Center for Economic Institutions

Working Paper Series

CEI Working Paper Series, No. 2005-10

"The Effect of Auditor Choice on Financing Decisions"

Xin Chang
Sudipto Dasgupta
Gilles Hilary

Institute of Economic Research
Hitotsubashi University
2-1 Naka, Kunitachi, Tokyo, 186-8603 JAPAN
Tel: +81-42-580-8405
Fax: +81-42-580-8333
e-mail: cei-info@ier.hit-u.ac.jp

The Effect of Auditor Choice on Financing Decisions

Xin Chang

Department of Finance

Faculty of Economics and Commerce

University of Melbourne

Sudipto Dasgupta

Department of Finance

Hong Kong University of Science and Technology

Gilles Hilary*

Department of Accounting

Hong Kong University of Science and Technology

º We thank Clive Lennox, Jeffrey Pittman and the seminar participants at Hong Kong University of Science and Technology for helpful comments. Dasgupta and Hilary acknowledge financial support from Hong Kong's Research Grants Council under grant number HKUST6064/01H and DAG03/04.BM02 DAG03/04.BM45 respectively.

* Corresponding author. Department of Accounting, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong. Email: acgh@ust.hk. Tel 852-23587579. Fax: 852-23581643

The Effect of Auditor Choice on Financing Decisions

ABSTRACT

We provide evidence that the financing decisions of companies that are audited by a Big Six auditor are less affected by information asymmetry. Specifically, these companies enjoy greater financial flexibility and depend less on favorable market conditions for their equity issuance decisions than those not audited by a Big Six firm. As a consequence, their debt ratios are less affected either by their past stock price performance or by Baker and Wurgler's [2002] measure of market timing. In addition, consistent with the idea that these firms are able to issue equity more regularly, we find that these firms have lower target debt ratios. These results are economically significant. They are robust to endogenizing the selection of the auditor and they hold both cross-sectionally and in panel settings.

JEL classification: G32 D82
Keywords: Information asymmetry, Capital Structure, Auditor Quality.

1. Introduction

The theoretical literature has long recognized that asymmetry of information between companies' and outside investors could affect companies' financing choices (e.g., Modigliani and Miller [1958], Ross [1977], Leland and Pyle [1977], Myers and Majluf [1984]). The financial statements obviously play a critical role in reducing this asymmetry, and their integrity is essential to well functioning capital markets. In this context, auditors are called upon to play a key role in the certification of this information. Yet, all auditors may not offer the same level of service. The theoretical literature usually suggests that large firms (such as the "Big Six")[1] provide better auditing services than smaller auditors because of three distinct (not mutually exclusive) reasons: they have greater monitoring ability (e.g., Watts and Zimmerman [1981]), they have a more valuable reputation to protect (e.g., DeAngelo [1981]), and they have "deeper pockets" in case of litigation (e.g., Dye [1993]). In turn, this higher level of certification should reduce the information asymmetry between informed managers and outsiders and thus affect financial decisions. However, the empirical evidence supporting these predictions is limited (although not inconsistent with this idea). Healy and Palepu [2001], for instance, note a "paucity of evidence on the value of auditor opinions to investors". Similarly, Mansi et al. [2004] state: "the empirical evidence that links audits to investors is limited and mixed". Consistent with this position, Chaney et al. [2004] find no evidence of higher fees when Big Six firms audit private companies (after controlling for

[1] We follow the convention of calling the main firms the Big Six, although their number varied over time from initially 8 to currently 4.

the endogeneity of the auditor choice). To further our understanding of these issues, in this paper we investigate two distinct but related questions.

In a first series of tests, we examine the effect of the higher certification on companies' capital structure decisions. Specifically, we examine whether better auditing allows companies to maintain lower debt-equity ratios and to issue more equity as opposed to debt. Consistent with the theoretical literature, we hypothesize that companies audited by Big Six firms face a lower information asymmetry. We also hypothesize that, in turn, this lower information asymmetry should affect their capital structure. Since equity is informationally more sensitive than debt (e.g., Myers and Majluf [1984]), our prior is that these companies should issue more equity and maintain lower debt ratios. Our results are consistent with these predictions. We show that companies audited by a Big Six firm have less debt in their capital structure. In addition, our robustness checks indicate that these companies have a lower likelihood of debt issuance when they decide to issue either debt or equity in a given year. They also fund a lower proportion of their financing deficit through debt. Our results hold in the overall sample but are usually stronger for smaller companies, where financial statements represents a larger part of the information set of outside investors.

In a second series of tests, we find evidence showing that the timing of security issuance is affected by auditor quality. The "market timing" theory argues that companies' equity issuance decisions are concentrated in time periods that present a "window of opportunity". Favorable conditions in the equity markets are either likely to represent periods when the adverse selection is relatively less important (Choe, Masulis and Nanda [1993], Lucas and McDonald [1990]), or when stock prices have diverged upward from their fundamental value (Baker and Wurgler [2002], Baker, Ruback and Wurgler [2004]). Thus, firms are likely to exploit the opportunity presented by these time periods and issue equity; however, the tendency should be especially significant for firms for which information asymmetry problems are more endemic, since these time periods present these firms with an opportunity to rebalance their capital structures or build up financial slack and debt capacity. Increasing auditor quality decreases the likelihood that managers' private valuation is not aligned with that of the market and, thus, reduces the incentives to time security issuances. We use two specifications to test this hypothesis. In the first one, we consider the effect of past stock returns on changes in capital structure. We predict that some companies should behave opportunistically and be more likely to issue equity after favorable stock returns. However, this effect should be stronger for companies that are not audited by Big Six firms. Consistent with our hypothesis that higher auditing quality reduces the incentive to time the market, we find that the debt ratios of companies audited by Big Six firms are less affected by the past returns. In the second specification, we use the measure of market timing developed by Baker and Wurgler [2002] (BW hereafter). Similarly, we find that the debt ratios of companies audited by Big Six firms are less affected by the BW [2002] measure.

All these results are both economically and statistically significant. They hold both in cross-sectional and panel settings. In addition, as first noted by Copley et al. [1995] and Ireland and Lennox [2001], the auditor choice is likely to be endogenous and companies may self-select based on company characteristics. We replicate our Ordinary Least Squares (OLS) tests using different specifications designed to control for this endogeneity. A traditional approach to deal with endogeneity is to use Two Stage Least

Squares (2SLS) procedure. However, our endogenous variable is a binary one, so we cannot use the standard approach. Instead, we employ an alternative, but comparable, two-stage strategy. In the first stage, we predict the likelihood of the company to select a Big Six auditor and we use this predicted value in the second stage. We boot-strap the system 500 times to obtain consistent standard errors. In addition, we use a two-stage procedure (Heckman [1979]) in our capital structure regression. Our results are robust to these controls for the possible endogeneity of auditor choice.

Finally, to reinforce our interpretation of the results based on information asymmetry and to control for other informational intermediaries, we perform an additional test. We include analyst coverage as an additional control variable. Financial (equity) analysts, like the Big Six auditors, also have the property of reducing information asymmetry but the distribution of the two variables is very different. Most large companies are audited by a Big Six firm but there is a fair amount of variation for smaller companies. On the other hand, relatively few small companies are covered by analysts but there is a large variation in the number of analysts covering larger companies. The effect of an improvement in analyst coverage has a pattern similar to the effect of an improvement in auditing but the effect of auditing exists independently of other informational intermediaries.

Our results contribute to the literature in several ways. First, our tests examine whether Big Six auditors contribute to financial flexibility by making the firms' equity issuance decisions less sensitive to equity market conditions. Equity market conditions play an important role in shaping corporate financing policies. For example, survey evidence (Graham and Harvey [2001]) indicate that managers consider equity market prices as more important than 9 out 10 other factors in their decision to issue common stock. This is consistent with an extensive literature indicating that companies tend to issue equity instead of debt when market value is high (see Baker and Wurgler [2002] for a review of a long list of papers). To the best of our knowledge, prior research has not considered the effect of auditing quality on this behavior.

Our other set of results on capital structure relate to recent findings that auditor quality affects both the cost of equity in Initial Public Offerings (e.g., Willemborg [1999], Copley and Douthett [2002]) and the cost of debt (e.g., Mansi et al. [2004], Pittman and Fortin [2004]). Although traditional capital structure theory suggests that an asymmetric reduction in the costs of equity versus debt would lead firms to issue more equity relative to debt, it is not known whether reducing information asymmetry should have a first order economic effect on debt ratios, or merely be a sideshow. In addition, as noted by Mansi et al. [2004], the pricing of bonds is relatively well-defined but there is much debate as to what the correct pricing model should be for equity (and how the parameters should be empirically estimated). Perhaps for this reason, the literature has examined the effect of auditor choice on the cost of equity only during Initial Public Offerings (IPO). Looking at capital structure essentially considers the cost of equity relative to the cost of debt instead of trying to evaluate the absolute cost of equity. Therefore, showing that auditor quality has a first order effect on debt ratios extends the prior results outside the IPO setting.

The rest of this paper is organized as follows. Section 2 elaborates our hypotheses and methodology. The sample and variables are defined in Section 3. Section 4 discusses our empirical results. Section 5 concludes the paper.

2. Hypotheses Development and Empirical Specification

Based on prior literature, we hypothesize that higher auditing quality, proxied by whether the auditor is a Big Six firm or not, mitigates information asymmetry in the financial markets. We consider several implications of this hypothesis for corporate financing decisions, both in terms of the likelihood and the level of debt issuance (relative to equity) and in terms of the timing of equity issuance.

Auditor size, Audit Quality and Information Asymmetry

The literature has long recognized that managers know more about the economic situation of the company than outside suppliers of capital and that they may use this superior knowledge to behave opportunistically. In response, investors have required that managers report periodically and that their statements are verified by an independent party (e.g., Watts and Zimmerman [1983]). The Public has been reminded of the importance of this function by recent accounting scandals. Essentially, auditors serve two main functions. First, they review actual financial statements and the procedures designed to produce them. In addition to this monitoring role, they also provide an insurance device by indemnifying investors when they have suffered an economic loss caused by misleading financial statements.

Yet, all auditors may not offer the level of service. The theoretical literature suggests that large firms provide better auditing services than smaller auditors. For example, Willenborg [1999] states that: “it is widely perceived that larger, more prestigious firms have greater incentives not to perform a low-quality audit at a high-quality price”. Different reasons have been proposed for this. For example, Watts and

Zimmerman [1981] suggest that bigger firms have greater monitoring ability, while DeAngelo [1981] points out that they have a more valuable reputation to protect. Dye [1993] theorizes the idea that they have "deeper pockets" in case of litigation. Menon and Williams [1994] (among others) provide empirical support for this third view.

In turn, this higher level of certification should reduce the information asymmetry between informed managers and outsiders, and thus affect financial decisions. For example, Becker et al. [1998] states: "auditing reduces information asymmetries that exists between managers and firm stakeholders by allowing outsiders to verify the validity of financial statements." Titman and Trueman [1986] and Datar et al. [1991] provides models in which the value of a firm issuing security is increasing in the quality of its auditor. Empirically, Willenborg [1999] finds that auditor size is negatively related to IPO underpricing (a setting where information asymmetry is expected to be particularly strong), while Mansi et al. [2004] and Pittman and Fortin [2004] find that larger auditors (proxied by whether they are a Big Six firm or not) are associated with a lower cost of debt for their clients. Weber and Willenborg [2003] find that the pre-IPO opinions of larger auditors are more predictive of post-IPO negative stock delistings for a sample of microcap IPOs.

Audit Quality and the Debt-Equity Choice

The determinants of firms' capital structure and financing decisions is one of the main topics of research in corporate finance, as evidenced by the impressive number of papers and reviews published on the topic. Harris and Raviv [1991] provides an early survey of an already large literature; Rajan and Zingales [1995] examine the robustness of cross-sectional correlations in international data; Graham and Harvey [2001] provides extensive survey evidence on corporate financing decisions, while Fama and French [2002] revisit some traditional issues in capital structure.

It is well recognized in this literature that asymmetry of information between firms and outside investors could affect firms' financing choices and capital structure decisions. For example, Modigliani and Miller's [1958] irrelevance result does not hold if there is information asymmetry between the company's insiders and outsiders. It is also well accepted that in the presence of information asymmetry, equity issues should be more affected than debt, since payments to debt holders are senior fixed claims.[2] As a result, the theoretical literature (Myers and Majluf [1984], Lucas and McDonald [1990], Choe, Masulis and Nanda [1993]) primarily considers how adverse selection due to information asymmetry between insiders and outsiders affects equity issuance. If the "trade-off model" is a correct theoretical description of capital structure (i.e., if companies tradeoff the benefits and costs of issuing debt and equity in determining their capital structure), then companies suffering from more information asymmetry should have higher debt ratios as they try to mitigate the informational costs of equity issuance by relying more on debt financing.

However, prior empirical evidence linking information asymmetry with capital structure is far from convincing. Proxies for information asymmetry either have weak or ambiguous effects in capital structure regressions, or ambiguous interpretations. For example, the standard deviations of sales or of stock returns, and the number of business segments in which the firm operates, typically have weak effects; firm size can proxy for less information asymmetry, but bigger firms have *more* debt; R&D expenditure can

---

[2] If debt is risk-free, it is not subject to any adverse selection at all.

proxy for more information asymmetry, but more R&D is associated with *less* debt; young firms are supposedly more subject to information asymmetry, but they rely more on equity financing than on debt (Frank and Goyal [2003,a]). We use a more direct proxy, the quality of the auditor to revisit this literature. As explained above, higher auditing quality should reduce information asymmetry. Therefore, companies with greater audit certification should experience lower costs of issuing equity relative to debt. To the extent that companies trade-off costs and benefits, we expect those with a lower cost of equity (relative to debt) maintain lower debt ratios and issue relatively more equity.

To test this hypothesis, we estimate the standard "target adjustment model" (e.g., Jalilvand and Harris [1984], Auerbach [1985], Fama and French [2002], and more recently, Flannery and Rangan [2004]):

$$(TDM_{i,t} - TDM_{i,t-1}) = \alpha_1 + \varphi\,(TDM_{i,t}^{*} - TDM_{i,t-1}) + \varepsilon_{i,t} \quad (1)$$

where $TDM_{i,t}$ is the leverage ratio at time *t* for company *i*, $TDM_{i,t-1}$ is leverage ratio lagged one period. The market leverage ratio (*TDM*) is defined as the ratio of book value of total debt to quasi-market value of assets (total assets minus book value of equity plus market value of equity).[3] $TDM^{*}_{i,t}$ denotes the target debt ratio for company *i* at time *t*, which can be expressed as a function of a set of predetermined (lagged one period) variables (C^{1}):

[3] As a robustness check, we define the leverage ratio in terms of the book value (i.e., book value of total debt divided by book value of assets). Our main results still hold.

$$TDM^*_{i,t} = \alpha_2 + \gamma\, BigSix_{i,t-1} + \lambda_i\, C_{i,t-1} \qquad (2)$$

Here, $BigSix_{i,t-1}$ is a dummy variable that takes the value of one if the auditor is a Big Six firms, zero otherwise.[4] By substituting equation (2) into equation (1), we reduce the target adjustment model to:[5]

$$TDM_{i,t} = \alpha_3 + (1-\varphi)\, TDM_{i,t-1} + \mu\, BigSix_{i,t-1} + \nu_i\, C_{i,t-1} + \varepsilon_{i,t} \qquad (3)$$

where $\mu = \varphi\gamma$, and $\nu_i = \varphi\, \lambda_i$

We control for j variables (C) that have been shown by prior literature to influence capital structure (e.g., Frank and Goyal [2003, a]). A complete list of these variables as well as a discussion of their possible impact on companies' financing decisions is provided in the Appendix. We expect μ to be negative.[6]

Auditor Quality and Market Timing Theory

The "market timing theory" argues that managers look at current conditions in both the debt and equity markets and opt for the means of financing that seems to be

---

[4] *BigSix* takes the value of one if Compustat item 149 has a value comprised between 100 and 800, zero otherwise.

[5] Fama and French [2002] substitute the fitted values from an OLS regression on (2) into (1), and then estimate (1) using the procedure of Fama and MacBeth [1973]. Since our interest is the co-efficient of BigSix, we follow the recent literature (see Flannery and Rangan [2004]) in directly estimating (3). Our results hold if we leave the target adjustment model and merely estimate (2) by OLS.

[6] Fama and French [2002] suggest that the literature on capital structure revolves around two competing models: the "trade-off" model and the "pecking order" model. In their empirical specification, Fama and French [2002] include some additional terms involving firms' current and past investment and earnings. Their objective in doing so is to nest the tradeoff model and the Pecking Order Hypothesis (POH) in the same model. The POH predicts that φ should be zero, while the trade-off theory says it should be positive. Recent work, however, (e.g., Frank and Goyal [2003,a], Leary and Roberts [2005]) suggest some empirical challenges for the Pecking Order theory. Since our objective is not to discriminate between theories but rather establish that higher quality auditing reduces information asymmetry, we do not nest the two models.

currently more favorable, or not issue any securities at all if market conditions are not favorable. Companies subject to higher information asymmetry are more likely to suffer from unfavorable misvaluation (e.g., Myers and Majluf [1984]). If they are undervalued and are unable to issue equity, they may be forced to seek alternative means of financing, such as debt, for their projects. Thus, these firms will issue equity less frequently, and also be further away from an optimal target debt ratio. On the other hand, when they are overvalued because of market sentiment, or when the information asymmetry is reduced because of general business conditions (see Choe et al. [1993]), these firms will have the incentive to make bigger issues of equity to rebalance their capital structures. This means that it is especially important for these companies to take advantage of temporary improvements in market conditions to issue equity. Alternatively, all managers may want to take advantage of any perceived temporary mispricing that benefits existing shareholders at the expense of new investors; however, mispricing is more likely to occur when a greater information asymmetry exists between managers and outside suppliers of capital.[7]

We predict that companies experiencing a lower audit quality will have greater opportunities to time the market. This prediction also relates to the earnings management literature. Prior results (e.g., Loughran and Ritter [1995], Rajan and Servaes [1997], Teoh et al. [1998a, 1998b] and Denis and Sarin [2001]) suggest that firms tend to issue equity at times when investors are enthusiastic about economic prospects. On the other

[7] Notice that market timing and target behavior are not inconsistent. For example, Baker et al. [2004] point out that when firms time the market, they may not want to deviate too much from the target. Similarly, we have argued above that firms subject to more information asymmetry may time the market to rebalance their capital structures or to avoid being over-levered in the future.

hand, Becker et al. [1998] indicate that earnings management is less prevalent for companies that are audited by Big Six firms.

We test this prediction in two ways. First, we consider how past equity returns affect changes in capital structure. As we argued above, all firms would try to take advantage of favorable conditions in the equity market to issue equity. Thus, in general, there should be a negative relation between past stock returns and the current debt ratio. However, if firms that do not have Big Six auditors are more subject to information asymmetry or are more likely to be temporarily overvalued when market conditions are favorable, then they should issue equity more aggressively. Thus, the association between past stock returns and the debt ratio should be stronger for these firms. To examine this prediction, we calculate *Accumulated Stock Retur*n (*ASR*) by compounding monthly stock returns from t-5 to t. We then estimate the following model with an interaction between *ASR* and *BigSix:*

$$(TDM_t - TDM_{t-5}) = \delta_0 + \delta_1 ASR_{i,t} + \delta_2(ASR \times BigSix)_{i,t} + \delta_3 BigSix_{i,t} + \gamma\Delta C_{,i,t} + \varepsilon_{i,t} \qquad (4)$$

We expect that δ_2, the coefficient of the interaction between *BigSix* and *ASR,* should be positive in equation (4). ΔC represents the changes in the same set of k control variables that appear in equation (3).[8] In addition, the tradeoff theory suggests that the change in the debt ratio will also be related to whether or not the company is above or below the target at t-5. Deviation from the target leverage ratio at t-5 is proxied by the

[8] We drop the control variables related to R&D from this test as these are essentially fixed firm characteristics.

difference between the leverage ratio and the target debt ratio estimated using equation (2) at t-5.

Second, we consider how an "external finance weighted-average" market-to-book ratio, introduced by Baker and Wurgler [2002], affects companies' capital structure. Baker and Wurgler [2002] argue that if companies issued equity rather than debt when market conditions were better in the past, then a past "external finance weighted-average" market-to-book ratio (a proxy for market conditions) will have a negative effect on the current debt ratio. We use their proxy:

$$BW5MBA_t = \sum_{s=t-6}^{t-1} \frac{Disu_s + Eisu_s}{\sum_{r=t-6}^{t-1}(Disu_r + Eisu_r)}(MBA)_s \qquad (5)$$

where $Disu_s$ and $Eisu_s$ denote, respectively, net debt and equity issue at time *s*.[9] The market-to-book ratio (*MBA*) is the ratio of the quasi-market value of assets to the book value of assets. The intuition is that if for the same aggregate amount of external financing (*Disu+Eisu*), a company issues more equity relative to debt when the market-to-book ratio is high, then the debt-equity ratio should be lower subsequently. Thus, for companies "timing" the market more actively, there should be a stronger negative relation between the past external finance-weighted market-to-book ratio and the current capital structure.[10]

[9] Following BW [2002], we set the minimum weight (sum of net debt issued and net equity issued) to zero and drop firm-year observations in which *BW5MBA* exceeds 10.0.

[10] An alternative interpretation of a negative coefficient for BWMBA that is consistent with a market timing interpretation has been suggested by Hovakimian [2005]. Hovakimian argues that the BWMBA variable contains information about future growth opportunities not captured by the current market-to-book ratio. Firms may want to issue equity and build up debt capacity when market conditions are good (which also indicates promising growth opportunities for the future) in order to ensure that they can avoid issuing equity later under unfavorable market conditions.

We examine the effect of the auditor quality and BW's ratio (measured from t-5 to t) on the change in the debt ratio over the same period. To do so, we introduce an interaction between *BW5MBA* and *BigSix*:

$$(TDM_t - TDM_{t-5}) = \beta_0 + \beta_1\, BW5MBA_{i,t} + \beta_2(BW5MBA \times BigSix)_{i,t} + \beta_3\, BigSix_{i,t} + \theta\Delta C_{,i,t} + \varepsilon_{i,t} \quad (6)$$

We expect that β_2, the coefficient of the interaction between *BigSix* and *BW5MBA,* should be positive in equation (6).

3. Data, Variable Construction and Summary Statistics

3.1 Sample

Our main sample consists of companies listed in the Compustat Industrial Annual Files at any point between 1974 and 2003.[11] Data on stock prices and returns is retrieved from CRSP Files. Financial, insurance and real estate companies (i.e., SIC code 6000-6900), regulated utilities (SIC code 4900-4999), and companies with missing book value of assets are excluded.[12] This leads to a sample with 79,844 company-year observations.

Details of the calculation of the financial variables are included in the Appendix. All variables have been winsorized at the top and bottom 0.5% of their distribution. This

11 Since this period overlaps with the Arthur Andersen-Enron fallout, we re-run our regressions after dropping post-2000 years. Results are qualitatively similar.

12 As a robustness check, we drop firms involved in large asset sales and significant mergers (identified by Compustat footnote code AB). Results are essentially the same.

approach reduces the impact of extreme observations by assigning the cutoff value to values beyond the cutoff point. Our results (not tabulated) are qualitatively very similar when we truncate the distribution instead of winsorizing it. Dollar values are adjusted to 2000 dollar using GDP deflator.

3.2 Summary Statistics

Figure 1 reports the evolution of the percentage of companies audited by Big Six firms. We evenly split the sample into three size groups according to the book value of assets at the beginning of the fiscal year. Group 1 consists of the smallest companies and group 3 includes the largest companies.[13] In the overall sample, 86% of the companies are audited by a Big Six auditor. Noticeably, large companies more likely to be audited by a Big Six firm: the percentage of companies audited by a Big Six increases across the three sub-groups based on size (from 55% for small firms to 98% for large companies in 2003). Overall, the market share of the Big Six varied over time, ranging from a low of 81 percent in 1974 to a high of 89 percent in 1982 to 85% in 2003. However, much of this growth is coming from larger companies. Interestingly, we observe a decline in the percentage of smaller companies audited by Big Six firms during the recent years (from 66% in 1974 to 53% in 2003).

Table 1 reports descriptive statistics for the overall sample and for the three size groups. For the smallest group of companies, alternative sources of reduction in information asymmetry are rare: the median number of analysts (not tabulated) is 0.25 compared to 8.7 for the largest group, and only 1.4% of small companies have their debt

[13] Note that the same firm can belong to different size groups over the period it is present in the sample, as the book value of its assets changes.

rated by Standard and Poor's. For these companies, auditors are likely to play a key role. Table 2 reports the correlation coefficients among our key variables of interest. Univariate correlations suggest that being audited by a Big Six firm is positively correlated with size, profitability (ROA and Z-score, an inverse measure of bankruptcy risk) and the ratio of tangible to total assets (tangibility) and negatively related to the market to book ratio.

3.3 Auditor Choice

Table 3 reports the result of a Probit regression where the dependent variable is *BigSix,* a dummy variable that takes the value of one if the company is audited by a Big Six firm, zero otherwise. This analysis provides the basis for our control for endogeneity of the auditor choice in Section 4. In our choice of control variables,[14] we start by introducing different company characteristics: size, age, stock price, asset turnover, asset growth (Willenborg [1999]), Herfindhal index, current ratio (Weber and Willenborg [2003]) and whether or not the company discloses any R&D. We also control for profitability (Return on Assets (ROA) and its interaction with a dummy for loss, Chaney et al. [2004]). We include several measures for risk: a dummy variable for companies working in industry sectors with high litigation risk (Hogan [1997]), return and earnings volatility, industry median debt ratio and bankruptcy risk (z-score). We also control for different measures of the complexity of the auditing assignment: the number of segments,

[14] Aside from variables specific to the IPO context, Willenborg [1999] and Weber and Willenborg [2003] use the log of asset, leverage, current ratio and the existence of foreign subsidiaries in their first stage. The existence of foreign subsidiary is not consistently available for our sample of firms but the two other factors are used. We also use all the variables in Chaney et al. [2004], except the amount of exportation as this variable is not consistently available for our sample of US firms. In addition, we do not use the debt ratio as this variable is our main dependent variable in our second stage regression. Instead, we use the industry median.

the R&D intensity and asset tangibility. Results indicate that bigger companies with a higher asset turnover and a larger price attract Big Six auditors. Although profitability does not seem to play a big role (at least for small companies), all the risk variables are significant. With the exception of the bankruptcy risk proxy, all variables indicate that Big Six auditors are less likely to audit risky companies. The effect of the difficulty of auditing is more complicated. For small companies, some variables indicate a positive correlation with the difficulty of the assignment (R&D intensity, current ratio) but other a negative correlation (number of segments, tangibility). For larger companies, R&D intensity remains positive but the sign of the current ratio changes. To assess the accuracy of our classification, we predict that a company chooses a Big Six auditor if the probability estimated by our model is greater than 50 percent. Our classification is accurate 85 percent of the time. Note, however, that our main objective here is not to explain this choice *per se* but rather to obtain a basis for our procedures that control for the endogeneity in Section 4.

4. Empirical Tests and Results

4.1. Auditor Quality and Capital Structure Decisions

In this section, we present results on the relation between auditor quality and three main aspects of capital structure decisions: the target leverage ratio, debt/equity choices and the funding of the financing deficit.

Table 4 presents the results of the target adjustment model (equation (3)). To be consistent with previous literature that does not always endogenize the choice of auditor, we first run an OLS procedure both for the overall sample and our 3 sub-samples based on size. We are careful to allow for clustering of observations by company to adjust the standard errors for serial correlation. We also correct the standard errors for heteroskedasticity.[15] The tabulated OLS results use the auditor choice lagged one period, but are qualitatively similar when we use the contemporary auditor or lag the variable by three periods. In addition, we use different specification to endogenize the selection of the auditor. A traditional approach to deal with endogeneity is to use Two Stage Least Squares (2SLS) procedure. However, our endogenous variable is a binary one, so we cannot use the standard approach. Instead, we employ an alternative, but comparable, two-stage strategy. In the first stage, we predict the likelihood of the company to select a Big Six auditor and we use this predicted value in the second stage. To further mitigate the effect of endogeneity, the auditor choice is lagged one period and is first predicted based on some company-specific variables lagged two periods. We boot-strap the system 500 times to obtain consistent standard errors. In addition, we use a two-stage procedure (Heckman [1979]) in our capital structure regression. Results from these two procedures are presented in Table 5.

Results in both Table 4 and 5 indicate that being audited by a Big Six firm has a significant negative effect on the target leverage ratio for our overall sample and across all size groups. The t-statistic is -4.4 in the OLS specification (Table 4, column 1) and -9.2 in the Heckman case (Table 5, Column 2). We present the bootstrapped 95% confidence interval in Table 5, Column 1. The coefficient is significant at the 1% level. These results also hold when we use a panel (random effect) setting (z-statistic equals -4.8, untabulated results). The coefficient of the choice of auditor is economically

[15] Results are unaffected when we cluster observations by year.

significant. Being audited by a Big Six reduces the target debt ratio by 3.3% percentage points in the overall sample and 3.8% for smaller companies.[16] By comparison, increasing log of assets by one standard deviation would reduce the target debt ratio by approximately 2.8%. When we turn our attention to the group size, we observe that the coefficient is more significant for smaller companies, both economically and statistically. Not surprisingly, the lagged capital structure in Table 4 and 5 is extremely significant but results are qualitatively similar when the lagged capital structure is excluded from the regression. Other control variables generally have the expected signs.

Having established that auditing quality has significantly negative effects on the target debt ratio, we then consider two additional robustness checks. First, we examine whether the auditor selection affects debt-equity choice of companies in a given year. To do so, we estimate a Probit regressions similar to Hovakimian et al. [2002]: the dependent variable takes a value of 1 if the net debt issued constitutes more than 5% of book value of assets, and zero if the net equity issued divided by the book value of assets exceeds 5%.[17] Untabulated results indicate that companies with better auditing issue debt less frequently than equity. The z-statistic equals –2.5 in the Probit specification. Results hold when we use a panel (random effect) specification, a bivariate Probit procedure specification (to simultaneously model the decision of issuing debt and to choose a Big Six auditor) or a boot-strapped procedure (similar to the one described in section 4.1.).

[16] Switching from non Big Six to Big Six decreases the target debt ratio by 0.005 (0.007 for small firms) divided by 1 minus the coefficient of the lagged debt ratio. From Table 4, the latter is 0.848 (0.816 for small firms), implying that the target decreases by (0.005/(1-0.851)=3.3% in the overall sample and 3.8% in the sample of smaller firms.

[17] Consistent with past literature, company years where the net amount issued divided by the book value of assets is less than 5% or both debt and equity are issued in a given fiscal year are omitted. We control variables similar to those in Hovakimian et al. [2002]: the deviation of the leverage ratio from the industry median debt ratio, which is known to be an important determinant of the target debt ratio.

Lastly, we examine whether companies audited by Big Six firms fund a larger proportion of the financing deficit with debt (instead of equity). We use a framework similar to Shyam-Sunder and Myers [1999]. However, unlike Shyam-Sunder and Myers, our purpose is not to test a theory of financial hierarchy, but rather, examine the extent to which firms rely on debt financing to bridge the financing gap.[18] We regress the debt issue size on the financing deficit[19] (both scaled by the book value of assets) and include company fixed effects.[20] The parameter of interest is the coefficient estimate on the deficit scaled by book value of assets. We split our sample between companies that are audited by a Big Six firm and those are not for each of our three size sub-samples. We find the coefficient on the size of the deficit is significantly larger in each size sub-sample for the companies that are not audited by a big six firm, indicating that the companies not audited by Big Six firms show a significantly higher dependence on debt financing. These results hold both when the model is estimated with an OLS or a boot-strapped procedure. The economic magnitude is such that the dependence on debt is reduced by approximately one third for small companies audited by a Big Six. For medium and large companies, the effect is approximately 14% and 8% respectively.[21] We obtain comparable results when we regress the debt issue size on the financing deficit and its

[18] Chirinko and Singha [2000] note several empirical problems with this specification when it is used to distinguish between trade-off theory and pecking order theory. We do not try to make this distinction.

[19] Following prior literature, the financing deficit is defined as the sum of the amount of dividend payment, the amount of capital expenditure, the net increase in working capital, the current portion of long term debt at the beginning of the period, but minus the operating cash-flows after interest and taxes.

[20] The estimated model is: $(\frac{Disu}{BVA})_t = a + b(\frac{Deficit}{BVA})_t + \mu_i + \varepsilon_{it}$

where *Disu* is net debt issued, BVA is the book value of assets, *Deficit* is the financing deficit, μ_i is a firm-specific fixed effect, and ε_{it} is an error term. The co-efficient "*b*" indicates the proportion of the deficit that is financed with debt. All our results are unaffected when we include the control variables proposed by Frank and Goyal [2003,b]: tangibility of assets, change in market-to-book ratio, change in log of sales and change return in assets.

[21] The ratios of coefficients for the three size groups are: 0.26/0.19 = 1.47; 0.43/0.37 =1.16 and 0.65/0.59 = 1.10.

interaction with *BigSix*. The interaction is significantly negative at 1% level in each size sub-sample.

4.2 Auditor Quality and Market Timing

In this section, we examine whether the leverage ratios of companies audited by Big Six firms are less affected by market timing strategy compared to companies that are not. Figure 2 provides some preliminary evidence in support of the hypothesis that firms not audited by Big Six auditors issue equity more aggressively when market conditions are favorable. In Panel A (Panel B), we compare the proportion of firms in the two groups issuing equity after a positive equity shock (respectively, a year of high market-to-book ratio). A positive equity shock is defined as a year in which stock returns at least one standard deviation above the firm-specific mean, while a firm year is classified as a year of high market-to-book ratio if the latter is above the 75th percentile of the distribution. The Figure reveals that a higher proportion of firms in the "non-Big Six" group issue equity immediately after a positive equity shock, or after a year of high market-to-book ratio.

In our regressions, we use two main proxies for market conditions: past equity returns and the BW's [2002] "external finance weighted-average" market-to-book ratio. We report the results of estimating equation (4) (with the accumulated stock return) in Table 6 and equation (6) (with the BW's measure) in Table 7. We use both an OLS (column 1) and two-stage bootstrap procedure (column 2).

In all specifications, our proxy for market timing (*ASR* or *BW5MBA*) is negative. This is consistent with the idea that companies time the market to issue more equity when market conditions are good. However, its interaction between *BigSix* and *ASR* or *BW5MBA* is positive both in the OLS estimation (the t-statistic equals 5.3, Table 6, column 1, and 5.9, Table 7, column 1 respectively) and in the bootstrapped procedure (column 2). Similarly, the t-statistic becomes 9.5 and 8.9 when a panel specification is used (the magnitude of the coefficient is slightly higher). The economic magnitude is such that being audited by a Big Six firm reduces the incentive to time the market by approximately 30-50%.[22]

4.3. Further analysis

We perform two additional tests. First, we include analyst coverage as an additional variable to reinforce our interpretation of the results based on information asymmetry and to control for the effect of other informational intermediaries. Financial analysts also have the property of reducing information asymmetry but they typically cover larger companies (Table 1). As a further robustness check, we also control for the effect of bond rating agencies. Results are reported in Table 8 for the capital structure and Table 9 for the market timing regressions. Our main results are qualitatively similar to the ones obtained without the control for the two informational intermediaries. In other words, the higher quality of auditing has an effect incremental to that of the other informational intermediaries. The effect of an improvement in analyst coverage has a pattern similar to the effect of an improvement in auditing. Unsurprisingly, the debt rating helps with debt issuance. This last result is consistent with Faulkender and Petersen [2005]. All these findings continue to hold when we use an untabulated boot-strapped procedure similar to the one in section 4.1 and 4.2.

[22] The ratios of coefficients are 0.006/0.014 and 0.009/0.017 respectively.

Finally, the theoretical literature (e.g., Dye [1993]) usually suggests that "Big Six" provide better auditing services because they have both greater ability to monitor their clients and have "deeper pockets" in case of litigation, and thus offer a more valuable "insurance". If this "insurance effect" is the primary driver for our results, we expect that the effect of the Big Six should be stronger when their expected liability is greater. To test this hypothesis, we interact a dummy for industries with high litigation risk (Hogan [1999]) with *BigSix* in our capital structure regression (see equation (3)).[23] The interaction is not significant. We replicate this test with the z-score as "auditors' greatest liability derives from auditing clients that subsequently experience financial distress" (Dye [1993]). The interaction is also insignificant. In other words, we do not find evidence suggesting that the "insurance effect" is driving our results. Instead, results suggest that Big Six auditors appear to be better at monitoring their clients either before accepting them or subsequently during the actual engagements.

5. Conclusion

We provide evidence that the difference in information asymmetry associated with higher quality auditors affects companies' financing choices. Following previous literature that suggests auditing quality is greater for companies audited by Big Six auditing firms, we argue that the presence of a Big Six auditor reduces the extent of information asymmetry faced by outsiders. We consider several implications. First, we show that companies with Big Six auditors have less debt in their capital structure, are less likely to issue debt (when they issue security) and are financing a smaller portion of

---

[23] We do not run the test on our timing regressions because we would have to use a three way interaction. This would lead to a high degree of multi-collinearity between the different variables.

their deficit with debt. When we partition our sample into three sub-groups based on size, the above results are generally more significant for the smaller size groups, where sources of information other than audited financial statements are more limited.

Second, and perhaps more interestingly, we find that companies with better auditors depend less on favorable market conditions for their equity issuance decisions. Specifically, we find that the debt ratios of companies audited by a Big Six firm are less affected by past stock returns and by the BW [2002] measure of market timing. These results hold in different specifications that are designed to minimize the risk that the endogeneity between auditor choice and financing decisions biases our results. The also hold both cross-sectionally and in panel settings. In addition, we obtain comparable results when we use an alternative proxy (analyst coverage) for differences in information asymmetry but this proxy does not subsume the effect of being audited by a Big Six auditor.

References

Altman, Edward I., 1968, "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy", *The Journal of Finance*, Vol. 23, pp.589-609.

Auerbach, A. J., 1985, "Real Determinants of Corporate Leverage", in Benjamin J. Friedman (ed.), *Corporate Capital Structures in the United States*, University of Chicago Press, Chicago.

Baker, Malcom P. and Jeffrey Wurgler, 2002, "Market Timing and Capital Structure", *The Journal of Finance*, Vol. 57, Iss. 1, pp.1-32.

Baker, Malcolm, Richard S. Ruback, and Jeffrey Wurgler, 2004, "Behavioral Corporate Finance: A Survey", to appear in *The Handbook of Corporate Finance: Empirical Corporate Finance*, Espen Eckbo (ed.).

Becker, Connie L., Mark L. Defond, James Jiambalvo, K.R. Subramanyam, 1998, "The Effect of Audit Quality on Earnings Management", *Contemporary Accounting Research*, Vol. 15, Iss. 1, pp. 1-24.

Chaney, Paul K., Debra C. Jeter, and Lakshmanan Shivakumar, 2004, "Self-Selection of Auditors and Audit Pricing in Private Firms", *The Accounting Review*, Vol. 79, Iss. 1, pp. 51-72.

Chang, Xin, Sudipto Dasgupta and Gilles Hilary, 2004, "Analyst Coverage and Capital Structure Decisions", *Tuck Contemporary Corporate Finance Issues III Conference Paper SSRN Working Paper*.

Chirinko, Robert and A. Singha, 2000, "Testing Static Tradeoff against Pecking Order Models of Capital Structure: A Critical Comment", *Journal of Financial Economics,* Vol. 58, pp. 412-425.

Choe, Hyuk, Ronald W. Masulis, and Vikram Nanda. 1993, "Common stock offerings across the business cycle.", *Journal of Empirical Finance*, Vol. 1, Iss.1, pp.3-31.

Copley, Paul A. and Edward B. Douhett, 2002, "The Association between Auditor Choice, Ownership Retained and Earnings Dsiclosure by Firms Making IPO Offerings", *Contemporary Accounting Research*, Vol. 19, Iss.1, pp.49-75.

Copley, Paul A., J. Gaver and K. Gaver, 1995, "Simultaneous Estimation of the Supply and Demand of Differential Audits: Evidence from Municipal Audit Market", *Journal of Accounting Research*, Vol. 33, pp.137-155.

Datar, Srikant M., Gerald A. Feltham, John S. Hughes, 1991, "The Role of Audits and Audit Quality in Valuing New Issues", *Journal of Accounting and Economics*, Vol. 14, pp. 3-49.

DeAngelo, Linda E., 1981, "Auditor Size and Audit Quality", *Journal of Accounting and Economics*, Vol. 3, pp. 183-199.

David J. Denis and Atulya Sarin, 2001, "Is the Market Surprised by Poor Earnings Realizations following Seasoned Equity Offerings?", *Journal of Financial and Quantitative Analysis*, Vol. 36, Iss. 2, pp. 169-193.

Dye, Ronald A., 1993, "Auditing Standards, Legal Liability and Auditor Wealth", *Journal of Political Economy*, Vol. 101, Iss. 5, pp.887-914.

Fama, Eugene F. and James MacBeth, 1973, Risk, Return and Equilibrium: Empirical Tests, *Journal of Political Economy,* Vol. 81, pp. 607-636.

Fama Eugene F. and Kenneth French, 2002, "Testing Trade-off and Pecking Order Predictions about Dividends and Debt", *Review of Financial Studies*, Vol.15, Iss. 1, pp.1-33.

Faulkender, Michael W. and Mitchell A. Petersen, 2005, "Does the Source of Capital Affect Capital Structure?", *Journal of Finance,* Forthcoming.

Flannery, Mark J. and Kasturi P. Rangan, 2004, "Partial Adjustment towards Target Capital Structures", *SSRN Working Paper*.

Frank, Murray Z. and Vidhan K. Goyal, 2003a, "Capital Structure Decisions", *SSRN Working Paper*.

Frank, Murray Z. and Vidhan K. Goyal, 2003b, "Testing the Pecking Order Theory of Capital Structure", *Journal of Financial Economics*, Vol.67, Iss. 2, pp. 217-248.

Graham, John R., and Campbell Harvey, 2001, The Theory and Practice of Corporate Finance: Evidence from the Field, *Journal of Financial Economics,* Vol. 60, pp.187-243.

Harris, Milton and Arthur Raviv, 1991, "The Theory of Capital Structure", *Journal of Finance*, Vol. 46, pp. 297-356.

Healy, Paul M. and Krishna G. Palepu, 2001, "Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature", *Journal of Accounting and Economics*, Vol. 31, pp. 405–440

Heckman, James J., 1979, "Sample Selection Bias as a Specification Error." *Econometrica*, Vol. 47, Iss. 1, pp. 153-162.

Hogan, Chris E., 1997, "Costs and Benefits of Audit Quality in the IPO Market: A self-Selection Analysis", *The Accounting Review*, Vol. 72, Iss.1, pp.67-86.

Hovakimian, Armen, Tim Opler and Sheridan Titman, 2002, "The Debt–Equity Choice", *Journal of Financial and Quantitative Analysis*, Vol. 36, Iss.1, pp.1-24.

Hovakimian, Armen, 2005, "Are Observed Capital Structure Determined by Equity Market Timing?", *SSRN Working Paper.*

Ireland, Jennifer C. and Clive Lennox, 2002, "The large Audit Firm Fee Premium: A Case of Selectivity Bias?", *Journal of Accounting, Auditing and Finance*, Vol. 17, pp. 73-91.

Jalilvand, Abolhassan and Robert S. Harris, 1984, "Corporate Behavior in Adjusting to Capital Structure and Dividend Targets: An Econometric Study", *Journal of Finance*, Vol. 34, Iss. 1, pp. 127-145.

Leary, Mark T. and Michael R. Roberts, 2005, "Do Firms Rebalance Their Capital Structures?", Forthcoming, *Journal of Finance*.

Leland, Hayne and David Pyle, 1977, Information Asymmetries, Financial Structure, and Financial Intermediation, *Journal of Finance,* Vol. 32, pp. 371-388.

Loughran, Tim and Jay Ritter, 1995, "The New Issues Puzzle", *Journal of Finance*, Vol. 50, Iss. 1, pp.23-51.

Lucas, Deborah J. and Robert L. McDonald, 1990, "Equity Issues and Stock Price Dynamics", *Journal of Finance*, Vol. 45, Iss. 4, pp.1019-1043.

Mansi, Sattar A., William F. Maxwell, and Darius P. Miller, 2004,"Does Auditor Quality and Tenure Matter to Investors? Evidence from the Bond Market.", *Journal of Accounting Research*, Vol. 42, Iss. 4, pp. 755-793.

Menon, Krishnagopal and David D. Williams, 1994, "The Insurance Hypothesis and Market Prices", *The Accounting Review*, Vol. 69, Iss. 2, pp. 327-42.

Miller, Merton H. and Franco Modigliani, 1958, "The Cost of Capital, Corporation Finance and the Theory of Investment", *The American Economic Review*, Vol. 48, Iss. 3, pp. 261-297.

Myers Stewart C. and Nicholas S. Majluf, 1984, "Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have", *Journal of Financial Economics,* Vol.13, Iss .2, pp. 187-221.

Pittman Jeffrey A. and Steve Fortin, 2004, "Auditor choice and the Cost Debt Capital for Newly Public Firms", *Journal of Accounting and Economics*, Vol. 37, Iss. 1, pp. 113-136.

Rajan, Raghuram and Henri Servaes, 1997, “Analyst Following of Initial Public Offerings”, *Journal of Finance,* Vol. 52, pp. 507-529.

Rajan, Raghuram G. and Luigi Zingales, 1995, “What Do We Know about Capital Structure? Some Evidence from International Data”, *Journal of Finance,* Vol. 50, Iss. 5, pp. 1421-1460.

Ross, Stephen, 1977, “The Determinants of Financial Structure: The Incentive Signalling Approach”, *Bell Journal of Economics,* Vol. 8, pp. 23-40.

Shyam-Sunder, Lakshmi and Stewart C. Myers, 1999, “Testing Static Tradeoff against Pecking Order Models of Capital Structure”, *Journal of Financial Economics*, Vol. 51, Iss. 2, pp. 219-244.

Teoh, Siew Hong, Ivo Welch and T.J. Wong, 1998a, “Earnings Management and the Post-Issue Performance of Seasoned Equity Offerings”, *Journal of Financial Economics*, Vol. 50, pp 63-99.

Teoh, Siew Hong, Ivo Welch, and T.J. Wong, 1998b, “Earnings Management and the Long-term Market Performance of Initial Public Offerings”, *Journal of Finance*, Vol. 53, pp. 1935-1974.

Titman, Sheridan, 1984, “The Effect of Capital Structure on a Firm's Liquidation Decision”, *Journal of Financial Economics,* Vol.13, Iss.1, pp.137-151.

Titman, Sheridan and Brett Trueman, 1986, “Information Quality and The Valuation of New Issues”, *Journal of Accounting and Economics,* Vol. 8, pp.159-172.

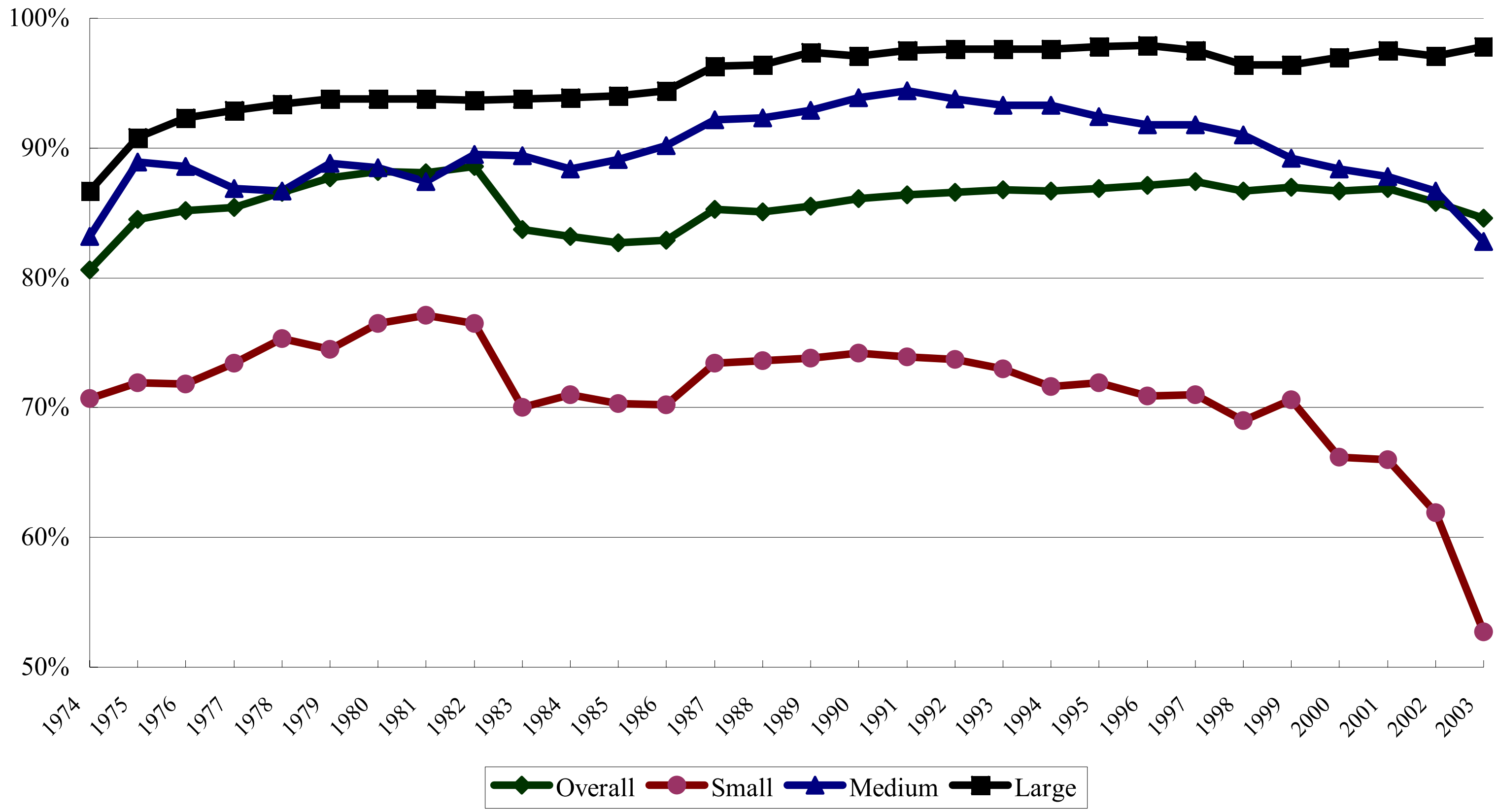
Watts, Ross L. and Jerold L. Zimmerman, 1981, “The Markets for Independence and Independent Auditors”, *Working Paper*, University of Rochester.

Watts, Ross L. and Jerold. L. Zimmerman, 1983, “Agency Problems, Auditing, and Theory of the Firm: Some Evidence”, *Journal of Law and Economics*, Vol. 26, Iss. 3, pp. 613-633.

Weber, Joseph and Michael Willenborg, 2003, “Do Expert Informational Intermediaries Add Value? Evidence from Auditors in Microcap Initial Public Offerings.”, *Journal of Accounting Research,* Vol. 41, Iss. 4, pp. 681–720.

Willenborg, Michael, 1999, “Empirical Analysis of the Economic Demand for Auditing in the Initial Public Offerings Market”, *Journal of Accounting Research*, Vol. 37, Iss.1, pp. 225-238.

Figure 1: Percentage of Firms Audited by Big Six

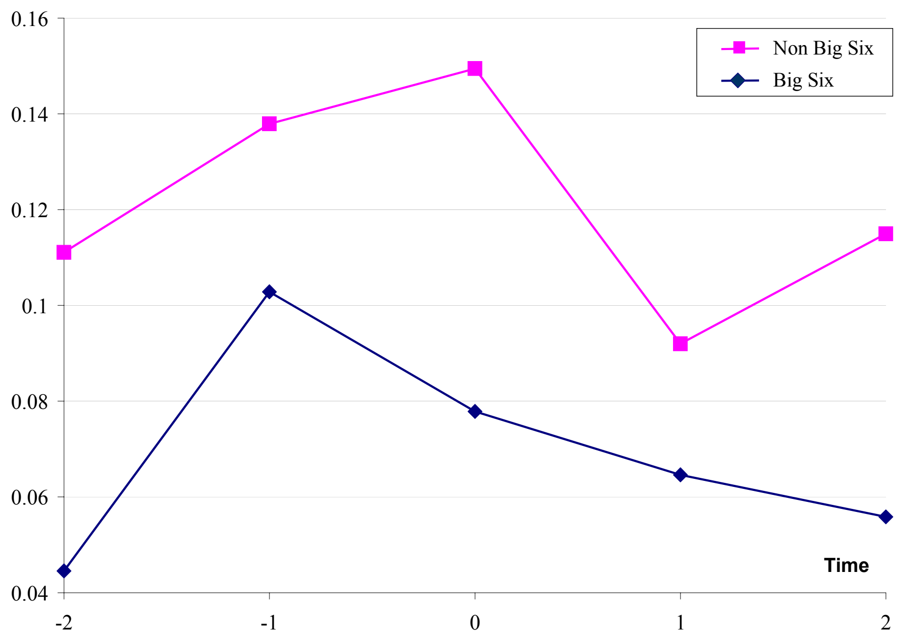


Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974 – 2003. The overall sample is evenly partitioned into three size groups based on the book value of assets. The figure reports the time trend of percentage of firms audited by Big Six.

Figure 2: Auditor Choice and Equity Issuance

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974 – 2003. Panel A compares the fraction of firms issuing equity from two years before to two years after a positive equity shock for firms audited by Big Six versus non Big Six auditors. Firms are defined as issuing equity when the net equity issued divided by the book value of assets exceeds 5%. A positive equity shock corresponds to an annual stock return at least one standard deviation above the firm-specific mean. Panel B compares the fraction of firms issuing equity from two years before to two years after a high market-to-book year for firms audited by Big Six versus non Big Six auditors. A firm's market-to-book ratio is high if it is above the 75th percentile of the distribution. Market-to-book ratio is defined as (market value of equity + book value of debt) / book value of assets.

Panel A: Fraction of Firms Issuing Equity Around Positive Equity Shocks



Panel B: Fraction of Firms Issuing Equity Around High Market-to-book Year

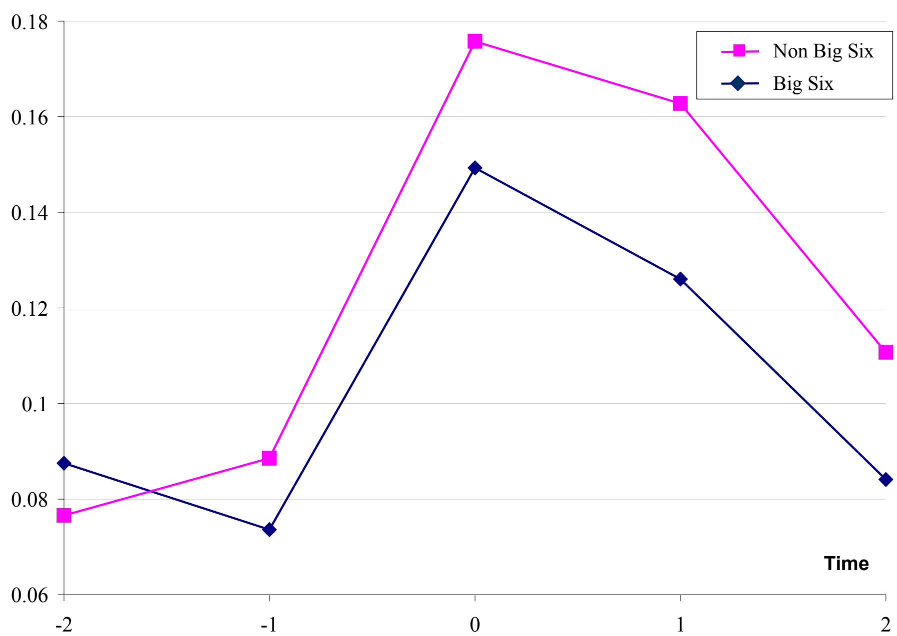


Table 1: Summary Statistics (Size Grouping)

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974 – 2003. The overall sample is evenly partitioned into three size groups based on the book value of assets. *Age* is the number of years since the firm entered the database. *Book Value of Assets* is Compustat item number 6. *Market Capitalization* is defined as the number of shares outstanding multiplied by closing stock price at the end of the fiscal year. *Book Debt Ratio* is the ratio of total debt (debt in current liabilities + long-term debt) to book value of assets. *Market Debt Ratio* is total debt divided by the sum of total debt and market value of equity. *Market-to-book Asset Ratio* is defined as (market value of equity + book value of debt) / book value of assets. *Return on Asset* is the income before depreciation and amortization divided by book value of assets. A firm has debt rated if either senior or subordinated debt is rated by Standard & Poor's. A firm is covered by analysts if the number of analyst is greater than zero. The number of analysts is the maximum number of analysts making annual earnings forecasts any month over a twelve-month period. Dollar figures are in millions.

		Overall Sample	Group 1 (Small)	Group 2 (Medium)	Group 3 (Large)
Age	Mean	17.6	12.3	15.9	24.5
	Median	14	10	14	25
Book Value of Assets	Mean	1,788.2	24.36	176.7	5163.4
	Median	52.94	21.02	152.9	1,500.0
	Standard Deviation	7,828.6	16.6	93.1	12,913.4
Market Capitalization	Mean	1,795.9	34.2	203.0	5,150.5
	Median	114.3	17.14	111.3	1,199.2
	Standard Deviation	10,250.0	57.5	309.6	17,268.4
Book Debt Ratio	Mean	0.243	0.214	0.239	0.277
	Median	0.214	0.151	0.206	0.257
	Standard Deviation	0.234	0.278	0.222	0.187
Market Debt Ratio	Mean	0.194	0.158	0.203	0.220
	Median	0.154	0.095	0.160	0.191
	Standard Deviation	0.178	0.174	0.190	0.165
Return on Asset	Mean	7.8%	-3.2%	11.9%	14.6%
	Median	12.1%	6.5%	12.8%	14.4%
	Standard Deviation	44.2%	73.9%	12.6%	8.0%
Market-to-book Asset Ratio	Mean	1.84	2.22	1.65	1.64
	Median	1.30	1.37	1.24	1.31
	Standard Deviation	1.92	2.74	1.35	1.24
Percentage of firms having debt rated		16.9%	1.4%	6.5%	44.1%
Percentage of firms being covered by analysts		49.7%	24.9%	58.5%	65.6%
Percentage of firms being audited by Big Six		85.9%	71.4%	90.5%	95.8%
Number of Firm-years		79,844	26,615	26,614	26,615

Table 2: Correlation coefficients among key variables

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974 – 2003. *Book Value of Assets* is Compustat item number 6. *Big Six Dummy* equals one if a firm chose a Big Six Auditor, and zero otherwise. *Book Debt Ratio* is the ratio of total debt (debt in current liabilities + long-term debt) to book value of assets. *Market Debt Ratio* is total debt divided by the sum of total debt and market value of equity. *Market-to-book Asset Ratio* is defined as (market value of equity + book value of debt) / book value of assets. *Return on Asset* is the income before depreciation and amortization divided by book value of assets. *Tangibility* is net PPE-to-asset ratio. Altman's *Un-leveraged Z-score* equals (3.3 × pretax income + sales + 1.4 × retained earnings + 1.2 × (current assets - current liabilities) / book value of assets). Pair-wise correlation coefficients among variables are reported. Correlation coefficients that are significant at the 1%, 5% and 10% level are marked with ***, **, and *respectively.

	Big Six Dummy	*Book Debt Ratio*	*Market Debt Ratio*	*Log (Assets)*	*Market-to-Book Ratio*	*Tangibility*	*Return On Asset*	*Un-leveraged Z Score*
Book Debt Ratio	-0.001	1.00						
Market Debt Ratio	-0.005	0.778***	1.00					
Log (Assets)	0.309***	0.100***	0.144***	1.00				
Market-to-Book Ratio	-0.012***	-0.063***	-0.329***	-0.161***	1.00			
Tangibility	0.047***	0.235***	0.289***	0.255***	-0.149***	1.00		
Return On Asset	0.060***	-0.166***	0.014***	0.203***	-0.224***	0.067***	1.00	
Un-leveraged Z Score	0.083***	-0.227***	-0.003	0.274***	-0.362***	-0.007	0.543***	1.00

Table 3: Determinants of Auditor Choice (estimated with a Probit regression**)**

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974 – 2003. The overall sample is evenly partitioned into three size groups based on total assets. The dependent variable is the *Big Six Dummy* which equals one if a firm chose a Big Six Auditor, and zero otherwise. *Age* is the number of years since a firm entered the dataset. *Industry Median Market Debt Ratios* are computed by 3-digit SIC code and by year. *Asset Growth* is the change in log of total assets. *Litigation Risk Dummy* equals one if the firm is in a high litigation-risk industry and 0 otherwise. *Herfindahl Index* is computed by summing squared market shares within each 3-digit SIC industry. *Market-to-book Asset Ratio* is (market value of equity + book value of debt) / book value of assets. *Stock Price* is the median monthly closing prices over a 12-month period. *R&D Dummy* equals one if R&D expense is missing. *Return on Assets* is income before depreciation and amortization divided by total assets. *Loss Making Dummy* equals one if the firm incurred a loss in the previous year, zero otherwise. *Tangibility* is net PPE-to-asset ratio. *Asset turnover* is sales divided by total assets. *Current Ratio* equals current assets divided by total assets. *Stock Return Volatility* is standard deviation of daily stock returns calculated for each firm each year. *Earning Volatility* is standard deviation of EBIT-to-asset ratios over a firm's entire life in Compustat. All explanatory variables are measured one year before a firm's auditor choice is observed. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. Constant terms and year dummies are included in regressions but not reported. z-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations for a given firm.

Auditor Choice (BigSix)	**Overall Sample**		**Group 1 (Small)**		**Group 2 (Medium)**		**Group 3 (Large)**	
	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.	Coef.	z-stat.
Log (Assets)	0.298***	(16.2)	0.442***	(15.2)	0.277***	(6.4)	0.016	(0.4)
Log (Age)	-0.126***	(-4.4)	-0.193***	(-5.2)	-0.138***	(-3.0)	0.209***	(3.3)
Log (Stock Price)	0.110***	(5.1)	0.041*	(1.7)	0.152***	(3.4)	0.213***	(2.7)
Asset Turnover	0.094	(3.5)	0.089***	(3.0)	0.289***	(4.2)	0.516***	(4.2)
Return on Assets	0.042	(-0.3)	0.016	(0.8)	0.575*	(1.6)	1.188**	(2.0)
Return on Asset × Loss Making Dummy	0.278	(1.5)	0.115	(0.5)	0.817	(1.6)	-0.322	(-0.2)
Industry Median Market Debt Ratio	-0.864***	(-5.4)	-1.079***	(-4.9)	-0.768***	(-2.9)	-0.448	(-1.3)
Un-leveraged Z Score	-0.032***	(-4.0)	-0.031***	(-3.9)	-0.238***	(-4.6)	-0.368***	(-3.8)
Stock Return Volatility	-1.24***	(-2.7)	-2.044***	(-4.0)	-1.566	(-1.2)	2.473	(0.8)
Earning Volatility	-0.001***	(-5.8)	0.003	(1.0)	0.000	(0.7)	-0.000	(-1.5)
Litigation Risk Dummy	-0.209***	(-2.4)	-0.104	(-1.0)	-0.161	(-1.3)	-0.360***	(-2.4)
Herfindahl Index	-0.176*	(-1.7)	-0.371***	(-3.0)	-0.053	(-0.3)	0.530*	(1.8)
Market-to-Book Asset Ratio	0.005	(0.8)	0.009	(1.3)	0.018	(0.9)	0.016	(0.5)
Asset Growth	-0.108***	(-4.8)	-0.143***	(-5.4)	-0.182***	(-4.06)	-0.085	(-1.1)
Number of Industrial Segments	-0.006*	(-1.8)	-0.017***	(-3.2)	-0.002	(-0.4)	-0.002	(0.4)
R&D to Sales Ratio	0.201***	(6.7)	0.169***	(5.7)	0.407*	(1.7)	3.819***	(3.1)
R&D Dummy	-0.069*	(-1.9)	-0.105**	(-2.2)	-0.068	(-1.1)	-0.015	(-0.2)
Tangibility	0.210*	(1.8)	0.496***	(3.7)	0.204	(1.0)	-0.306	(-1.0)
Current Ratio	0.223**	(2.0)	0.618***	(5.0)	0.465**	(2.0)	-0.881***	(-2.4)
Firm-years	79,844		26,615		26,614		26,615	

Table 4: Target Adjustment Model and Auditor Choice (estimated with an OLS regression**)**

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974-2003. The overall sample is evenly partitioned into three size groups based on book value of assets. The dependent variable is *Market Debt Ratio* that equals the ratio of total debt to market value of assets. Explanatory variables include the lagged *Market Debt Ratio*, *Big Six Dummy* as well as a set of control variables. *Big Six Dummy* equals one if a firm chose a Big Six Auditor, and zero otherwise. *Share Turnover* is the median value of shares traded (volume) in a month divided by shares outstanding over a twelve-month period. *Annual Stock Return* is the compounded monthly stock return in the past fiscal year. Other control variables are defined in Table 2. All explanatory variables are measured one year before a firm's debt ratio is observed. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. Constant terms and year dummies are included in regressions but not reported. T-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations for a given firm.

Market Debt Ratio (TDM)	**Overall Sample**		**Group 1(Small)**		**Group 2 (Medium)**		**Group 3 (Large)**	
	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.
Lagged Debt Ratio	0.848***	(265.7)	0.814***	(137.7)	0.863***	(163.5)	0.860***	(140.3)
Big Six Dummy	-0.005***	(-4.4)	-0.007***	(-4.9)	-0.004**	(-2.1)	-0.001	(-0.3)
Log (Assets)	0.002***	(5.7)	0.003***	(3.3)	-0.011***	(-8.7)	-0.002***	(-3.6)
Log (Age)	-0.006***	(-11.6)	-0.004**	(-3.7)	-0.008***	(-7.7)	-0.006***	(-7.0)
Tangibility	0.020***	(9.4)	0.022***	(5.8)	0.023***	(5.8)	0.012***	(3.6)
Industry Median Debt Ratio	0.027***	(6.5)	0.032***	(3.9)	0.029***	(3.8)	0.018***	(2.9)
Return On Assets	-0.007	(-1.4)	-0.006	(-1.0)	-0.024**	(-3.0)	-0.009	(-0.8)
Share Turnover	2.103***	(4.7)	1.825	(1.8)	2.022***	(2.6)	2.007**	(2.8)
Annual Stock Return	-0.001**	(-2.3)	-0.002*	(-2.5)	-0.003***	(-2.5)	0.000	(0.1)
Market-to-Book Asset Ratio	-0.000	(-2.5)	0.000	(0.0)	-0.001	(-2.9)	-0.001**	(-2.0)
R&D to Sales Ratio	-0.005***	(-8.2)	-0.005***	(-6.5)	-0.008***	(-5.7)	-0.010	(-2.0)
R&D Dummy	0.007***	(9.5)	0.006***	(4.3)	0.008***	(5.7)	0.006***	(5.1)
Un-leveraged Z Score	-0.000	(-0.9)	0.000	(0.5)	-0.001*	(-1.7)	-0.002***	(-3.7)
Dividend to Asset Ratio	-0.149***	(-8.0)	-0.169***	(-5.0)	-0.130*	(-4.3)	-0.067	(-2.1)
Stock Return Volatility	-0.170***	(-6.8)	-0.119***	(-4.0)	-0.302***	(-5.9)	-0.097**	(-1.5)
Earning Volatility	-0.000***	(-11.3)	-0.000	(-0.7)	-0.000***	(-5.0)	-0.000***	(-5.0)
R^2/ Firm-years	0.74/78,731		0.69/26,471		0.76/26,182		0.77/26,078	

Table 5: Target Adjustment Model and Auditor Choice (Robustness Checks)

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974-2003. The dependent variable is *Market Debt Ratio* that equals the ratio of total debt to market value of assets. Column (1) reports leverage regression in Table 4 using a two-stage procedure. In the first stage, the likelihood of the firm to select a *Big Six* auditor is predicted based on firm-specific variables in Table 2 using a Probit model. In the second stage, *Market Debt Ratio* is regressed on predicted auditor choice and other control variables in Table 4. We bootstrap the system 500 times to obtain consistent standard errors. Confidence intervals in square brackets are calculated from 500 bootstrap replications resampled from the dataset with replacement of clusters. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. Column (2) fits the treatment effects model using Heckman's two-step consistent estimator. Only second-step regression is reported. T-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations for a given firm.

***Market Debt Ratio* (*TDM*)**	**Two-Stage Bootstrap (1)**		**Treatment Effects Model (2)**	
	Coef.	95% interval	Coef.	t-stat.
Lagged Debt Ratio	0.846	[0.839, 0.853]	0.849***	(359.5)
Predicted Auditor Choice	-0.026	[-0.042, -0.012]	-0.044***	(-9.2)
Log (Assets)	0.009	[0.005, 0.015]	0.004***	(10.4)
Log (Age)	-0.009	[-0.011, -0.007]	-0.006***	(-10.4)
Tangibility	0.019	[0.014, 0.025]	0.019***	(10.5)
Industry Median Debt Ratio	0.017	[-0.002, 0.034]	0.020***	(5.0)
Return On Asset	-0.005	[-0.017, 0.005]	-0.007***	(-3.0)
Share Turnover	2.137	[1.251, 3.056]	1.915***	(4.3)
Annual Stock Return	-0.002	[-0.003, -0.001]	-0.002***	(-2.9)
Market-to-Book Asset Ratio	-0.000	[-0.0005, 0.0005]	-0.000	(-0.5)
R&D to Sales Ratio	-0.000	[-0.004, 0.004]	-0.004***	(-5.7)
R&D Dummy	0.004	[0.002, 0.006]	0.006***	(8.0)
Un-leveraged Z Score	-0.0003	[-0.0009, 0.0005]	-0.000	(-1.1)
Dividend to Asset Ratio	-0.139	[-0.179, -0.098]	-0.165***	(-7.8)
Stock Return Volatility	-0.231	[-0.297, -0.169]	-0.191***	(-11.3)
Earning Volatility	-0.003	[-0.004, -0.002]	-0.002***	(-11.5)
Replications / Firm-years	500		74,155	

Table 6: Market Timing and Auditor Choice - Past Stock Return

Sample includes all Industrial Compustat firms with complete data for five or more adjacent years during 1976-2003. The dependent variable is *Change in Market Debt Ratio from t-5 to t*. *Accumulated Stock Retur*n is obtained by compounding monthly stock returns from t-5 to t. *Big Six Dummy* equals one if a firm chose a Big Six auditor at t-5, and zero otherwise. *Deviation from Target Debt Ratio* is measured as the difference between a firm's debt to asset ratio and target debt ratio estimated in Table 3a. Column (1) presents OLS specification. Column (2) reports regression using a two-stage procedure. In the first stage, the likelihood of the firm to select a *Big Six* auditor is predicted based on firm-specific variables in Table 2 using Probit model. In the second stage, *Change in Market Debt Ratio* is regressed on predicted auditor choice, interaction term between predicted auditor choice and accumulated past stock return from t-5 to t, and other control variables. We bootstrap the system 500 times to obtain consistent standard errors. Confidence intervals in square brackets are calculated from 500 bootstrap replications resampled from the dataset with replacement of clusters. Constant terms and year dummies are included in the regressions, but not reported. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. T-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations of a given firm. The 95% confidence intervals in brackets are obtained from 500 bootstrap replications resampled from the actual dataset with replacement of clusters.

Change in Market Debt Ratio from t-5 to t **(*TDM_t - TDM_{t-5}*)**	**(I) OLS**		**(II) Two-Stage Bootstrap**	
	Coef.	t-stat.	Coef.	95% interval
Accumulated Stock Return (ACR)	-0.014***	(-13.9)	-0.012	[-0.015, -0.010]
Big Six Dummy	-0.014***	(-5.6)	-0.011	[-0.015, -0.006]
ACR × Big Six Dummy	0.006***	(5.3)	0.003	[0.001, 0.005]
Δ *Total Assets*	0.001***	(4.6)	0.001	[0, 0.002]
Δ *Market-to-book Asset Ratio*	-0.011***	(-17.6)	-0.011	[-0.012, -0.009]
Δ *Return on Assets*	-0.069***	(-10.7)	-0.068	[-0.082, -0.056]
Δ *Tangibility*	0.166***	(17.4)	0.166	[0.148, 0.184]
Δ *Unleveraged Z Score*	-0.002***	(-4.4)	-0.002	[-0.003, -0.001]
Δ *Dividend to Asset Ratio*	-0.728***	(-11.8)	-0.723	[-0.848, -0.601]
Δ *Stock Return Volatility*	0.929***	(14.10)	0.922	[0.796, 1.045]
Δ *Share Turnover*	-8.739***	(-8.3)	-8.630	[-10.73, -6.57]
Deviation from Target Debt Ratio	-0.360***	(-45.7)	-0.360	[-0.375, -0.345]
R-Square	0.27			
Firm-years/Replications	58,287		500	

Table 7: Market Timing and Auditor Choice - Baker and Wurgler's Timing Measure

Sample includes all Industrial Compustat firms with complete data for five or more adjacent years during 1976-2003. The dependent variable is *Change in Market Debt Ratio from t-5 to t*. Baker and Wurgler's "external finance weighted-average" market-to-book ratio (*BW5MBA*) is calculated from t-5 to t. *Big Six Dummy* equals one if a firm chose a Big Six auditor at t-5, and zero otherwise. *Deviation from Target Debt Ratio* is measured as the difference between a firm's debt to asset ratio and target debt ratio estimated in Table 3a. Column (1) presents OLS specification. Column (2) reports regression using a two-stage procedure. In the first stage, the likelihood of the firm to select a *Big Six* auditor is predicted based on firm-specific variables in Table 2 using Probit model. In the second stage, *Change in Market Debt Ratio* is regressed on predicted auditor choice, interaction term between predicted auditor choice and *BW5MBA*, and other control variables. We bootstrap the system 500 times to obtain consistent standard errors. Confidence intervals in square brackets are calculated from 500 bootstrap replications resampled from the dataset with replacement of clusters. Constant terms and year dummies are included in the regressions, but not reported. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. T-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations of a given firm. The 95% confidence intervals in brackets are obtained from 500 bootstrap replications resampled from the actual dataset with replacement of clusters.

Change in Market Debt Ratio from t-5 to t **(*TDM_t - TDM_{t-5}*)**	**(I) OLS**		**(II) Two-Stage Bootstrap**	
	Coef.	t-stat.	Coef.	95% interval
BW5MBA	-0.017***	(-11.6)	-0.013	[-0.015, -0.010]
Big Six Dummy	-0.030***	(-8.0)	-0.016	[-0.022, -0.011]
BW5MBA × *Big Six Dummy*	0.009***	(5.9)	0.0024	[0.001, 0.004]
Δ *Total Asset*	0.001***	(3.5)	0.001	[0, 0.002]
Δ *Market-to-book Asset Ratio*	-0.014***	(-19.13)	-0.014	[-0.016, -0.013]
Δ *Return on Asset*	-0.060***	(-8.9)	-0.058	[-0.071, -0.044]
Δ *Tangibility*	0.158***	(16.3)	0.157	[0.140, 0.175]
Δ *Unleveraged Z Score*	-0.003***	(-6.9)	-0.003	[-0.004, -0.002]
Δ *Dividend to Asset Ratio*	-0.851***	(-13.1)	-0.842	[-0.972, 0.715]
Δ *Stock Return Volatility*	1.084***	(18.6)	1.099	[0.979, 1.216]
Δ *Share Turnover*	-12.208***	(-11.6)	-12.49	[-14.47, -10.51]
Deviation from Target Debt Ratio	-0.386***	(-46.6)	-0.385	[-0.401, -0.369]
R-Square	0.27			
Firm-years/Replications	55,816		500	

Table 8: Target Adjustment Model and Auditor Choice - Additional controls for alternative informational intermediaries

Sample includes all Industrial Compustat firms with complete data for two or more adjacent years during 1974-2003. The dependent variable is *Market Debt Ratio* that equals the ratio of total debt to market value of assets. Explanatory variables include the lagged *Market Debt Ratio*, *Big Six* dummy as well as a set of control variables. *Big Six Dummy* equals one if a firm chose a Big Six Auditor, and zero otherwise. *Share Turnover* is the median value of shares traded (volume) in a month divided by shares outstanding over a twelve-month period. *Annual Stock Return* is the compounded monthly stock return in the past fiscal year. The number of analysts is the maximum number of analysts making annual earnings forecasts any month over a twelve-month period. Other control variables are defined in Table 2. *Debt Rating* dummy equals one if either senior or subordinated debt is rated by Standard & Poor's, and zero otherwise. All explanatory variables are measured one year before a firm's debt ratio is observed. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. Constant terms and year dummies are included in regressions but not reported. T-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations for a given firm.

***Market Debt Ratio* (*TDM*)**	**OLS**	
	Coef.	t-statistics
Big Six	-0.005***	(-4.3)
Number of Analysts	-0.000***	(-12.2)
Debt Rating	0.010***	(9.5)
Lagged Debt Ratio	0.842***	(259.1)
Log (Assets)	0.002***	(5.2)
Log (Age)	-0.006***	(-11.29)
Tangibility	0.021***	(10.0)
Industry Median Debt Ratio	0.026***	(6.1)
Return On Asset	-0.006	(-1.3)
Share Turnover	2.609***	(5.9)
Annual Stock Return	-0.002***	(-2.9)
Market-to-Book Asset Ratio	0.000	(-1.6)
R&D to Sales Ratio	0.005***	(-7.8)
R&D Dummy	0.007***	(8.9)
Un-leveraged Z Score	-0.000	(-0.4)
Dividend to Asset Ratio	-0.140***	(-7.5)
Stock Return Volatility	-0.171***	(-6.8)
Earning Volatility	-0.001***	(-9.7)
R-Square	0.74	
Firm-years	78,731	

Table 9: Market Timing and Auditor Choice - Additional controls for alternative informational intermediaries

Sample includes all Industrial Compustat firms with complete data for five or more adjacent years during 1976-2003. The dependent variable is *Change in Market Debt Ratio from t-5 to t.* Baker and Wurgler's "external finance weighted-average" market-to-book ratio (*BW5MBA*) is calculated from t-5 to t. *Accumulated Stock Retur*n (ASR) is obtained by compounding monthly stock returns from t-5 to t. *Big Six Dummy* equals one if a firm chose a Big Six auditor at t-5, and zero otherwise. The number of analysts is the maximum number of analysts making annual earnings forecasts any month between t-6 and t-5. *Debt Rating* dummy equals one if either senior or subordinated debt is rated by Standard & Poor's at t-5, and zero otherwise. *Deviation from Target Debt Ratio* is measured as the difference between a firm's debt to asset ratio and target debt ratio estimated in Table 3a. Constant terms and year dummies are included in the regressions, but not reported. Coefficients significant at 10%, 5% and 1% levels are respectively marked with *, ** and *** in superscripts. T-statistics in parentheses are calculated from the Huber/White/sandwich heteroscedastic consistent errors, which are also corrected for correlation across observations of a given firm.

Change in Market Debt Ratio from t-5 to t	**Past Stock Return (ASR)**		**Baker and Wurgler's Timing Measure (BW5MBA)**	
	Coef.	t-stat.	Coef.	t-stat.
BW5MBA / ASR	-0.014***	(-14.2)	-0.017***	(-11.7)
Big Six × BW5MBA / ASR	0.006***	(5.6)	0.009***	(5.9)
Nbr Analysts × BW5MBA/ASR	0.000**	(2.3)	0.000***	(2.3)
Debt Rating × BW5MBA / ASR	-0.008***	(-5.1)	-0.007	(-2.5)
Big Six Dummy	-0.014***	(-5.4)	-0.030***	(-7.9)
Number of Analysts	-0.000***	(-3.9)	-0.001***	(-3.9)
Debt Rating	0.014***	(4.3)	0.022***	(3.8)
Δ Total Asset	0.000***	(4.3)	0.001***	(4.9)
Δ Market-to-book Asset Ratio	-0.011***	(-17.6)	-0.014***	(-19.1)
Δ Return on Asset	-0.070***	(-10.8)	-0.060***	(-8.9)
Δ Tangibility	0.165***	(17.3)	0.157***	(16.2)
Δ Unleveraged Z Score	-0.002***	(-4.3)	-0.003***	(-6.8)
Δ Dividend to Asset Ratio	-0.728***	(-11.9)	-0.848***	(-13.1)
Δ Stock Return Volatility	0.925***	(14.0)	1.080***	(18.6)
Δ Share Turnover	-8.886***	(-8.5)	-12.164***	(-11.5)
Deviation from Target Debt Ratio	-0.364***	(-45.6)	-0.392***	(-46.7)
R-Square	0.27		0.27	
Firm-years	58,287		55,816	

Appendix: Control Variables in Leverage Regressions.

As mentioned in section 3, in our regressions, we control for a set of variables that have been shown by prior literature to influence capital structure (e.g. Frank and Goyal [2003,a]). Note that we propose reasonably well-accepted interpretations of the different control variables but that alternative interpretations may be possible. This, however, does not affect our main conclusions. As a robustness check, we also include, capital expenditure over assets, NBER recession dummies, corporate tax rate, whether the firm is in a regulated industry or in a "unique" industry (in the sense of Titman [1984]) as additional control variables in the leverage regressions. However, their effect is not robust across specifications and their presence does not affect our main results. Specifically, we consider the following control variables:

- Firm general characteristics: It is well documented (e.g., Harris and Raviv [1991]) that larger firms have higher leverage. Hence, we include the log of the book value of assets as a proxy for firm size. Firms having more tangible assets are expected to support more debt since these assets can be pledged as collateral. The net PPE-to-asset ratio measures the tangibility of the firm's assets. Research and development expense scaled by sales can proxy for a variety of firm characteristics, such as uniqueness of the product (Titman [1984]), information asymmetry or growth potential. We also introduce an R&D dummy which equals one if R&D expense is missing. In addition, Frank and Goyal [2003,a] show that industry leverage is one of the strongest determinants of corporate leverage; we therefore include the median industry leverage ratio, defined as the median of the ratio of total debt to the market value of assets - by three-digit SIC code and by year. We also control for the maturity of the firm by including the log of the age plus one, where age is measured as the number of years since the IPO year.

- Analyst coverage: Chang et al.[2004] stress the relevance of this variable. The data on analyst coverage are obtained from the I/B/E/S Historical Summary File. For each year, we set the number of analysts following a firm as the maximum number of analysts who make annual earning forecasts any month over a twelve-month period. We assume that firms not covered by I/B/E/S have no analyst coverage.

- Profitability: Various theories of capital structure suggest that leverage should be related to profitability. For example, it could be argued that profitability is a proxy for debt capacity, and there should therefore be a positive association between profitability and leverage according. We use the return on asset (the ratio of operating income before depreciation and amortization to assets) as the proxy for profitability.

- Liquidity: Share turnover is the median value of monthly shares traded (volume) divided by shares outstanding over a twelve-month period.

- Past Stock Performance and Growth Opportunities: Firms are more likely to issue equity when their stock price performance has been good. To control for the past stock performance, we use, in alternative specifications, two cumulative stock returns, which are obtained by compounding monthly returns from t-2 to t-1 and from t-6 to t-1, respectively. We also use the market-to-book ratio as a control for growth opportunities. Most studies document a negative relation between the market-to-book ratio and leverage, possibly because growth firms have greater incentives to avoid debt overhang problems. Since the POH maintains that firms finance their asset growth mainly with debt, we include asset growth as another control for growth opportunity.

- Payout Policy: Capital structure may be related to a firm's payout policy. If current profits are positively correlated with future profits, firms expecting higher future profits may payout more dividends as well as lower debt ratios by retiring debt. On the other hand, to the extent that higher future profits reflect higher debt capacity, firms that pay more dividends may choose higher debt ratios. We use the ratio of dividends to assets as our payout variable.

- Risk and Financial Constraints: We control for risk and financial constraints faced by the firm. In the Tradeoff theory, firms react to risk by reducing leverage. Hence, we include Altman's unleveraged Z-score, stock return volatility and earning volatility as controls for risk. Stock Return volatility is measured as the standard deviation of the daily stock return calculated for each firm for each year. Earning volatility is defined as the standard deviation of EBIT to total asset ratio over a firm's entire life in Compustat. We also include a dummy variable that takes the value of one if the firm has a debt rating assigned by Standard & Poor's. Rated firms are more credit worthy and have better access to corporate debt markets (Faulkender and Petersen [2003]).