8.75%	6.90%
No. of obs	10,518 obs	10,518 obs	10,524 obs	10,518 obs	10,518 obs
Median leverage	0.013	0.123	0.220	0.315	0.461

Panel B: the Bond IPO Sample

Variable	Lev 1 (Lowest)	Lev 2	Lev 3	Lev 4	Lev 5 (Highest)
Intercept	0.107 (0.00)	0.076 (0.00)	0.074 (0.00)	0.069 (0.00)	0.078 (0.00)
DR	-0.012 (0.25)	0.005 (0.62)	-0.004 (0.73)	0.001 (0.97)	-0.013 (0.31)
Return	0.037 (0.00)	0.064 (0.00)	0.076 (0.00)	0.051 (0.00)	0.003 (0.85)
*Return*DR*	0.062 (0.10)	0.104 (0.02)	-0.037 (0.36)	0.031 (0.60)	0.106 (0.04)
Post	-0.003 (0.66)	-0.001 (0.86)	0.002 (0.81)	-0.025 (0.04)	-0.003 (0.78)
*DR*Post*	0.007 (0.62)	-0.002 (0.88)	0.013 (0.46)	0.030 (0.17)	0.016 (0.36)
*Return*Post*	-0.023 (0.17)	-0.020 (0.22)	-0.036 (0.08)	0.044 (0.13)	-0.011 (0.61)
*Return*DR*Post*	**0.138 (0.01)**	-0.043 (0.46)	**0.249 (0.00)**	0.117 (0.12)	0.101 (0.12)
Adj R^2	14.97%	10.50%	14.51%	9.57%	5.30%
No. of obs	1,062 obs	1,068 obs	1,068 obs	1,068 obs	1,062 obs
Median leverage	0.014	0.104	0.187	0.283	0.44

Panel C: the Seasoned Bond Sample

Variable	Lev 1 (Lowest)	Lev 2	Lev 3	Lev 4	Lev 5 (Highest)
Intercept	0.073 (0.00)	0.061 (0.00)	0.071 (0.00)	0.064 (0.00)	0.053 (0.00)
DR	-0.005 (0.33)	0.002 (0.66)	-0.015 (0.00)	0.001 (0.79)	0.013 (0.02)
Return	0.057 (0.00)	0.049 (0.00)	0.011 (0.12)	0.035 (0.00)	0.055 (0.00)
*Return*DR*	0.061 (0.01)	0.046 (0.06)	0.037 (0.13)	0.075 (0.00)	0.099 (0.00)
Post	-0.011 (0.01)	-0.005 (0.23)	-0.016 (0.00)	-0.012 (0.00)	-0.004 (0.36)
*DR*Post*	0.012 (0.13)	-0.001 (0.87)	0.010 (0.18)	-0.001 (0.89)	-0.001 (0.94)
*Return*Post*	-0.002 (0.86)	-0.007 (0.56)	**0.024 (0.04)**	0.019 (0.07)	-0.001 (0.90)
*Return*DR*Post*	0.001 (0.98)	0.031 (0.35)	0.033 (0.30)	-0.052 (0.07)	-0.019 (0.56)
Adj R^2	15.43%	11.05%	9.59%	10.72%	10.48%
No. of obs	2,355 obs	2,364 obs	2,359 obs	2,364 obs	2,364 obs
Median leverage	0.064	0.152	0.235	0.314	0.422

This table presents the results of testing whether the results from the main tests on changes in conservatism level around debt issuance vary with firms' existing debt level.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 13
Control the Effect of Existing Debt Mix

	Issuance of Private Debt	
Variable	Without Public Debt Outstanding	With Public Debt Outstanding
Intercept	0.051 (0.00)	0.055 (0.00)
DR	-0.001 (0.93)	0.009 (0.04)
Return	0.023 (0.00)	0.014 (0.00)
*Return*DR*	0.176 (0.00)	0.192 (0.00)
Post	-0.003 (0.47)	-0.002 (0.54)
*DR*Post*	0.002 (0.77)	0.001 (0.85)
*Return*Post*	**-0.015 (0.01)**	**-0.011 (0.03)**
*Return*DR*Post*	**0.091 (0.00)**	**0.067 (0.00)**
Adj R^2	7.65%	6.66%
No. of obs	27,790 obs	33,628 obs

This table presents the results of testing whether the results on the change in conservatism around the issuance of private debt differs between firms that have or do not have public debt outstanding at the same time.
The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses. P-values are reported in parenthesis.

TABLE 14
Changes in Accounting Conservatism Around Private Debt Issuance: Segregation by Maturity

Variable	Dealmonth>=36 months	Dealmonth<36 months
Intercept	0.057 (0.00)	0.052 (0.00)
DR	-0.002 (0.73)	0.009 (0.02)
Return	0.015 (0.00)	0.020 (0.00)
*Return*DR*	0.180 (0.00)	0.172 (0.00)
Post	-0.007 (0.05)	-0.001 (0.61)
*DR*Post*	0.016 (0.02)	0.002 (0.69)
*Return*Post*	-0.005 (0.36)	**-0.021 (0.00)**
*Return*DR*Post*	**0.155 (0.00)**	**0.137 (0.00)**
Adj R^2	7.84%	8.23%

This table presents the results of testing whether the results of being more conservative following private debt issuance are driven by the length of maturity.
The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance and 0 otherwise. The issuance year is not included in the analyses. P-values are reported in parenthesis.

TABLE 15

Changes in Accounting Conservatism around Private Debt Issuance - Segregation by Distribution Method

Variable	Full		Syndication		Single Lender	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.052 (0.00)	0.054 (0.00)	0.054 (0.00)	0.056 (0.00)	0.034 (0.00)	0.036 (0.00)
DR	0.009 (0.00)	0.004 (0.17)	0.006 (0.00)	0.002 (0.53)	0.020 (0.02)	0.012 (0.33)
Return	0.011 (0.00)	0.018 (0.00)	0.011 (0.00)	0.016 (0.00)	0.012 (0.06)	0.023 (0.01)
*Return*DR*	0.251 (0.00)	0.176 (0.00)	0.222 (0.00)	0.151 (0.00)	0.312 (0.00)	0.254 (0.00)
Post		-0.004 (0.07)		-0.004 (0.04)		-0.005 (0.59)
*DR*Post*		0.008 (0.05)		0.006 (0.13)		0.017 (0.33)
*Return*Post*		**-0.014 (0.00)**		**-0.011 (0.00)**		-0.020 (0.12)
*Return*DR*Post*		**0.146 (0.00)**		**0.139 (0.00)**		**0.118 (0.01)**
Adj R^2	7.36%	7.99%	7.29%	8.04%	7.42%	7.63%

This table presents the results of testing whether the change in conservatism around private debt issuance differs between distribution methods. The full sample is broken down to two subsamples: one has only syndicated loans and the other has only single-lender loans. The full sample has 52,644 observations, among which 40,920 are syndicated loans and 5,874 are single-lender loans. The samples cover the time horizon of 1987 to 2005.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 16

Changes in Accounting Conservatism around Private Debt Issuance - Existence of Financial Covenants

Variable	Full		With Financial Covenants		Without Financial Covenants	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.052 (0.00)	0.054 (0.00)	0.0507 (0.00)	0.0518 (0.00)	0.0529 (0.00)	0.0552 (0.00)
DR	0.009 (0.00)	0.004 (0.17)	0.0077 (0.02)	0.0094 (0.09)	0.011 (0.00)	0.0016 (0.45)
Return	0.011 (0.00)	0.018 (0.00)	0.0072 (0.03)	0.0142 (0.00)	0.0151 (0.00)	0.0222 (0.00)
*Return*DR*	0.251 (0.00)	0.176 (0.00)	0.2355 (0.00)	0.1787 (0.00)	0.2664 (0.00)	0.1749 (0.00)
Post		-0.004 (0.07)		-0.002 (0.94)		-0.005 (0.28)
*DR*Post*		0.008 (0.05)		-0.005 (0.50)		0.0171 (0.02)
*Return*Post*		**-0.014 (0.00)**		**-0.015 (0.01)**		**-0.014 (0.02)**
*Return*DR*Post*		**0.146 (0.00)**		**0.1153 (0.00)**		**0.171 (0.01)**
Adj R^2	7.36%	7.99%	7.52%	8.21%	7.27%	7.86%

This table presents the results of testing whether the change in conservatism around private debt issuance depends on the existence of financial covenants. The full sample is broken down to two subsamples: one has loans that have accounting-based financial covenants and one does not. The full sample has 52,644 observations, among which 21,642 have financial covenants and 31,002 do not have. The samples cover the time horizon of 1987 to 2005.

The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise. *Post* is an indicator variable that takes on the value of 1 if the year is after the debt issuance year and 0 otherwise. The issuance year is not included in the analyses.

P-values are reported in parenthesis.

TABLE 17
Accounting Conservatism around Debt Issuance by Year

Panel A: the Private Debt Sample

Variable	Year -3	Year -2	Year -1	Year 0	Year 1	Year 2	Year 3
Intercept	0.057 (0.00)	0.055 (0.00)	0.050 (0.00)	0.052 (0.00)	0.055 (0.00)	0.048 (0.00)	0.048 (0.00)
DR	0.000 (0.93)	0.001 (0.72)	0.010 (0.02)	-0.001 (0.81)	0.000 (0.98)	0.014 (0.01)	0.023 (0.00)
Return	0.015 (0.00)	0.015 (0.00)	0.023 (0.00)	0.008 (0.03)	0.000 (0.96)	0.006 (0.19)	0.006 (0.36)
*Return*DR*	0.145 (0.00)	0.179 (0.00)	0.195 (0.00)	0.191 (0.00)	0.242 (0.00)	0.309 (0.00)	0.418 (0.00)
Adj R^2	8.06%	8.24%	8.80%	6.48%	8.04%	7.56%	7.83%

Panel B: the Seasoned Bond Sample

Variable	Year -3	Year -2	Year -1	Year 0	Year 1	Year 2	Year 3
Intercept	0.068 (0.00)	0.064 (0.00)	0.058 (0.00)	0.053 (0.00)	0.054 (0.00)	0.057 (0.00)	0.051 (0.00)
DR	-0.001 (0.74)	-0.002 (0.69)	0.005 (0.15)	0.003 (0.51)	0.000 (0.91)	-0.002 (0.61)	0.012 (0.00)
Return	0.041 (0.00)	0.041 (0.00)	0.056 (0.00)	0.057 (0.00)	0.053 (0.00)	0.040 (0.00)	0.062 (0.00)
*Return*DR*	0.075 (0.00)	0.068 (0.00)	0.047 (0.00)	0.014 (0.41)	0.025 (0.15)	0.050 (0.00)	0.095 (0.00)
Adj R^2	10.70%	9.52%	12.65%	9.09%	9.24%	8.47%	14.98%

This table presents the results of estimating levels of accounting conservatism around debt issuance by year. The samples cover the time horizon of 1987 to 2005.
The dependent variable is *Earnings* defined as annual earnings per share (Compustat item #53) scaled by price per share at the beginning of the fiscal year (Compustat item #199). *Return* is fiscal year buy-and-hold return. *DR* is an indicator variable that equals 1 if *Return* is less than 0, and 0 otherwise.

Essay 2

Auditor Choice and Debt Structure

2.1. INTRODUCTION

A number of studies identify factors that affect a firm's choice of external auditor (Chow 1982; Francis and Wilson 1988; Johnson and Lys 1990; DeFond 1992; Francis et al. 1999; Lennox 2005; Godfrey and Hamilton 2005). Based on the general agency cost framework of Jensen and Meckling (1976), one stream of research models the choice of high-quality auditors as an increasing function of agency costs between debt holders and managers/shareholders and between shareholders and managers. Auditing is a mechanism that mitigates agency conflicts between a firm and its capital providers. There is more demand for high-quality auditors when the agency conflicts are more severe. Auditor quality in these papers is generally captured by auditor size or brand name reputation (Big N vs non-Big N[20]). Financial leverage is a proxy for the presence of agency conflicts between debt holders and managers/shareholders. Proxies for the agency conflicts between shareholders and managers include managerial ownership, the existence of accounting-based incentive performance contracts, diffusion of ownership and short-term accruals (Francis and Wilson 1988; DeFond 1992).

The results of prior auditor choice studies are inconsistent. For example, Francis and Wilson (1988) find a negative association between a firm's leverage level and the likelihood of a change to a brand name auditor and DeFond (1992) finds a positive relation between a firm's

[20] The auditing industry has experienced increased concentration in the past two decades. Big 8 has become Big 6, Big 5 and now Big 4. For brevity, these large accounting firms are referred to as Big N auditor in this paper in contrast to non-Big N for the rest of the industry.

leverage change and its change to a brand name auditor[21]. The inconsistent results across these studies are not adequately explained.

Using larger and more recent samples, I provide a more comprehensive analysis of the impact of debt structure on a firm's choice of an auditor. Specifically, I explore three related research questions. First, based upon research developments in accounting, auditing and finance since these earlier studies, I re-examine the relation between debt level and auditor choice. The purpose is to test whether the relation has evolved and more importantly to identify which theory best explains the relation. Second, I analyze whether the relation varies with the sources of debt. Third, I test whether the relation differs between short-term and long-term debt. Auditor choice is captured along two dimensions: brand name reputation that is typically used in prior studies and auditor industry specialization, an aspect that has drawn much attention in the auditing literature since these earlier studies.

My predictions on the relation between auditor choice and leverage are based on two streams of literature that link firms' accounting choices to the presence of accounting numbers in debt contracts. One is the effect of managerial opportunism in complying with debt covenants and the other is the role of conservatism in debt contracting.

The managerial opportunism hypothesis argues that there are costs associated with covenant violation such as increased interest and reduced line of credit. Recent empirical evidence from the corporate finance literature suggests that covenant violation can also affect a firm's investment activities and corporate governance (e.g. management turnover) (Chava and Roberts 2008; Nini et al. 2009; Nini et al. 2009). Therefore, firms have strong incentives to make income-increasing accounting choices to avoid covenant violation. The income increasing

[21] DeFond (1992) summarizes four other papers that include leverage in their auditor choice studies and the results are also mixed.

accounting choices are in direct contrast with conservatism that accelerates the recognition of losses and delays recognition of gains when uncertainty is present. Zhang (2008) provides empirical support that being more conservative accelerates covenant violation. Because the likelihood and cost of covenant violation increase with leverage, the incentive to manage earnings is stronger for firm with high leverage. Since prior auditor differentiation literature finds that Big N auditors and industry specialist auditors are better at constraining earnings overstatement and are more conservative, firms with high leverage are less likely to choose Big N/industry specialist auditors. By avoiding Big N/specialist auditors, they are able to maintain their financial reporting flexibility.

The debt contracting role of conservatism, however, suggests an opposite prediction. This line of research argues that debt holders have an asymmetric payoff structure and conservatism reflected in accounting numbers mitigates their downside risk. When agency costs are high, managers will bond themselves to more conservative reporting and signal to the debt market that they are committed to protecting debt holders' interests. The auditor differentiation literature typically considers large or specialist auditors to be more conservative. So the efficient debt contracting hypothesis suggests that firms with high leverage are more likely to have Big N/industry specialist auditors who provide more conservative audits. Since the managerial opportunism hypothesis and the debt contracting role of conservatism give contradictory predictions, I seek to identify which theory (if any) dominates the relation between auditor choice and leverage.

The second research question explores whether the relation between auditor choice and leverage varies with the sources of debt. This research question is motivated by the institutional differences between the public and private debt markets in monitoring functions and covenant

features. Compared with public debt holders, private debt holders are argued to have better access to private information, better information processing ability, more efficient monitoring of debt contracts, more and tighter debt covenants. The differences in monitoring functions give rise to differences in the demand for more conservative auditing. Public debt holders should have more demand for the monitoring provided by high-quality external auditors. The differences in covenant features give rise to differences in the likelihood and costs of covenant violation and hence to different preferences for Big N/specialist auditors by opportunistic managers. Firms with only private debt are more concerned over covenant violation compared to those with access to the public debt market. They therefore have more incentives to avoid Big N/specialist auditors who are more likely to limit their flexibility in managing earnings.

Monitoring functions and covenant features are also factors that differentiate short-term debt and long-term debt. Monitoring by short-term debt holders is stronger because (1) compared with long-term debt, short-term debt is largely held by banks that are monitoring specialists; (2) reducing the term of the debt enhances debt holders' bargaining power and hence enhances the monitoring effectiveness (Barclay and Smith 1995). In terms of covenant features, short-term debt contains more restrictive debt covenants and in the case of a covenant violation, short-term debt holders give fewer concessions (Barclay and Smith 1995; Berglof and Von Thadden 1994). Therefore, similar to the argument for public and private debt, strong monitoring suggests less demand for Big N/specialist auditors from the short-term debt holders and more restrictive covenants suggest that managers are more concerned over covenant violation and have more incentives to avoid Big N/specialist auditors.

The samples include all firm-years with data available on COMPUSTAT Industrial Annual from 1988 to 2006. Brand name reputation is measured with a dichotomous variable to

indicate a Big N or a non-Big N auditor. Following prior literature, I use an audit firm's industry market share for a given year as the proxy for industry specialization. I use both level and change models to test the relation between auditor choice and leverage. Availability of S&P ratings in COMPUSTAT is used to identify firm-year observations that have public debt.

I find consistent results that firms with high leverage are less likely to have Big N/specialist auditors and firms with an increase in leverage are less likely to switch to Big N/specialist auditors. This negative relation is consistent with the managerial opportunism hypothesis. Prior studies document that financial statements audited by brand name/specialist auditors are more conservative and are better at constraining income-increasing accruals. Because the likelihood and costs of covenant violation are high for firms with high leverage, they have more incentives to avoid brand name/specialist auditors to retain their financial reporting flexibility.

I find public debt and private debt has differential impact on auditor choice. The coefficient for leverage is significantly negative for firm-years that have only private debt. But the negative relation turns positive for firm-years that also have public debt, suggesting a dominant role of the efficient debt contracting hypothesis. Firms bond themselves to brand name/specialist auditors to access to the public debt market. The reversal in the coefficient estimates confirms the difference between the public and private debt markets with respect to monitoring functions and covenant features. Compared with the private debt market, the public debt market is weaker in monitoring the borrower and has to rely more on Big N/specialist auditors. As to the covenant features, the borrower of public debt is less concerned over violating debt covenants because there are fewer accounting-based covenants and the covenants are

generally set looser in public debt. Therefore, they are more willing to engage Big N/specialist auditors.

As to the maturity structure, although the coefficients for short-term debt and long-term debt are both significantly negative while controlling for other factors that affect auditor choice, the negative relation is more pronounced for short-term debt. This result is consistent with my hypothesis that managers with more short-term debt have more incentives to avoid Big N/Specialist auditors to maintain financial reporting flexibility and meanwhile short-term debt holders have less demand for monitoring by high-quality external auditors. The result further confirms the role of bank monitoring and covenants in a firm's auditor choice decision.

Because recent studies provide empirical evidence that auditor choice affects a firm's cost of debt and target debt ratio (Chang et al. 2009; Pittman and Fortin 2004; Mansi et al. 2004), there is a potential reciprocal causation between auditor choice and leverage. To control the endogeneity problem, I apply two-stage probit least squares (2SPLS) to the brand name model and two-stage least squares (2SLS) to the industry specialization model to study the effect of leverage on auditor choice. The results still hold after I control for the endogeneity problem using 2SPLS and 2SLS.

My study extends the auditor differentiation and auditor choice literature. I provide empirical evidence that a firm's financial leverage is an important consideration in its choice of auditor and the consideration varies with its debt sources and maturity structure.

Compared with the prior studies that also include leverage as one of their determinants of auditor choice, I focus specifically on the conflict of interest between managers/shareholders and debt holders and provide a detailed explanation for the negative relation. The theoretical bases go beyond the general discussion in Jensen and Meckling (1976) to incorporate developments in

accounting literature on debt contracting including the efficient debt contracting role of conservatism and the managerial opportunism hypothesis. Furthermore, I differentiate the impact of different debt sources and maturity structure on a firm's auditor choice decision. This segregation provides critical insights because agency costs, monitoring effectiveness and covenant features vary considerably among different types of debt. In contrast, the debt component in leverage in earlier studies is considered as uniform.

I also make a few technical improvements. First, my tests are based on larger and more comprehensive samples. Because the auditing industry and the general business environment have changed dramatically over the past twenty years, I provide new insights using updated data. Secondly, I use both brand name reputation and industry specialization as my measures of auditor choice. Thirdly, I consider both "level" and "change" model specifications. The level specification, which in general establishes association between two variables, captures a firm's general auditor choice policy. The change specification captures the same association but is less prone to omitted variable problems. Finally, I take into consideration the potential reciprocal causation between auditor choice and leverage and use two-stage procedures to control the endogeneity problem.

My study also contributes to the growing literature on the impact of the debt market on firms' financial reporting attributes, especially conservatism. Auditing plays an important role in monitoring a firm's financial reporting system. It has a significant impact on the financial flexibility a firm has in making accounting choices and the audited financial statements are a joint product of auditor-client negotiation when disagreements exist. Auditing has significant influence on the level of conservative reporting. So a study of the relation between auditor choice and debt structure provides additional insight.

The rest of the paper is organized as follows. Chapter 2 discusses the relevant literature and develops hypotheses. Chapter 3 presents the research designs, followed by a discussion of the results in chapter 4. Chapter 5 discusses a few additional tests. Chapter 6 concludes.

2.2. BACKGROUND LITERATURE AND HYPOTHESIS DEVELOPMENT

2.2.1. Auditing and the Debt Contracting Process

The demand for auditing arises because of agency problems. One commonly recognized function of auditing in mitigating the agency conflict between managers/shareholders and debt holders is that high-quality auditors deliver credibility to the financial accounting information that is used to evaluate the creditworthiness of a business and its debt-paying ability. Auditors attest to the accuracy of the accounting numbers used and insure that the procedures used to generate these numbers are in conformity with Generally Accepted Accounting Principles (GAAP). Auditing is an important external monitoring mechanism.

Another important, yet less stressed role of external auditors in mitigating the agency conflict between managers/shareholders and debt holders is that auditor conservatism is in line with the debt holders' demand for conservatism. Conservatism is defined as a higher degree of verification requirements to recognize good news as gains than to recognize bad news as losses. The link between auditor conservatism and accounting conservatism is shown in Basu (1997). His study finds that accounting conservatism is an increasing function of auditor litigation exposure (auditor conservatism and debt holders' preference for conservatism are further elaborated in the next two subsections). In studying the debt contracting process, conservatism deserves a separate discussion from the other attributes of accounting numbers because it potentially differentiates the demand for external auditing between debt holders and shareholders. Studies support debt holders' preference for conservatism, but it is unclear whether

auditor conservatism is also beneficial to the equity market (DeFond and Francis 2005). Even if it is, auditor conservatism might be more beneficial to debt holders than to shareholders.

2.2.2. Auditor Differentiation

Auditors of different size differ in performing high-quality and conservative audits. Theoretical research suggests a positive relation between auditor size and auditor quality. The quality of audits depends on the competence and independence of auditors. Competence is manifested through the probability that the auditor discovers a given breach. Independence is shown through the probability that the auditor reports the discovered breach (DeAngelo 1981a, 1981b; Watts and Zimmerman 1986). Large auditors are generally more competent because of their economies of scale and technical expertise. Large auditors are more independent because: (1) relative financial independence enables them to stand up against clients' questionable reporting behaviors; (2) they have more quasi-rent to lose if they fail to deliver high-quality audits; (3) they are more concerned about protecting their investment in reputation capital; (4) litigation risk is higher for large auditors because of their "deeper pocket" (Dye 1993).

The positive relation between auditor size and audit quality is supported by many empirical auditor differentiation studies using various constructs such as discretionary accruals, management forecast errors, earnings response coefficients, the promptness of disclosing auditor changes and going-concern opinions (Becker et al. 1998; Francis et al. 1999; Davidson and Neu 1993; Teoh and Wong 1993; Schwartz and Soo 1996; Lennox 1999). In addition, consistent with the findings that Big N auditors provide high-quality audits and thus demand a high return on their investment, the audit pricing literature finds that Big N accounting firms earn systematically higher audit fees (Francis and Simon 1987; Craswell et al. 1995).

Another perspective for differentiating auditors is the degree of conservatism. Big N auditors are more conservative because they face higher litigation risk than non-Big N auditors due to their "deeper pockets". Both the explicit cost (e.g. monetary settlement) and implicit cost (e.g. reputation damage) following lawsuits are higher for Big N auditors. Since a lawsuit is more likely to follow income overstatement than income understatement, Big N auditors would like managers to report losses more timely and delay the recognition of gains. In terms of empirical evidence, Francis and Krishnan (1999) find that Big N auditors are more conservative with firms with high-accruals, especially income-increasing accruals. Conservatism is measured by the likelihood of issuing modified audit reports. Kim et al. (2003) find that Big N auditors are more effective than non-Big N auditors in constraining income-increasing accruals, but less effective in constraining income-decreasing accruals. The stronger preference of Big N auditors for income understatement reflects their conservative bias. Using the asymmetric recognition of gains and losses as their measures of conservatism, Basu et al. (2000) find that firms audited by Big N auditors are quicker in recognizing unrealized losses than unrealized gains.

The arguments on differentiated audits for different size auditors have been extended to industry specialization. To isolate the effect of industry specialization from brand name reputation, the studies on industry specialization typically limit their samples to observations audited by Big N auditors. An auditor might build competitive advantage through specializing in a certain industries identified as key to its survival. It invests heavily in industry-specific technologies, recruits and trains professionals and builds organizational structures around this objective. Industry specialization is argued to enhance audit effectiveness because the error characteristics and methods of detection differ across industries (Maletta and Wright 1996) and knowledge and best practices gained from auditing other clients of the same industry are

transferable. In addition, the heavy investment in a certain industries also gives an auditor more incentives to preserve their reputation capital when facing litigation exposure. As a result, financial statements audited by industry specialist auditors are considered to be of better quality and more conservative.

As to empirical evidence, financial statements audited by specialist auditors have been found to have lower levels of discretionary accruals (Krishnan 2003; Balsam et al. 2003), higher earnings response coefficients (Balsam et al. 2003), and enhanced disclosures (Dunn & Mayhew 2004). Similar to Basu et al. (2000), Krishnan (2005) uses the asymmetric timeliness measure of conservatism and finds that financial statements audited by specialist auditors are quicker in recognizing losses and are therefore more conservative.

If auditor fee premium is a good indicator of differentiated audit quality, there are, however, some controversies regarding industry specialization. Craswell et al. (1995) find that industry specialist Big N auditors earn a 34% fee premium over nonspecialist Big N auditors. Ferguson and Stokes (2002) find very limited support for the presence of industry specialist premium. They attribute the change to increased auditing industry concentration over the years.

2.2.3. Auditor Choice and Leverage

A few prior studies also include leverage as one determinant of auditor choice. DeFond (1992) uses leverage as one measure of agency conflicts along with managerial ownership and short-term accruals. He argues that the demand for high-quality audits is an increasing function of agency conflicts because auditing is a means of reducing agency costs. His results support a positive association between change in leverage and change to a brand name or larger auditor. Francis and Wilson (1988) include managerial ownership, the existence of incentive performance contracts, the diffusion of ownership and leverage in their test of the agency theory. Although

they anticipate a positive relation between change to a Big Eight auditor and other agency cost variables, they predict a negative association between level and change of leverage and change to a Big Eight auditor. They argue that leverage in their study is measured prior to the auditor change and represents the interests of existing debt holders. Firms with high leverage are more likely to switch to low-quality auditors to increase the value of stockholders. Their results about leverage are inconsistent: change to a Big Eight auditor is negatively associated with leverage level, but is positively associated with leverage change.

Johnson and Lys (1990) argue that auditor changes result from changes in clients' financing, investing and operating characteristics, in contrast to changes in agency costs. Using leverage as a measure of financial risk, they find it negatively correlated with relative auditor size. This is contrary to their hypothesis of a positive relation based on the argument that large accounting firms can better diversify related audit risk. Leverage is later discarded from their multivariate regression because of its high correlation with other variables of interest.

Thus, prior research that examines the relation between leverage and auditor choice produces mixed results not only for different theoretical arguments, but also within the same agency cost framework. Lack of focused discussion on the agency problem between debt holders and managers/shareholders leaves the conflicting results unexplained. In addition, none of these studies considers the impact of debt composition. In terms of theoretical frameworks, most of these studies do not consider the opposing effect of managerial opportunism[22]. The sample size in these studies is small and the sample period is from 1973 to 1985. In terms of research design,

[22] Francis and Wilson (1988) suggest the possibility that managers transfer wealth from existing debt holders to shareholders, a form of managerial opportunism. But it is different from the managerial opportunism related to covenant compliance, as argued in this paper.

these studies either do not use both level and change analyses, or the results for level and change models are inconsistent. These studies also do not control for the potential endogeneity issues[23].

My analyses are motivated by two streams of literature that link firms' accounting choices to the presence of accounting numbers in debt contracts. Debt contracts typically contain affirmative and negative covenants to enhance debt holders' ability to monitor the lending. Affirmative covenants require borrowers to meet some basic standards such as timely payments, accurate financial disclosure etc. Negative covenants restrain borrowers from taking certain actions including paying dividends, taking additional debt, depleting working capital, undertaking mergers, selling assets and purchasing certain securities (Strahan 1999; Leftwich 1983). These restrictions are conditional on firms' financial positions that are typically measured in such accounting numbers as debt to EBITDA, interest coverage, tangible net worth and current ratio (Leftwich 1983; Dichev and Skinner 2002).

The managerial opportunism literature focuses on the adverse effects of using accounting numbers in debt contracts. Specifically, this line of research relies on the argument that there are significant costs associated with covenant violation. Several studies find that the costs associated with covenant violations can be substantial including increased collateralization, increased interest rates and restricted borrowing (Beneish and Press 1993; Chen and Wei 1993; Sweeney 1994). Recent empirical evidence from the corporate finance literature suggests that the costs of covenant violation go beyond these direct costs to even affect a firm's investment and corporate governance (e.g. management turnover) (Chava and Roberts 2008; Nini et al. 2009; Nini et al. 2009). Therefore, managers have strong incentives to make income-increasing accounting choices to avoid covenant violation. The managerial opportunistic behaviors in complying with

[23] Recent studies find that the choice of Big N auditor is related to a firm's cost of debt (Pittman and Fortin 2004; Mansi et al. 2004) and target debt ratio (Chang et al. 2009). The potential reciprocal causation needs to be addressed. More details are provided below.

debt covenants are empirically supported by several studies (e.g. Sweeney 1994; DeFond and Jiambalvo 1994; Dichev and Skinner 2002). The income increasing accounting choices are in direct contrast with conservatism that accelerates the recognition of losses and delays recognition of gains. Zhang (2008) provides empirical support that being more conservative accelerates covenant violation.

The debt contracting role of conservatism on the other hand focuses on the positive role of accounting in debt contracting. Specifically, recent studies on accounting conservatism suggest that conservatism serves as a mechanism to mitigate the downside risk faced by debt holders (Ahmed et al. 2002; Moerman 2008; Zhang 2008; Beatty et al. 2008). Conservative accounting leads to lower reported earnings and assets, which in turn reduces the likelihood of firms transferring wealth from debt holders (e.g. through excessive dividends to shareholders) when restrictive covenants are based on income statement and balance sheet numbers (Ahmed et al. 2002). Conservatism also leads to numbers that are more verifiable so that lenders can make better lending and monitoring decisions (Watts 2003; Zhang 2008).

In summary, the two streams of literature described above make opposing predictions about managerial reporting behaviors. The managerial opportunism hypothesis predicts that borrowers do not want to report more conservatively and even engage in aggressive reporting to avoid covenant violations. In contrast, the debt contracting role of conservatism takes the view that borrowers bond themselves to conservative reporting that defers recognition of gains, but recognizes losses in a timely manner. Given the important monitoring role auditing has in the debt contracting process, I expect the opposing reporting incentives to have different impacts on firms' choice of auditors. Prior studies document that Big N/industry specialist auditors are better at constraining income-increasing accruals and are more conservative. Therefore, the managerial

opportunism hypothesis suggests that firms with high leverage are more likely to avoid Big N/industry specialist auditors to keep their reporting flexibility because the likelihood and cost of covenant violation is high when the leverage is high. The efficient contracting theory, however, predicts a positive relation between leverage and the choice of Big N/specialist auditors. In order to bond themselves to more conservative reporting and signal to the debt market that they are committed to protecting debt holders' interests, firms with high leverage are more likely to have Big N/industry specialist auditors and firms that change to higher leverage are more likely to change to Big N auditors. I seek to identify which hypothesis better explains the relation between auditor choice and leverage. I express the following hypotheses in alternative forms:

H1a: Firms with high leverage are more likely to have Big N/industry specialist auditors.

H1b: Big N audited firms with high (low) leverage are more (less) likely to have industry specialist auditors.

H1c: Firms that increase leverage are more likely to change to Big N/industry specialist auditors.

H1d: Non-Big N audited firms with high (low) leverage are more (less) likely to have industry specialist auditors.

2.2.4. Segregating the Effect of Public and Private Debt on Auditor Choice

Public and private debt markets differ in monitoring functions and covenant features. Private debt holders have better access to the borrower's private information. They are typically monitoring experts and have better information processing capacity. There are generally more accounting-based negative covenants in private debt contracts and the covenants are set tighter. Technical violation of private debt covenants is more prevalent. Any technical violation hands over part of the control rights to debt holders who can then step in and enforce their preferred actions (Dichev and Skinner 2002). In contrast, the incentive to engage in monitoring is weak for diffuse creditors of public debt due to the "free rider" problem (Strahan 1999). The Federal Trust

Indenture Act limits the flexibility the trustee of the public debt has in renegotiation. Unanimous consent is required for major revision of the debt contracts. Partially due to the high renegotiation cost in public debt issuance, there are less accounting-based debt covenants in public debt and they are set looser. As a result, technical violation of debt covenant is rare. Chen and Wei (1993) document that only four out of total 128 covenant violators are for public debt.

Due to their information and monitoring advantage, private debt holders are expected to have less demand for the monitoring of external auditors compared to the public debt holders. In addition, since there are more accounting-based covenants in private debt and the covenants are set tighter, managers have more incentive to keep their reporting flexibility by choosing non-Big N auditors when leverage is high. In contrast, public debt holders rely more on other monitoring forces including auditing and their demand for Big N auditors is high. Furthermore, because for public debt, the possibility of violating debt covenants is low, firms have less incentive to avoid Big N for the purpose of avoiding covenant violation. In summary, I have the following hypotheses regarding how the relation between auditor choice and leverage varies with debt sources:

> H2a: firms with high leverage are less likely to have Big N/industry specialist auditors if they only have private debt.
>
> H2b: firms with high leverage are more likely to have Big N/industry specialist auditors if they also have public debt.

2.2.5. Segregating the Effect of Short-term and Long-term Debt on Auditor Choice

The differences in monitoring functions and covenant features between public and private debt also exist for short-term and long-term debt. The monitoring is stronger from short-term debt because short-term debt is largely held by banks that are monitoring specialists. The short maturity itself also enhances monitoring effectiveness because debt holders can maintain more

bargaining power with the option of refunding (Barclay and Smith 1995). In terms of covenant features, short-term debt contains more restrictive debt covenants and in the case of a covenant violation, short-term debt holders give less concession (Barclay and Smith 1995; Berglof and Von Thadden 1994). Therefore, similar to the argument for public and private debt, strong monitoring suggests less demand for Big N auditors from the short-term debt holders and more restrictive covenants suggest that managers are more concerned over covenant violation and they have more incentives to avoid Big N/specialist auditors. In summary, I have the following hypothesis:

> H3: firms with more short-term debt are less likely to have Big N /industry specialist auditors.

2.3. RESEARCH DESIGN

2.3.1. Measures of Auditor Choice

Auditor choice is measured along two dimensions: brand name reputation as designated by Big N and non-Big N auditors and industry specialization. Brand name reputation is coded as a dichotomous variable *(Auditor)* that equals 1 if financial statements are audited by one of the Big N and 0 otherwise. Following prior literature (Craswell et al. 1995; Ferguson and Stokes 2002; Godfrey and Hamilton 2005; Lim and Tan 2008), industry specialization *(Specialization)* is measured as an auditing firm's industry market share. To be specific, it is calculated as the audit firm's market share of the client firm's two-digit SIC industry.

$$Specialization_{ik} = \frac{\sum_{j=1}^{J_{ik}} Sales_{ijk}}{\sum_{i=1}^{I_k}\sum_{j=1}^{J_{ik}} Sales_{ijk}}$$

Sales refers to the client firm's sales revenue (Compustat item #12). The numerator is the sum of sales of all J_{ik} clients of an auditor i in industry k for a specific year. The denominator is the sum of sales of all firms (clients and non-clients of i) in industry k for the same year. The results presented have industry specialization as a continuous variable to avoid the ambiguity of arbitrarily using a cut-off point for dichotomous variables. As a robustness check, I also use two alternative measures that are based on the market share but coded as dichotomous variables. First, an industry specialist auditor is defined as the auditor with the largest industry market share and second it is defined as any auditor with a market share of 24% or more.

2.3.2. Auditor Choice and Leverage

I use both level and change models to test the relation between auditor choice and leverage. The level specification takes on the following form[24]:

$$Auditor/Specialization = \alpha_0 + \alpha_1 Leverage + \alpha_2 Size + \alpha_3 Fixed\ assets + \alpha_4 Cycle + \alpha_5 P\text{-}E\ ratio + \alpha_6 Issue + \alpha_7 Loss + \alpha_8 Regulation + \alpha_9 R\&D + Industry + Year + \varepsilon \quad (1)$$

A logistic regression is used when the dependent variable is brand name reputation and an ordinary least square regression is used when the dependent variable is industry specialization. The definitions of the variables are as follows. *Auditor* and *Specialization* are as previously defined. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm of total assets; *Fixed Assets* is gross property, plant and equipment (Compustat item #7) divided by total assets; *Cycle* is the sum of days' inventory and days' accounts receivable

[24] We omit subscripts t and i from equations for presentation simplicity.

divided by 30[25]; *P/E* is price/earnings ratio at fiscal year end; *Issue* is the amount of net new equity issues (Compustat item #108 - #115) during the year scaled by total assets; *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise; *Regulation* equals one if an observation is in a regulated industry and zero otherwise[26]. *R&D* is research and development expenses (Compustat item #46) scaled by total assets.

Based on prior research, the model includes several control variables that are found to be correlated with auditor choice. I include *Size* because large firms are more likely to choose large auditors due to their operational complexity and geographic diversification. I include *Fixed assets* and *Cycle* because Francis et al. (1999) find that firms with higher capital intensity and longer operating cycle (measurements of firms' propensities to generate accruals) are more likely to hire Big N auditors. *P-E ratio* is used to measure a firm's growth potential. Firms with growth opportunities are more likely to issue securities and thus have more incentives to use Big N auditors. I include the variable *Issue* to further control the effect of equity issuance on auditor choice. I control for *Loss* because Big N auditors are less willing to audit firms in financial distress due to litigation concerns. I include *Regulation* because Francis et al. (1999) posit that regulation might induce demand for Big N auditors. I include *R&D* because Godfrey and Hamilton (2005) argue that R&D, their proxy for discretionary expenditure, increases agency cost and therefore increases the demand for Big N/Industry specialist auditors.

[25] Days' inventory = 365 (average beginning- and ending-of-period inventory (Compustat item #3)/cost of goods sold (Compustat item #41)) and days' accounts receivable = 365 (average of beginning- and ending-of-period accounts receivable (Compustat item #2) /sales (Compustat item #12))

[26] Following Francis et al. (1999), the following industries are considered as regulated: railroads (4011 and 4100), telephone communications (4812 and 4813), electric companies (4911), gas companies (4922, 4923 and 4924), personal credit (6141), insurance (6311).

I also use a change specification to capture the relation between auditor choice and leverage. One advantage of using a change model is that it mitigates the correlated omitted variable problem. In the level analyses, the results can be biased if I omit variables that affect auditor choice but differ between firms. As long as these omitted variables remain relatively constant over time, a change model reduces their impact because the difference from year to year for these variables is small and thus they do not affect the dependent variable. Another reason of including a change model is that it directly measures the impact of temporal changes in leverage on changes in auditors. Since I measure changes in leverage using years prior to the specific year of auditor change, including the change model provides a necessary condition to infer a causal relation between auditor choice and financial leverage.

My test of auditor change and change in leverage takes on the following logistic regression model:

$$\Delta Auditor/\Delta Specialization = \alpha_0 + \alpha_1 \Delta Leverage + \alpha_2 Growth + \alpha_3 \Delta Cash\ flow + \alpha_4 \Delta Issue$$
$$+\alpha_5 \Delta Acquisition + \alpha_6 \Delta Times\ interest + \varepsilon \qquad (2)$$

Choice of control variables follows Johnson and Lys (1990). Each observation refers to a client year where there has been a change in the auditor. $\Delta Auditor$ takes on values of 1, or 0. If the change in auditor is from a non-Big N to a Big N auditor, $\Delta Auditor$ is coded as 1; if it is from a Big N to a non-Big N, $\Delta Auditor$ is 0. *Specialization* is defined as above. *Growth* is sales growth (Compustat item #12); *Cash flow* is operating cash flow (Compustat item #308) scaled by total assets; *Acquisition* is acquisition expenses (Compustat item #129) scaled by total assets; *Times interest* is the ratio of earnings from operations (Compustat item #13) to interest expenses (Compustat item #15). *Leverage* and *Issue* are as previously defined. Changes in leverage and in

other control variables are measured as changes over the two years PRIOR TO the specific year in which auditor changes occur.

2.3.3. Segregating the Effect of Public and Private Debt on Auditor Choice

To examine the different impact of private and public debt on a firm's auditor choice decision, I augment model 1 with an indicator variable *Pubic*. I expect α_3 to be positive.

$$\begin{aligned} \textit{Auditor/Specialization} = {} & \alpha_0 + \alpha_1 \textit{Public} + \alpha_2 \textit{Leverage} + \alpha_3 \textit{Leverage*Public} + \\ & \alpha_4 \textit{Size} + \alpha_5 \textit{Fixed assets} + \alpha_6 \textit{Cycle} + \alpha_7 \textit{P-E ratio} + \\ & \alpha_8 \textit{Issue} + \alpha_9 \textit{Loss} + \alpha_{10} \textit{Regulation} + \alpha_{11} \textit{R\&D} + \\ & \textit{Industry} + \textit{Year} + \varepsilon \end{aligned} \qquad (3)$$

Public is an indicator variable that is coded as 1 if a firm has an S&P long-term domestic issuer credit rating (Compustat item #280) or a short-term domestic issuer credit rating (Compustat item #283) for that year, 0 otherwise. The other variables are defined as in model 1. I follow the practice of Faulkender and Peterson (2006) that use the availability of S&P credit ratings to identify the availability of public debt. This method of segregating public and private debt is also justified by Cantor and Packer (1997) who report that " both agencies (S&P and Moody's) currently have a policy of rating ALL taxable corporate bonds publicly issued in the United States regardless of whether they have been asked by an issuer for a rating". This statement suggests that there are rarely public debt issues that are covered by other rating agencies but not by S&P.

2.3.4. Segregating the Effect of Short-term and Long-term Debt on Auditor Choice

To differentiate the impacts of short-term debt and long-term debt on auditor choice decision, I estimate the following model:

$$Auditor/IndSpec = \alpha_0 + \alpha_1 Short\ Term + \alpha_2\ Long\ Term + \alpha_3 Size + \alpha_4 Fixed\ Assets + \alpha_5 Cycle + \alpha_6 P/E + \alpha_7 Issue + \alpha_8 Loss + \alpha_9 Regulated + \alpha_{10} R\&D + Industry + Year + \varepsilon \quad (4)$$

Leverage in this model is separated into two parts: *Short Term* is short-term debt (Compustat item #34) divided by total assets and *Long Term* is long-term debt Compustat item #9) divided by total assets[27]. I expect a negative relation between short-term debt and auditor choice variable. I do not make prediction on the relation between long term debt and auditor choice variable. But it is expected to be less negative than short-term debt. The control variables are defined as in model (1).

2.3.5. Two Stage Procedures (2SPLS and 2SLS)

In this paper, I am interested in testing whether leverage is a determinant of managers' choice of auditors. However, Chang et al. (2009) argue that the choice of auditor is a determinant of leverage and auditor quality affects a firm's target debt ratio. Closely related studies are Pittman and Fortin (2004) and Mansi et al. (2004) who find that cost of debt is lower for firms with Big N auditors. This poses a challenge to my research design because there is a potential reciprocal causation between leverage and auditor choice, that is, the existence of the following relations:

$$Auditor = f_1(Leverage, X_1, \varepsilon_1) \quad (5)$$

$$Leverage = f_2(Auditor, X_2, \varepsilon_2) \quad (6)$$

The reciprocal causation causes *Leverage* and *Auditor* to be correlated with ε_1 and ε_2 respectively, violating the standard assumptions of single OLS and Logit models including the independent distribution of the explanatory variables (Gujarati 2002). Two-stage least squares

[27] Compustat item #34 has the current portion of long-term debt as a component. I also define *Short Term* as the difference between #34 and #44 (long-term debt due in one year) divided by total assets and *Long Term* as the sum of #9 and #44 divided by total assets. The results are qualitatively the same.

are generally used in estimating overidentified equations to control the simultaneity problem. In the first stage, the endogenous variable is regressed on all the predetermined variables in the whole system. The predicted value thus obtained is uncorrelated with the stochastic disturbance terms in each equation and serves as an instrumental variable in the second stage to replace the endogenous variable in the original equation. In testing the impact of industry specialization, I use two-stage least squares where both the first and second stages are estimated with OLS regression. Because the test of brand name reputation involves a dichotomous variable, I adopt two-stage probit least squares where the first stage is estimated with OLS regression while the second stage uses probit regression. The CDSIMEQ statement in STATA is used to obtain estimates for the coefficients that are consistent and have corrected standard errors.

I specify models (5) and (6) as:

$$\textit{Auditor/Specialization} = \alpha_0 + \alpha_1 \textit{Leverage} + \alpha_2 \textit{Size} + \alpha_3 \textit{Fixed assets} + \alpha_4 \textit{Cycle} + \alpha_5 \textit{P-E ratio} + \alpha_6 \textit{Issue} + \alpha_7 \textit{Loss} + \alpha_8 \textit{Regulation} + \alpha_9 \textit{R\&D} + \textit{Industry} + \textit{Year} + \varepsilon$$

$$\textit{Leverage} = \beta_0 + \beta_1 \textit{Auditor/Specialization} + \beta_2 \textit{Size} + \beta_3 \textit{Fixed assets} + \beta_4 \textit{Tax shields} + \beta_5 \textit{Growth} + \beta_6 \textit{Manufacture} + \beta_7 \textit{Profitability} + \textit{Industry} + \textit{Year} + \varepsilon$$

The models for the two stages are specified as follows:

Stage 1:

$$\textit{Leverage} = \alpha_0 + \alpha_1 \textit{Size} + \alpha_2 \textit{Fixed assets} + \alpha_3 \textit{Tax shields} + \alpha_4 \textit{Growth} + \alpha_5 \textit{Manufacture} + \alpha_6 \textit{Profitability} + \alpha_7 \textit{Cycle} + \alpha_8 \textit{P-E ratio} + \alpha_9 \textit{Issue} + \alpha_{10} \textit{Loss} + \alpha_{11} \textit{Regulation} + \alpha_{12} \textit{R\&D} + \textit{Industry} + \textit{Year} + \varepsilon$$

Stage 2:

$$Auditor/Specialization = \alpha_0 + \alpha_1 IVLeverage + \alpha_2 Size + \alpha_3 Fixed\ assets + \alpha_4 Cycle + \alpha_5 P\text{-}E\ ratio + \alpha_6 Issue + \alpha_7 Loss + \alpha_8 Regulation + \alpha_9 R\&D + Industry + Year + \varepsilon$$

The choice of determinants of *leverage* in stage 1 follows prior literature (Titman and Wessels 1988; Rajan and Zingales 1995; Hovakimian et al. 2001). *Tax shields* equals one if the sum of net operating loss carry forward (Compustat item #51) and investment tax credit (Compustat item #52) is positive and zero otherwise; *Growth* is sales growth (Compustat item #12); *Manufacture* is an indicator variable that equals one if the SIC code (DNUM) of an observation is between 3400 and 4000 (firms producing machines and equipment) and zero otherwise. *Profitability* is income before extroardinary income (Compustat item #34) divided by total assets. The other variables are as previously defined. I include *Tax shields* because tax deductions for depreciation and investment tax credits are substitutes for the tax benefits of debt financing and therefore firms with large non-debt tax shields have less debt. I include *Fixed Assets* because the risk of appropriation is lower when firms have more collateral which makes them more likely to have higher level of leverage. *R&D* measures the uniqueness of product and is expected to be negatively related to *Leverage* because the potential costs of bankruptcy imposed on the constituents are higher for firms that produce specialized products. *Expenditure* is another measure of firms' growth because the agency problem between managers and debt holders is more severe for growth firms, so they are expected to be negatively related to leverage. I include *Profitability* because firms use internal funds for investment before raising capitals externally and therefore past returned earnings should be an important determinant of a firm's current debt ratio. Finally, I include *Industry Dummies* to control industry effect, where industry classification follows Fama-French approach (Fama and French 1997).

2.4. RESULTS

2.4.1. Auditor Choice and Leverage

I select my sample from COMPUSTAT Annual that covers the time horizon of 1988 to 2006. I truncate observations falling into the top and bottom 1 percent of continuous independent variables. There are 94,204 firm-years for the full sample, of which 19,066 observations have both public and private debt and 75,138 observations have private debt only.

Table 1 presents the descriptive statistics for variables used in the auditor choice and leverage models. For the full sample, 80 percent use Big N auditors and the mean industry market share is 16.5%. Firms on average have a leverage 0.25, P-E ratio 11.218, and operating cycle of 5.362 months. The total assets are on average $1.4 billion, 52.1 percent are fixed assets. Net new equity issuance is 6 percent and R&D expenses are 4 percent of total assets. Firm-years with losses comprise 36 percent of the sample. Comparison of the private sample and the public-private sample suggests that almost 97 percent of observations in the public-private sample use Big N auditors and 75 percent of observations in the private sample use Big N auditors. The public-private sample also uses more of industry specialist auditors (22 percent vs 15 percent). They have higher leverage and have more fixed assets. The average P/E ratio of the public-private sample is higher, suggesting more growth. But the private sample issues more equity (7.37 percent of total assets vs 0.48 percent of total assets for the public-private sample) and spends more on R&D (4.63 percent of total assets vs 1.35 percent of total assets for the public-private sample).

The pearson correlation analysis presented in table 2 indicates a high level of correlation between choice of Big N auditors and choice of industry specialization (almost 50 percent). Therefore, in this paper, I also use two subsamples consisting of only Big N audited firm-years

and non-Big N audited firm-years to identify the additional explanatory power of industry specialization. The univariate analysis indicates a negative relation between auditor choice and leverage.

Table 3 identifies the industry specialist auditors for selected industries for my sample. Industries are classified with 2-digit SIC code and specialist auditors are identified as the auditing firm with the highest industry market share for a specific year. This table suggests (1) the majority industry leaders are Big N auditors; (2) the industry leaders are relatively stable for consecutive years. For example, Arthur Andersen is the leader from 1995 to 2001 for the industry of agricultural production crops (SIC 01) and then Delloite & Touche from 2002 to 2006.

Table 4 presents the results of testing the impact of leverage on auditor choice. The multivariate analysis confirms a significantly negative relation between choice of Big N/industry specialist auditors and leverage. The coefficient on leverage is -0.766 (p-value < 0.0001) for the brand name regression. This indicates that the probability of selecting Big N auditors decreases by 2 percent as financial leverage increases by one standard deviation, while other variables stay at mean. The coefficient on leverage for the industry specialization regression is -0.018. This suggests that when a firm's leverage increases by one standard deviation, the average industry market share of the firm's auditor decreases by 0.5%. Because the auditing industry is highly concentrated and my sample includes all firms, large or small, that have necessary data in the COMPUSTAT database, they are still economically significant, although the numbers do not seem to be large. Overall, the results show that it is less likely that a firm with high leverage will have a Big N/industry specialist auditor, which is consistent with the prediction of the managerial opportunism hypothesis. Because the likelihood and cost of violating debt covenants

is higher for firms with higher leverage, they have more incentives to avoid Big N/industry specialist auditors.

Table 4 also presents the results of testing the additional explanatory power of industry specialization by estimating the model seperately for the Big-N audited firm-year sub-sample. For the sub-sample, I do not find an association between the choice of industry specialist auditor and leverage.

The results using the two alternative measures of industry specialization (not tabulated here) are qualitatively the same as using the continuous measure. The exception is that when the largest market share dichotomous variable is used, the coefficient for leverage is significantly negative for the sample with only Big N audited firm-years and not significant for the sample with only non-Big N audited firm-years.

Table 5 presents the results of year by year regressions and regressions by sub-period. The results confirm a strong negative relation between the choice of brand name auditors and leverage. The negative relation between auditor choice and leverage holds for all the years from 1988 to 2006 with the exception of 1994. The results for industry specialization are weaker. The negative coefficient is not significant for nine out of the nineteen years, with all nine years but one being before 1996. The increase of the negative association is further confirmed by the subperiod regressions. The coefficients for the periods of 1988 – 1997, 1998 – 2001 and 2002 – 2006 are -0.554, -0.722 and -0.801 respectively.

Table 6 presents the results of using a change model. The coefficient for $\Delta Leverage$ is significantly negative for both brand name and industry specialization measures of auditor choice (the coefficients are -0.798 and -0.005 respectively). The results indicate that it is less likely for a

firm that increases its leverage to change to a Big N/specialist auditor, confirming the results in table 4 and table 5.

2.4.2. Segregating the Effect of Public and Private Debt on Auditor Choice

Table 7 presents the results of testing the different impact of public and private debt on the choice of auditors. When *Public* alone is added to the model, the coefficient estimate is significantly positive when brand name is the dependent variable, suggesting that the existence of public debt increases the likelihood of having Big N auditors. The coefficient estimate is positive but not significant (un-tabulated) when industry specialization is the dependent variable. This is consistent with the statistics presented in table 1 when 96.8% of firms with public debt have Big N auditors[28].

The coefficient of *Leverage* represents the effect of leverage on auditor choice when firms have only private debt. To the extent that private debt is more likely to have accounting-based constraints, firms that have only private debt have more incentives to avoid brand name/specialist auditors to maintain their financial reporting flexibility. In addition, private debt holders have a strong monitoring mechanism and therefore the choice of brand name or industry specialist auditors is of less consequence. So I expect the coefficient to be negative. The sum of the coefficients of *Leverage* + *Leverage*Public* represents the effect of leverage on auditor choice when the firms also have public debt. I expect the sum to be positive. The results are consistent with my predictions. The coefficients on *Leverage* and *Leverage*Public* are -0.849 and 1.143 respectively for the brand name measure and -0.025 and 0.056 respectively for the industry specialization measure, all statistically significant. The result for industry specialization also holds for the Big N-audited firm-year sub-sample. Overall, the results suggest that

[28] When industry specialization is used as the measure of auditor choice, the coefficient on *Public* is positive, but not significant when it is added alone to the model.

borrowers balance the cost and benefit of having Big N/industry specialist auditors in each type of debt structure and yield to the demand from the public debt market for Big N/industry specialist auditors, but avoid such auditors when they only have private debt. The efficient debt contracting hypothesis better explains the relation between leverage and auditor choice when firms have public debt and the managerial opportunism hypothesis better explains auditor choice behaviors when firms have only private debt.

2.4.3. Segregating the Effect of Short-term and Long-term Debt on Auditor Choice

Table 8 presents the results of segregating the effect of short-term and long-term debt on auditor choice. Although the coefficients for short-term debt and long-term debt are both significantly negative while controlling for other factors that affect auditor choice, the negative relation between leverage and auditor choice is more pronounced for short-term debt than for long-term debt. The coefficients for *Short Term* and *Long Term* are -1.1198 and -0.5699 respectively for the brand name model and -0.0309 and -0.0101 respectively for the industry specialization model.

2.4.4. Controlling Endogeneity with 2SPLS and 2SLS

Table 9 presents the results of testing the impact of leverage on firms' choice of auditor after controlling for endogeneity problem using two-stage probit least squares (for the brand name regression) and two-stage least squares (for the industry specialization regression). The results are generally consistent with the single equation results that firms with high leverage are less likely to have Big N/industry specialist auditors. For the industry specialist measure of auditor choice, when I apply two-stage least squares to the subsamples of Big-N audited firms and non-Big N audited firms, I find a significantly positive relation. The Big N auditor picked by

a firm with high leverage is more likely to be an industry specialist. A non-Big N audited firm with high leverage is also more likely to have an industry specialist non-Big N auditor.

Table 10 reports the results of segregating the effect of public and private debt on auditor choice after controlling endogeneity. The two-stage procedures confirm the results found with the single equation models. For the public debt sample, I find no association for the brand name measure of auditor choice and a significantly positive relation for the industry specialist measure of auditor choice. For the private debt sample, I find a significantly negative relation.

2.5. DISCUSSIONS AND SENSITIVITY ANALYSES

2.5.1. The Asymmetric Recognition of Gains and Losses and Auditor Differentiation

Various constructs have been used in the auditing literature to differentiate auditors. Since part of my arguments is based on the efficient contracting role of conditional conservatism defined as the asymmetric recognition of gains and losses, I test whether the asymmetry in gain and loss recognition is more pronounced for Big N/industry specialist auditors for my sample. I use Basu (1997) model of measuring conservatism augmented with my auditor choice variables.

$$Earning = \alpha + \beta_1 Return + \beta_2 Return*DR + \beta_3 DR + \beta_4 Auditor/Specialization + \beta_5 Return*Auditor/Specialization + \beta_6 Return * DR*Auditor/Specialization + \beta_7 DR*Auditor/Specialization + \varepsilon$$

Earning is earnings per share excluding extraordinary items (Compustat item #58) scaled by the close price per share (Compustat item #199) at the beginning of the fiscal year. *Return* is buy-and-hold fiscal year return. *DR* is an indicator variable that equals 1 if it is bad news (*Return* is less than zero) and zero otherwise. I interact *Return* and *Return*DR* with the auditor choice variables to identify auditor differentiation in conservatism. β_1 represents the sensitivity of earnings to good news and is expected to be positive. β_2 captures the incremental response of

earnings to bad news over good news. It is expected to be positive for conservative reporting. The corresponding measure after interaction with *Auditor*/*Specialization* is $\beta_2 + \beta_6$. If Big N/industry specialist auditors are indeed more conservative in reporting bad news, I expect β_6 to be significantly positive.

As shown in model 2 and model 3 of table 11, the coefficients for my focus variable, the interaction of *Return*DR *Auditor/Specialization*, are positive 0.139 for the band name and 0.272 for the industry specialist regression, both highly significant, consistent with the prediction that firms audited by Big N/industry specialist auditors report bad news more quickly. The result also holds for the sub-sample that has only Big N audited firm years. The timing is important because recognizing losses more quickly potentially accelerates the violation of debt covenants. In addition, the increased asymmetry in recognizing gains and losses increases earnings volatility, which potentially increases the possibility of covenant violation.

2.5.2. Cost of Debt and Auditor Choice

If debt holders indeed can benefit from the auditing service by Big N/industry specialist auditors, I expect them to reward firms with Big N/industry specialist auditors with lower cost of debt. Pittman and Fortin (2004) provide evidence that cost of debt is lower for young firms with Big N auditors. Mansi et al. (2004) provide evidence for a negative relation between auditor quality and cost of debt for the bond market. I extend their research to test whether this applies to a more general sample and whether this applies to industry specialist auditors. I also examine whether the relation differs between public and private debt.

I follow the model in Pittman and Fortin (2004).

$$Interest\ Rate = \alpha + \beta_1 Auditor/IndSpec + \beta_2 Leverage + \beta_3 Prime\ Rate + \beta_4 Default + \beta_5 Size + \beta_6 Fixed\ Assets + \beta_7 Neg\ Equity + \beta_8 Profitability + Industry + Year + \varepsilon$$

Cost of debt *(Interest Rate)* is measured with interest expenses (Compustat item #15) divided by the average total debt. I follow Pittman and Fortin (2004) in selecting the control variables. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Prime Rate* is the average prime rate for the year; *Default* is the difference between the yield on BAA-rated corporate bonds and the yield on 10-year government bonds for the year; *Size* is the natural logarithm of total assets; *Fixed Assets* is gross property, plant and equipment (Compustat item #7) divided by total assets; *Neg Equity* indicates if the book value of common equity is negative; *Profitability* is income before extraordinary items (Compustat item #18) divided by total assets. *Industry* represents indicator variables coded following Fama-French industry classification (Fama and French 1997); *Year* are also indicator variables to control for year fixed effect. I expect a positive sign for *Leverage* and *Neg Equity* because high leverage and negative book value of equity indicates high credit risk. *Prime* and *Default* are proxies of the underlying cost of capital and the overall credit environment and are expected to positively related to cost of debt. *Size, Fixed Assets,* and *Profitability* are expected to have a negative relation with cost of debt. Larger and profitable firms on average have the ability to generate more cash flow and serve their debt. High fixed assets indicate high collateral value and in turn reduce a firm's cost of debt.

Table 12 presents the results of testing whether firms with Big N/Specialist auditors are rewarded with lower cost of debt. The results strongly support the hypothesis. The coefficients for *Auditor* and *Specialization* are significantly negative using either brand name or industry

specialist as measure of auditor choice. Comparison of public debt and private debt samples suggests not only the public debt market cares about the choice of Big N/industry specialist auditors, so does the private debt market. The coefficients for the control variables of *Size, Fixed Assets, Neg Equity and Profitability* are consistent with the prediction. The exception is *leverage*, which, against intuition and findings in some prior literature that use yield and debt spread to measure cost of debt (Sengupta 1998 and Bharath et al. 2008), is found to be negatively related to cost of debt. Francis et al. (2005) also find a negative relation using the same realized interest rate as their measure of cost of debt. They attribute the finding to the noisiness of using this measure of cost of debt.

2.5.3. The Size Effect

GAO 2003 Report on Consolidation and Competition of Public Accounting Firms documents that large firms complain about their limited auditor choices because they are expected to use Big N auditors due to their operational complexity and geographic dispersion. Sometimes a conflict of interest reduces their choices even further. I take a closer look at the effect of client size on the relation between auditor choice and leverage and the results are presented in table 13. The negative relation between auditor choice and leverage is the strongest among small companies who have more flexibility in making their auditor choice decision. The significant negative relation disappears for firms of top 25% in size.

2.5.4. Industry-adjusted Leverage

Because leverage has been argued to vary considerably across industries (Aggarwal and Zhao 2007), I further control the industry effect by using an industry-adjusted leverage measured as the difference between a firm's leverage and the industry median. The results are presented in table 14. The negative relation between leverage and auditor choice holds.

2.5.5. Segregating the Effect of Short-term and Long-term Debt on Auditor Choice for Sub-samples

One concern over the effect of maturity structure on auditor choice might be that it is actually caused by debt sources because private debt is generally shorter term and public debt longer term. To mitigate this concern, I also run the regression of model 4 using the sample with only private debt and the sample with both public and private debt. The coefficients on *Short Term* and *Long Term* are not significant for the sample that has both public and private debt. For the sample with only private debt, the negative relation for *Short Term* is more pronounced that that of *Long Term*.

2.6. CONCLUSION

Based on the debt contracting theories, I examine the relation between a firm's financial leverage and its auditor choice decision and whether the relation varies with its debt sources and maturity structure. I find that financial leverage is negatively associated with the likelihood of having a Big N/industry specialist auditor and firms with an increase in leverage are less likely to switch to a Big N auditor. The results suggest a dominant role of the managerial opportunism hypothesis over the efficient debt contracting hypothesis. I further find that this negative relation holds for firms that only have private debt. For firms that also have public debt, the auditor choice and leverage relation becomes positive, suggesting the dominant role of the efficient debt contracting hypothesis. I also document that the negative relation is more prominent for short-term debt than long-term debt. The results regarding debt sources and maturity structure suggest that monitoring functions and covenant features of different types of debt play a role in a firm's auditor choice decision.

This paper extends the auditor differentiation and auditor choice literature. It provides an explanation for the negative relation between the choice of Big N/industry specialist auditor based on the recent theoretical and empirical progresses in the debt contracting explanation of conservatism and the managerial opportunism hypothesis. Furthermore, this paper differentiates the impact of different debt sources and maturity structure on a firm's auditor choice decision. This is important because the distinction between debt of different sources and debt of different maturity in covenant features and monitoring functions has long been recognized in the finance literature. I also make some technical improvements. I use an updated and more comprehensive sample. I use both level and change models and I control endogeneity with the two-stage procedures.

To further understand the demand from the debt market for the auditing service and the response from borrowers in supplying such service, I propose a couple of future topics of interest. First, I can use the probability of covenant violation as a measure of auditor quality and test whether firms audited by Big N/industry specialist auditors are more likely to violate debt covenants. Violation of debt covenants has direct bearing on the interest of debt holders and therefore the topic potentially complement current literature by examining audit quality difference from debt holders' perspectives. Secondly, I can have more detailed analysis of how auditor choice affects the pricing and non-pricing terms of public and private debt contracts.

TABLE 1

Descriptive Statistics

	Full Sample			Public Debt			Private Debt		
Variable	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Auditor	0.802	1.000	0.398	0.968	1.000	0.176	0.760	1.000	0.427
Specialization	0.165	0.132	0.141	0.228	0.204	0.145	0.149	0.119	0.136
Leverage	0.254	0.210	0.261	0.353	0.329	0.207	0.229	0.162	0.267
Size	1416	117	4748	5352	2045	8702	417	64	2029
Fixed assets	0.521	0.430	0.399	0.656	0.618	0.406	0.487	0.390	0.390
Cycle	5.362	3.823	6.872	4.445	3.341	5.348	5.595	3.974	7.189
P-E ratio	11.218	10.872	33.484	14.822	14.458	31.296	10.303	9.375	33.957
Issue	0.060	0.001	0.182	0.005	0.000	0.058	0.074	0.001	0.199
Loss	0.359	0.000	0.480	0.218	0.000	0.413	0.395	0.000	0.489
Regulation	0.049	0.000	0.215	0.120	0.000	0.325	0.031	0.000	0.172
R&D	0.040	0.000	0.086	0.014	0.000	0.033	0.046	0.000	0.094

The samples cover the time horizon of 1988 to 2006. There are 94,204 observations in the full sample. The public debt sample has 19,066 observations and the private debt sample has 75,138 observations.

Auditor is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. *R&D* is the research and development expense (Compustat item #46) scaled by total assets.

TABLE 2

Pearson Correlation Matrix

Variables	*Auditor*	*Special-ization*	*Lever-age*	*Size*	*Fixed Assets*	*Cycle*	*P-E ratio*	*Issue*	*Loss*	*Regul-ation*	*R&D*
Auditor	1										
Specialization	0.492*	1									
Leverage	-0.067*	-0.010*	1								
Size	0.123*	0.183*	0.038*	1							
Fixed assets	0.044*	0.069*	0.205*	0.098*	1						
Cycle	-0.064*	-0.058*	0.032*	-0.007*	-0.220*	1					
P-E ratio	0.078*	0.051*	-0.072*	0.051*	0.002	-0.037*	1				
Issue	-0.082*	-0.073*	-0.100*	-0.099*	-0.156*	0.027*	-0.079*	1			
Loss	-0.161*	-0.115*	0.161*	-0.129*	-0.038*	0.078*	-0.523*	0.224*	1		
Regulation	0.040*	0.066*	0.108*	0.180*	0.184*	-0.031*	-0.001	-0.030*	-0.045*	1	
R&D	0.003	-0.034*	-0.148*	-0.076*	-0.141*	0.060*	-0.086*	0.214*	0.256*	-0.098*	1

This table presents the Pearson correlation matrix for the full sample that has 94,204 observations covering the time horizon of 1988 to 2006.
* indicates significance at the 0.01 level or better.
Auditor is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. *R&D* is the research and development expense (Compustat item #46) scaled by total assets.

TABLE 3

Industry Specialists for Selected Industries

2-digit SIC	*01*	*02*	*07*	*08*	*09*	*10*	*12*	*13*	*14*	*15*	*16*	*17*
1988	EY		AA	AA		EY		PWC	EY	PWC	EY	AA
1989	EY		AA	AA		EY		AA	EY	KPMG	EY	EY
1990	EY		AA	AA		AA	DT	PWC	EY	KPMG	EY	EY
1991	EY		AA	AA		AA	DT	PWC	EY	AA	Others	EY
1992	AA	EY	AA	AA		AA	KPMG	PWC	EY	AA	Others	EY
1993	AA		AA	AA		AA	KPMG	PWC	EY	AA	Others	DT
1994	EY		AA	AA		AA	PWC	PWC	EY	AA		DT
1995	AA	EY	AA	AA		AA	PWC	PWC	EY	AA	Others	AA
1996	AA	EY	AA	AA		AA	PWC	PWC	EY	AA	EY	AA
1997	AA	EY		KPMG	Others	AA	EY	PWC	EY	AA	EY	AA
1998	AA	EY	AA	DT		PWC	EY	PWC	KPMG	AA	EY	AA
1999	AA		AA	DT	Others	PWC	EY	PWC	Others	EY	DT	AA
2000	AA	AA	AA		Others	PWC	EY	AA	EY	EY	DT	AA
2001	AA	AA	AA		Others	PWC	EY	PWC	EY	EY	EY	AA
2002	DT	EY	DT		Others	PWC	EY	PWC	EY	EY	EY	EY
2003	DT	EY	DT		Others	PWC	EY	PWC	EY	EY	EY	EY
2004	DT	EY	DT		Others	KPMG	EY	KPMG	EY	EY	EY	EY
2005	DT	EY	DT	KPMG	Others	KPMG	EY	KPMG	EY	EY	EY	EY
2006	DT	Others	DT	KPMG		PWC	EY	KPMG	EY	EY	EY	EY

This table presents the auditing industry leaders for selected industries by year where industries are classified based on 2-digit SIC code. AA stands for Arthur Andersen; DT stands for Deloitte & Touche; EY stands for Ernst & Young.

TABLE 4

Auditor Choice and Leverage: Pooled Regressions

Variables	Pred. Sign	Brand Name	Industry Specialist	Industry Specialist Big-N audited firm-years
Intercept	*?*	-3.846 (0.00)	0.038 (0.00)	0.189 (0.00)
Leverage	*?*	-0.766 (0.00)	-0.018 (0.00)	-0.001 (0.75)
Size	+	0.845 (0.00)	0.023 (0.00)	0.008 (0.00)
Fixed assets	+	0.216 (0.00)	0.004 (0.01)	0.001 (0.56)
Cycle	+	-0.013 (0.00)	0.000 (0.00)	0.000 (0.68)
P-E ratio	+	0.001 (0.00)	0.000 (0.29)	0.000 (0.98)
Issue	+	0.080 (0.13)	0.010 (0.00)	0.010 (0.00)
Loss	-	0.150 (0.00)	0.000 (0.83)	0.000 (0.94)
Regulation	+	-0.525 (0.00)	0.002 (0.44)	0.009 (0.00)
R&D	+	4.027 (0.00)	0.101 (0.00)	0.023 (0.00)

This table presents the results of testing the impact of leverage on firms' choice of auditor. The full sample has 94,204 observations, among which 75,563 are audited by the Big N and 18,641 are audited by non-Big N auditors. The samples cover the time horizon of 1988 to 2006. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.

The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm transformation of total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. I also control for year and industry fixed effects.

P-values are reported in parentheses.

TABLE 5

Auditor Choice and Leverage: by Year and Period

Year	No. of Obs	Brand Name	Industry Specialist
Panel A: By year			
1988	4,056	-0.798 (0.00)	-0.020 (0.06)
1989	4,172	-0.762 (0.00)	-0.010 (0.32)
1990	4,154	-0.633 (0.00)	-0.010 (0.32)
1991	4,286	-0.717 (0.00)	0.003 (0.77)
1992	4,518	-0.431 (0.06)	-0.005 (0.66)
1993	4,843	-0.417 (0.08)	0.003 (0.80)
1994	5,157	-0.240 (0.34)	-0.004 (0.72)
1995	5,638	-0.579 (0.01)	-0.004 (0.63)
1996	5,880	-0.744 (0.00)	-0.008 (0.33)
1997	5,909	-0.811 (0.00)	-0.013 (0.08)
1998	5,777	-0.884 (0.00)	-0.018 (0.02)
1999	5,767	-0.714 (0.00)	-0.010 (0.17)
2000	5,773	-0.560 (0.00)	-0.011 (0.09)
2001	5,419	-0.735 (0.00)	-0.018 (0.00)
2002	5,150	-0.806 (0.00)	-0.016 (0.01)
2003	4,831	-1.110 (0.00)	-0.013 (0.03)
2004	4,743	-1.161 (0.00)	-0.019 (0.00)
2005	4,584	-0.756 (0.00)	-0.013 (0.05)
2006	3,547	-1.006 (0.00)	-0.033 (0.00)
Fama-Macbeth		-0.730 (0.00)	-0.012 (0.00)
Panel B: By period			
1988 - 1992	21,186	-0.646 (0.00)	-0.010 (0.04)
1993 - 1997	27,427	-0.620 (0.00)	-0.007 (0.07)
1998 - 2002	27,886	-0.731 (0.00)	-0.017 (0.00)
2003 - 2006	17,705	-0.909 (0.00)	-0.015 (0.00)
Panel C: By changes in the auditing industry			
1988-1997 Big 6	48,613	-0.554 (0.00)	-0.008 (0.00)
1998-2001 Big 5	23,047	-0.722 (0.00)	-0.016 (0.00)
2002-2006 Big 4	23,118	-0.801 (0.00)	-0.015 (0.00)

This table presents the results of testing the impact of leverage on firms' choice of auditor by year and period. The samples cover the time horizon of 1988 to 2006. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.
The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm transformation of total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share

excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. I also control for industry fixed effects, where Fama-French industry classification is used.
P-values are reported in parentheses.

TABLE 6

Auditor Change and Leverage Change

From non-Big N to Big N	730	
From Big N to non-Big N	1,454	
Variables	Brand Name	Industry Specialist
Intercept	-0.676 (0.00)	0.002 (0.00)
Δ *Leverage*	-0.798 (0.01)	-0.005 (0.02)
Growth	0.001 (0.92)	0.000 (0.26)
Δ*Cash flow*	-0.090 (0.67)	-0.002 (0.07)
Δ*Issue*	0.279 (0.22)	0.000 (0.87)
Δ*Acquisition*	1.322 (0.03)	0.002 (0.72)
Δ*Times interest*	0.000 (0.59)	0.000 (0.91)

This table presents the results of using a change model to test the auditor choice and leverage relation.
The sample covers the time horizon of 1988 to 2006. A logistic regression is used for brand name and an ordinary least square regression is used for the industry specialist.
The dependent variable is Δ*Auditor* or Δ*Specialization*. Δ*Auditor* takes on values of 1 or 0. If the change in auditor is from a non-Big N to a Big N, then Δ*Auditor* is coded as 1; if it is from a Big N to a non-Big N, then Δ*Auditor* is coded as 0. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Growth* is sales (Compustat item #34) growth. *Cash flow* is the net cash flow from operating activities (Compustat item #34) divided by total assets. *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Acquisition* is acquisitions (Compustat item #129) divided by total assets. *Times interest* is operating income before depreciation (Compustat item #13) divided by interest expenses (Compustat item #15). Changes in leverage and in other control variables are measured over the two years PRIOR TO the year of auditor change.
P-values are reported in parentheses.

TABLE 7

Segregating the Effect of Public and Private Debt on Auditor Choice

Variables	Pred. Sign	Brand Name	Brand Name	Industry Specialist	Industry Specialist Big-N audited firm-years
Intercept	*?*	-3.808 (0.00)	-3.801 (0.00)	0.039 (0.00)	0.194 (0.00)
Public	*?*	0.182 (0.00)	-0.300 (0.00)	-0.018 (0.00)	0.003 (0.18)
Leverage	*?*	-0.787 (0.00)	-0.849 (0.00)	-0.025 (0.00)	-0.006 (0.02)
*Leverage*Public*	+		1.143 (0.00)	0.056 (0.00)	0.014 (0.01)
Size	+	0.834 (0.00)	0.837 (0.00)	0.023 (0.00)	0.006 (0.00)
Fixed assets	+	0.214 (0.00)	0.220 (0.00)	0.004 (0.00)	0.001 (0.56)
Cycle	+	-0.013 (0.00)	-0.013 (0.00)	0.000 (0.00)	0.000 (0.86)
P-E ratio	+	0.001 (0.00)	0.001 (0.00)	0.000 (0.31)	0.000 (0.99)
Issue	+	0.076 (0.16)	0.073 (0.16)	0.010 (0.00)	0.009 (0.00)
Loss	-	0.147 (0.00)	0.147 (0.00)	0.000 (0.94)	0.000 (0.77)
Regulation	+	-0.535 (0.00)	-0.533 (0.00)	0.002 (0.43)	0.009 (0.00)
R&D	+	4.012 (0.00)	4.023 (0.00)	0.101 (0.00)	0.022 (0.00)

This table presents the results of testing whether the impact of leverage on firms' choice of auditor differs between firms that have access to the public debt market (with S&P ratings available) and firms that only have private debt (without S&P ratings). 19,066 observations have public debt and 75,138 observations have only private debt. The samples cover the time horizon of 1988 to 2006. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.

The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Public* is an indicator variable that equals one if a firm-year has public debt and zero otherwise. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm transformation of total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. I also control for year and industry fixed effects.

P-values are reported in parentheses.

TABLE 8

Segregating the Effects of Short-term and Long-term Debt on Auditor Choice

Variables	Pred. Sign	Brand Name	Industry Specialist
Intercept	*?*	-3.8220 (<.0001)	0.0385 (<.0001)
Short Term	*?*	-1.1198 (<.0001)	-0.0309 (<.0001)
Long Term	*?*	-0.5699 (<.0001)	-0.0101 (<.0001)
Size	+	0.8358 (<.0001)	0.0226 (<.0001)
Fixed assets	+	0.2056 (<.0001)	0.0033 (0.0174)
Cycle	+	-0.0130 (<.0001)	-0.0004 (<.0001)
P-E ratio	+	0.0013 (0.0004)	0.0000 (0.2317)
Issue	+	0.0712 (0.1724)	0.0100 (<.0001)
Loss	-	0.1643 (<.0001)	0.0005 (0.6700)
Regulated	+	-0.5256 (<.0001)	0.0023 (0.3916)
R&D	+	4.0134 (<.0001)	0.1004 (<.0001)

This table presents the results of testing whether the impact of leverage on firms' choice of auditor differs between short-term and long-term debt. Auditor choice is measured along two dimensions: brand name reputation (Big N vs non-Big N) and industry specialization. The samples cover the time horizon of 1988 to 2006. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.
The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Short term* is short-term debt (Compustat item #34) divided by total assets (Compustat item #6). *Long term* is long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm of total assets (Compustat item #6) in the regressions and total assets (Compustat item #6) in the descriptive statistics. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one a firm is a member of regulated industries and zero otherwise. I also control for the year and industry fixed effects.
P-values are reported in parentheses.

TABLE 9

Auditor Choice and Leverage:Control for Endogeneity Using 2SPLS and 2SLS

	Brand Name		Industry Specialist		Industry Specialist Big N audited firm-years	
Variables	Probit	2SPLS	OLS	2SLS	OLS	2SLS
Intercept	-1.975 (0.00)	-1.962 (0.00)	0.038 (0.00)	0.038 (0.00)	0.187 (0.00)	0.183 (0.00)
Leverage	-0.344 (0.00)		-0.015 (0.00)		-0.002 (0.36)	
IVLeverage		-0.319 (0.00)		-0.014 (0.02)		0.047 (0.00)
Size	0.437 (0.00)	0.434 (0.00)	0.023 (0.00)	0.023 (0.00)	0.009 (0.00)	0.008 (0.00)
Fixed assets	(0.00)	(0.00)	0.004 (0.00)	0.004 (0.01)	0.002 (0.23)	-0.003 (0.00)
	0.093	0.087				
Cycle	-0.006 (0.00)	-0.006 (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.96)	0.000 (0.00)
P-E ratio	0.001 (0.00)	0.001 (0.00)	0.000 (0.40)	0.000 (0.42)	0.000 (0.97	0.000 (0.00)
Issue	0.045 (0.12)	0.050 (0.05)	0.010 (0.00)	0.010 (0.00)	0.011 (0.00)	0.016 (0.00)
Loss	0.058 (0.00)	0.056 (0.00)	0.000 (0.69)	-0.001 (0.66)	0.000 (0.89)	-0.007 (0.00)
Regulation	-0.289 (0.00)	-0.294 (0.00)	0.003 (0.26)	0.003 (0.26)	0.010 (0.00)	0.012 (0.00)
R&D	2.605 (0.00)	2.564 (0.00)	0.120 (0.00)	0.121 (0.00)	0.031 (0.00)	0.055 (0.00)

This table presents the results of testing the impact of leverage on firms' choice of auditor after controlling for endogeneity using 2-stage probit least square (for the brand name regression) and 2-stage least square (for the industry specialization model). The results from the single equation model are also provided as comparison.

IVLeverage is the predicted value obtained in the first stage that regress leverage on all predetermined variables in the system. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm transformation of total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. I also control for year and industry fixed effects.

TABLE 10

Segregating the Effects of Public and Private Debt on Auditor Choice - Control for Endogeneity Using 2SPLS and 2SLS

Panel A: Private debt

	Brand Name		Industry Specialist	
Variables	Probit	2SPLS	OLS	2SLS
Intercept	-2.111 (0.00)	-2.104 (0.00)	0.020 (0.00)	0.018 (0.00)
Leverage	-0.429 (0.00)		-0.020 (0.00)	
IVLeverage		-0.288 (0.00)		-0.010 (0.08)
Size	0.456 (0.00)	0.453 (0.00)	0.024 (0.00)	0.024 (0.00)
Fixed assets	0.136 (0.00)	0.118 (0.00)	0.004 (0.00)	0.003 (0.07)
Cycle	-0.006 (0.00)	-0.006 (0.00)	0.000 (0.00)	0.000 (0.00)
P-E ratio	0.001 (0.00)	0.001 (0.01)	0.000 (0.52)	0.000 (0.68)
Issue	0.054 (0.07)	0.070 (0.04)	0.009 (0.00)	0.010 (0.00)
Loss	0.076 (0.00)	0.056 (0.01)	0.001 (0.64)	-0.001 (0.63)
Regulation	-0.264 (0.00)	-0.267 (0.00)	0.011 (0.00)	0.011 (0.00)
R&D	2.739 (0.00)	2.742 (0.00)	0.125 (0.00)	0.129 (0.00)

Panel B: Public debt

	Brand Name		Industry Specialist	
Variables	Probit	2SPLS	OLS	2SLS
Intercept	1.100 (0.00)	1.006 (0.00)	0.089 (0.00)	0.056 (0.00)
Leverage	0.108 (0.28)		0.011 (0.04)	
IVLeverage		0.261 (0.59)		0.074 (0.00)
Size	0.166 (0.00)	0.172 (0.00)	0.018 (0.00)	0.020 (0.00)
Fixed assets	0.113 (0.10)	0.106 (0.13)	0.016 (0.00)	0.013 (0.00)
Cycle	-0.010 (0.00)	-0.011 (0.00)	0.000 (0.10)	0.000 (0.01)
P-E ratio	0.001 (0.12)	0.001 (0.12)	0.000 (0.39)	0.000 (0.58)
Issue	0.045 (0.89)	0.024 (0.94)	0.010 (0.56)	0.004 (0.84)
Loss	-0.056 (0.32)	-0.076 (0.37)	-0.003 (0.31)	-0.012 (0.01)
Regulation	-0.178 (0.01)	-0.176 (0.01)	-0.006 (0.11)	-0.006 (0.14)
R&D	2.318 (0.02)	2.477 (0.03)	-0.059 (0.16)	0.007 (0.88)

This table presents the results of testing whether the impact of leverage on firms' choice of auditor differs between firms that have access to the public debt market (with S&P ratings available) and firms that only have private debt (without S&P ratings) after controlling for endogeneity using 2-stage probit least square (for the brand name regression) and 2-stage least square (for the industry specialization model). The results from the single equation models are also provided as comparison.

IVLeverage is the predicted value obtained in the first stage that regresses leverage on all predetermined variables in the system. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm transformation of total assets. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income

(Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one if a firm is a member of regulated industries and zero otherwise. I also control for year and industry fixed effects.
P-values are reported in parentheses.

TABLE 11

Conservatism and Auditor Choice

Variables	Brand Name	Industry Specialist	Big N audited firm-years
Intercept	-0.061 (0.00)	-0.008 (0.00)	0.022 (0.00)
Return	-0.061 (0.00)	-0.054 (0.00)	-0.029 (0.00)
*Return*DR*	0.334 (0.00)	0.408 (0.00)	0.430 (0.00)
DR	-0.016 (0.02)	-0.005 (0.30)	0.010 (0.08)
Auditor	0.095 (0.00)		
Specialization		0.152 (0.00)	0.055 (0.00)
*Return*Auditor*	0.020 (0.00)		
*Return*Specialization*		0.029 (0.02)	-0.054 (0.00)
*Return*DR*Auditor*	0.139 (0.00)		
*Return*DR*Specialization*		0.272 (0.00)	0.210 (0.00)
*DR*Auditor*	0.027 (0.00)		
*DR*Specialization*		0.054 (0.02)	0.002 (0.92)
Adjusted R-square	0.081	0.073	0.084

This table presents the results of testing whether financial reports audited by Big N/industry specialist auditors are more conservative. There are 107,086 observations in the brand name and industry specialization full sample. There are 84,761 observations in the Big N audited firm year sub-sample. The samples cover the time horizon of 1988 to 2006.

The dependent variable is *Earning* defined as earnings per share excluding extraordinary items (Compustat item #58) scaled by the close price per share (Compustat item #199) at the beginning of the fiscal year. *Return* is the fiscal year buy-and-hold return. *DR* is an indicator variable that equals one if *Return* is less than zero and zero otherwise. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm.

P-values are reported in parentheses.

TABLE 12

Cost of Debt and Auditor Choice

Variables	Pred. Sign	Full sample (120,295 obs)		Public debt (28,774 obs)		Private debt only (91,521 obs)	
		Brand Name	Industry Specialists	Brand Name	Industry Specialists	Brand Name	Industry Specialists
Intercept	+	0.343 (1.00)	0.336 (1.00)	0.092 (1.00)	0.089 (1.00)	0.152 (0.00)	0.151 (0.00)
Auditor	-	-0.007 (0.00)		-0.004 (0.02)		-0.010 (0.00)	
Specialization	-		-0.011 (0.00)		-0.007 (0.00)		-0.009 (0.02)
Leverage	+	-0.060 (0.00)	-0.060 (0.00)	-0.023 (0.00)	-0.023 (0.00)	-0.064 (0.00)	-0.063 (0.00)
Prime rate	+	-0.008 (1.00)	-0.008 (1.00)	0.004 (1.00)	0.004 (1.00)	0.001 (0.00)	0.001 (0.00)
Default	+	-0.064 (1.00)	-0.062 (1.00)	0.013 (1.00)	0.013 (1.00)	0.001 (0.52)	0.001 (0.34)
Size	-	-0.005 (0.00)	-0.005 (0.00)	-0.005 (0.00)	-0.005 (0.00)	-0.004 (0.00)	-0.004 (0.00)
Fixed assets	-	-0.018 (0.00)	-0.018 (0.00)	-0.007 (0.00)	-0.007 (0.00)	-0.021 (0.00)	-0.021 (0.00)
Negative equity	+	0.044 (0.00)	0.044 (0.00)	0.031 (0.00)	0.031 (0.00)	0.046 (0.00)	0.046 (0.00)
Profitability	-	-0.043 (0.00)	-0.044 (0.00)	-0.029 (0.00)	-0.029 (0.00)	-0.045 (0.00)	-0.045 (0.00)
Adj. R^2		0.084	0.084	0.132	0.132	0.070	0.069

This table presents the results of testing whether firms with Big N auditors/industry specialist auditors are rewarded with lower cost of debt.
The samples cover the time horizon of 1988 to 2006.
The dependent variable is *Interest rate* defined as interest expenses (Compustat item #15) divided by the average total debt for the year. *Auditor* is an indicator variable that equals 1 if an auditor is one of the Big N and 0 otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Leverage* is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Prime rate* is the average prime rate for a year. *Default* is the difference between the yield on BAA-rated bonds and the yield on 10-year treasury bonds for the year. *Size* is the natural logarithm of total assets (Compustat item #6) in the regressions and total assets (Compustat item #6) in the descriptive statistics. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Negative equity* is an indicator variable that equals one if the common stockholders' equity (Compustat item #60) is negative and zero otherwise. *Profitability* is income before extroardinary income (Compustat item #34) divided by total assets.
The p-value is reported in the parentheses.

TABLE 13

Auditor Choice and Leverage: the Influence of Firm Sizes

	Brand Name			
Variable	Quantile 1	Quantile 2	Quantile 3	Quantile 4
Intercept	-4.567 (0.00)	-4.792 (0.00)	-4.156 (0.00)	0.722 (0.05)
Leverage	-0.869 (0.00)	-0.907 (0.00)	-0.264 (0.02)	-0.205 (0.29)
Size	0.867 (0.00)	0.902 (0.00)	0.855 (0.00)	0.282 (0.00)
Fixed assets	0.294 (0.00)	0.333 (0.00)	0.270 (0.00)	0.083 (0.52)
Cycle	-0.011 (0.00)	-0.008 (0.00)	-0.018 (0.00)	-0.008 (0.12)
P-E ratio	-0.001 (0.19)	0.002 (0.00)	0.002 (0.07)	0.005 (0.00)
Issue	-0.058 (0.38)	0.504 (0.00)	0.461 (0.03)	-1.567 (0.00)
Loss	0.163 (0.00)	0.173 (0.00)	-0.011 (0.88)	0.397 (0.00)
Regulation	-0.764 (0.00)	0.015 (0.92)	-0.249 (0.09)	-0.279 (0.02)
R&D	3.903 (0.00)	7.365 (0.00)	7.896 (0.00)	1.884 (0.27)
	Industry Specialist			
Variable	Quantile 1	Quantile 2	Quantile 3	Quantile 4
Intercept	-0.030 (0.00)	-0.027 (0.01)	0.057 (0.00)	0.106 (0.00)
Leverage	-0.017 (0.00)	-0.021 (0.00)	-0.012 (0.01)	-0.002 (0.72)
Size	0.023 (0.00)	0.026 (0.00)	0.022 (0.00)	0.016 (0.00)
Fixed assets	0.007 (0.00)	0.003 (0.24)	0.007 (0.02)	0.010 (0.00)
Cycle	0.000 (0.01)	0.000 (0.05)	-0.001 (0.00)	0.000 (0.20)
P-E ratio	0.000 (0.82)	0.000 (0.37)	0.000 (0.30)	0.000 (0.91)
Issue	0.009 (0.00)	0.008 (0.09)	0.003 (0.65)	0.035 (0.02)
Loss	0.005 (0.01)	0.004 (0.10)	0.003 (0.17)	-0.009 (0.00)
Regulation	-0.022 (0.01)	0.020 (0.01)	0.049 (0.00)	-0.016 (0.00)
R&D	0.114 (0.00)	0.111 (0.00)	0.066 (0.00)	-0.021 (0.55)

This table presents the results of testing whether and how the auditor choice and leverage relation varies by firm sizes. The full sample is partitioned based on total assets into quatiles. Quatile 1 has total assets of less than $25.183 million, quatile 2 from $25.183 to $117.233 millions, quatile 3 from $117.233 to $627.200 millions and quatile 4 greater than $627.200 millions.

The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. Leverage is the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm of total assets (Compustat item #6) in the regressions and total assets (Compustat item #6) in the descriptive statistics. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one a firm is a member of regulated industries and zero otherwise. *R&D* is the research and development expense (Compustat item #46) scaled by total assets. I also control for the year and industry fixed effects.

TABLE 14

Auditor Choice and Leverage: Industry-adjusted Leverage

Variables	Pred. Sign	Brand name	Industry specialists
Intercept	*?*	-3.812 (0.00)	0.035 (0.00)
Leverage IA	*?*	-0.605 (0.00)	-0.018 (0.00)
Size	+	0.829 (0.00)	0.023 (0.00)
Fixed assets	+	0.098 (0.00)	0.003 (0.01)
Cycle	+	-0.017 (0.00)	0.000 (0.00)
P-E ratio	+	0.001 (0.00)	0.000 (0.29)
Issue	+	0.136 (0.01)	0.010 (0.00)
Loss	-	0.141 (0.00)	0.000 (0.83)
Regulation	+	-0.893 (0.00)	0.002 (0.44)
R&D	+	4.794 (0.00)	0.101 (0.00)

This table tests the relation between auditor choice and leverage where leverage is adjusted by the industry median. The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. Leverage IA is the difference between a firm's leverage and 2-digit SIC industry median leverage where leverage is calculated as the sum of short-term debt (Compustat item #34) and long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm of total assets (Compustat item #6) in the regressions and total assets (Compustat item #6) in the descriptive statistics. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one a firm is a member of regulated industries and zero otherwise. I also control for the year and industry fixed effects.
The p-value is reported in the parentheses.

TABLE 15

Effects of Short-term and Long-term Debt on Auditor Choice for the Private Debt Sample

Variables	Pred. Sign	Brand Name	Industry Specialist
Intercept	*?*	-4.017 (<.0001)	0.0208 (<.0001)
Short Term	*?*	-1.151 (<.0001)	-0.0310 (<.0001)
Long Term	*?*	-0.739 (<.0001)	-0.0201 (<.0001)
Size	+	0.8522 (<.0001)	0.0237 (<.0001)
Fixed assets	+	0.2397 (<.0001)	0.0037 (0.0120)
Cycle	+	-0.0118 (<.0001)	-0.0004 (<.0001)
P-E ratio	+	0.00108 (0.0029)	0.0000 (0.4365)
Issue	+	0.0657 (0.2139)	0.0095 (<.0001)
Loss	-	0.1726 (<.0001)	0.0016 (0.1977)
Regulated	+	-0.4194 (<.0001)	0.0115 (0.0011)
R&D	+	4.1122 (<.0001)	0.1032 (<.0001)

This table presents the results of testing whether the impact of leverage on firms' choice of auditor differs between short-term and long-term debt using the sample that has only private debt. Auditor choice is measured along two dimensions: brand name reputation (Big N vs non-Big N) and industry specialization. The samples cover the time horizon of 1988 to 2006. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.

The dependent variable is *Auditor* for the brand name test and *Specialization* for the industry specialist regression. *Auditor* is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. *Specialization* is the proportion of two-digit SIC industry sales for a year audited by each audit firm. *Short term* is short-term debt (Compustat item #34) divided by total assets (Compustat item #6). *Long term* is long-term debt (Compustat item #9) divided by total assets (Compustat item #6). *Size* is the natural logarithm of total assets (Compustat item #6) in the regressions and total assets (Compustat item #6) in the descriptive statistics. *Fixed assets* is the gross property, plant and equipment (Compustat item #7) divided by total assets. *Cycle* is the sum of days' inventory and days' accounts receivable divided by 30. *P-E ratio* is the close price per share (Compustat item #199) divided by earnings per share excluding extraordinary items (Compustat item #58). *Issue* is the net new equity issue (Compustat item #108 - #115) during the year scaled by total assets. *Loss* is an indicator variable that equals one if current income (Compustat item #172) is negative and zero otherwise. *Regulation* is an indicator variable that equals one a firm is a member of regulated industries and zero otherwise. I also control for the year and industry fixed effects.

P-values are reported in parentheses.

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