

# THE IMPACT OF DEBT STRUCTURE ON AUDITOR CHOICE

Fang Sun, Queens College, CUNY  
Fengyun Wu, Manhattan College

## ABSTRACT

*We investigate the impact of a firm's debt structure on its choice of an auditor. Auditor choice is measured along two dimensions: brand name reputation and auditor industry specialization. Debt structure includes debt level and debt sources. We find that firms with high leverage are less likely to have brand name/specialist auditors, consistent with managerial opportunism. Prior studies document that brand name/specialist auditors are more effective at constraining income-increasing accruals. Because the likelihood and cost of covenant violations increase with leverage, firms avoid brand name/specialist auditors to keep their financial reporting flexibility. We further investigate whether the negative relation between auditor choice and client leverage differs between firms with only private debt and firms that also have access to the public debt market. While it holds for firms that have only private debt, the negative relation turns positive for firms that also have public debt. This difference suggests the dominant role of the debt contracting hypothesis for firms that have public debt. Firms bond themselves to brand name/specialist auditors to access the public debt market. This paper extends the auditor differentiation and auditor choice literature and contributes to the growing literature on the impact of the debt market on firms' financial reporting attributes.*

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## INTRODUCTION

Previous studies identify factors that affect a firm's choice of an external auditor (Francis and Wilson 1988; DeFond 1992; Francis et al. 1999; Lennox 2005; Godfrey and Hamilton 2005). One stream of research models the choice of high-quality auditors as an increasing function of agency costs between debt holders and managers. Since 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). Financial leverage is generally a proxy for the level of agency conflicts between debt holders and managers/shareholders. 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. The inconsistent results across these studies are not adequately explained. Using larger and more recent samples, we provide a more comprehensive analysis of the impact of debt structure on a firm's choice of an auditor. Specifically, we explore two related research questions. First, we re-examine the relation between debt level and auditor choice. The purpose is to test whether the relation has evolved and to identify the theory that best explains the relation. Second, because the demand for and the incentive to supply high-quality audits differ between public and private debt, we analyze whether the relation varies with debt composition. The variation could partially explain the inconsistent results in prior studies.

The development of our hypotheses is based on two streams of literature that link firms' accounting choices to the presence of accounting numbers in debt contracts. One is the efficient debt contracting hypothesis and the other is the effect of managerial opportunism in complying with debt covenants. The debt contracting hypothesis, based on the general agency cost theory of Jensen and Meckling (1976), argues that when agency costs are high, managers will bond themselves to higher-quality reporting and signal to the debt market that they are committed to protecting debt holders' interests. Since the auditor differentiation literature finds that Big N/specialist auditors provide higher-quality audits, firms with high leverage are more likely to have Big N/specialist auditors. The managerial opportunism hypothesis, however, argues that there are direct and indirect costs associated with covenant violation. Therefore, firms have strong incentives to make income-increasing accounting choices to avoid violating accounting-based covenants. Because the likelihood and cost of covenant violation increase with leverage, the incentive to manage earnings is stronger for firms with high leverage. So, firms with high leverage are more likely to avoid Big N/specialist auditors in order to maintain their financial reporting flexibility. It is an empirical question to examine which theory dominates the relation between auditor choice and leverage.

We find 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 auditors. This negative relation is consistent with the managerial opportunism hypothesis. Our 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, and more efficient monitoring of debt contracts. The differences in monitoring functions give rise to differences in the demand for higher-quality audits. 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 violating accounting-based covenants and hence to different incentives for providing higher-quality audit. Because there are more accounting-based covenants in private debt and the covenants are generally set tighter, firms with only private debt have more incentives to avoid Big N/specialist auditors.

We find that public and private debt has different impacts on auditor choice. For firms with only private debt, the likelihood of choosing a Big N/specialist auditor decreases with leverage. This negative relation does not hold, or even turns positive, for firms that also have public debt. Overall, the results suggest that firms avoid Big N/specialist auditors to retain their financial reporting flexibility, but bond themselves to brand name/specialist auditors to access the public debt market. Therefore, the managerial opportunism hypothesis dominates the relation between auditor choice and leverage for firms that only have private debt and the debt contracting hypothesis better explains the relation for firms that also have access to the public debt market. Our study extends the auditor differentiation and auditor choice literature. Rather than focus only on the demand from the debt market for high-quality audit as in prior studies, we consider managers' incentives to supply high-quality audits and provide a detailed explanation for the negative relation. Furthermore, we differentiate the impact that debt composition has on a firm's auditor choice decision. Our results suggest the potential difference in debt composition in the samples of prior studies might contribute to the inconsistent results.

## **BACKGROUND LITERATURE AND HYPOTHESIS DEVELOPMENT**

Prior research that examines the relation between auditor choice and the agency conflict between managers/shareholders and debt holders produces mixed results that are not adequately explained. One problem is that the theoretical arguments in these papers focus only on the demand from the debt market for high-quality audit. But the choice of auditor is eventually made by management. Their incentives to supply high-quality audit are not adequately discussed. In addition, these studies do not consider the impact of debt composition, while the interaction between demand for and supply of high-quality audit differs for

firms with different types of debt. Our analyses are based on 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. 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 debt contracting hypothesis focuses on the positive role of having accounting numbers in debt contracts. Specifically, to access the debt market and signal to the debt market that they are committed to protecting debt holders' interests, managers have incentives to bond themselves to high-quality financial reporting. The managerial opportunism literature, on the other hand, focuses on the negative impact of having accounting numbers in debt covenants. It relies on the argument that there are significant costs associated with covenant violations. Several studies find that the costs associated with covenant violations can be substantial including increased collateralization, increased interest rates, restricted borrowing, future financing options, investment opportunities and corporate governance (Beneish and Press 1993; Sweeney 1994; Chava and Roberts 2008; Nini et al. 2009)

A number of studies provide evidence on the relation between leverage and covenant violation. Leverage is frequently used as a proxy for the closeness to covenant violation (Press and Weintrop 1990, Dichev and Skinner 2002), although it might be a noisy one as suggested by Dichev and Skinner (2002). In addition, Billett et al. (2007) and Christensen and Nikolaev (2012) provide evidence that leverage is positively associated with the use of restrictive covenant protection and negative covenants that constrain managers' actions. As to the relation between cost of violating accounting-based covenant and leverage, Chen and Wei (1993) finds that creditors are more likely to grant a waiver to the firm with a lower leverage ratio. To summarize, because the likelihood and cost of violating accounting-based covenants increase with leverage, the managerial opportunism hypothesis suggests that managers with high leverage have strong incentives to make income-increasing accounting choices to avoid covenant violation. In summary, the two streams of literature described above make opposing predictions about managerial reporting behavior. Given the important monitoring role auditing has in the debt contracting process, we expect the opposing reporting incentives to have different impacts on firms' choice of auditors. We express the following hypotheses in alternative forms:

Hypothesis 1 (a): Firms with high leverage are more likely to have Big N/specialist auditors.

Hypothesis 1 (b): Firms that increase leverage are more likely to change to Big N/specialist auditors.

Hypothesis 1 (c): Big N audited firms with high leverage are more likely to have industry specialist auditors.

#### Segregating The Effect of Public and Private Debt on Auditor Choice

Public and private debt markets differ in monitoring functions and covenant features. The difference causes differences in demand for monitoring by external auditors and in managers' incentives to supply high-quality audits. Private debt holders have better access to the borrower's private information. They are typically monitoring experts and have better information processing capacity. In contrast, the incentive to engage in monitoring is weak for diffuse creditors of public debt due to the "free rider" problem. In terms of covenant features, 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). Even if a waiver of violation might be the likely response from the lender, the waiver is not costless. 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. 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 higher. 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 likelihood of violating accounting-based debt covenants is low, firms have less incentive to avoid Big N for the purpose of avoiding covenant violation. In summary, we have the following hypotheses regarding how the relation between auditor choice and leverage varies with debt sources:

Hypothesis 2 (a): firms with high leverage are less likely to have Big N/specialist auditors if they only have private debt.

Hypothesis 2 (b): firms with high leverage are more likely to have Big N/specialist auditors if they also have public debt.

## DATA AND METHODOLOGY

### Measures of Auditor Choice

We use two measures of auditor choice. The first, Big N, is a dichotomous variable that equals 1 if financial statements are audited by one of the Big N and 0 otherwise. The second, Specialization, is calculated as the audit firm's market share of the client firm's two-digit SIC industry, following prior literature (Craswell et al. 1995; Ferguson and Stokes 2002; Godfrey and Hamilton 2005; Lim and Tan 2008).

$$Specialization_{ik} = \frac{\sum_{j=1}^{J^{ik}} Sales_{ijk}}{\sum_{i=1}^{I^k} \sum_{j=1}^{J^{ik}} Sales_{ijk}}$$

Sales refers to the client firm's sales revenue. The numerator is the sum of sales of all 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, we 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.

### Auditor Choice and Leverage

We use both level and change models to test the relation between auditor choice and leverage. The level specification takes on the following form (We omit subscripts *t* and *i* from equations for presentation simplicity).

$$Big\ N/Specialization = \alpha_0 + \alpha_1Leverage + \alpha_2Size + \alpha_3Fixed\ assets + \alpha_4\ Cycle + \alpha_5P-E\ ratio + \alpha_6Issue + \alpha_7Loss + \alpha_8Regulation + \alpha_9R\&D + Industry + Year + \varepsilon \quad (1)$$

A logistic regression is used when the dependent variable is Big N and an ordinary least square regression is used when the dependent variable is Specialization. The definitions of the variables are as follows. Big N and Specialization are as previously defined. Leverage is the sum of short-term debt and long-term debt divided by total assets. Size is the natural logarithm of total assets; Fixed Assets is gross property, plant and equipment divided by total assets; Cycle is the sum of days' inventory and days' accounts receivable divided

by 30. P/E is price/earnings ratio at fiscal yearend; Issue is the amount of net new equity issues during the year scaled by total assets; Loss is an indicator variable that equals one if current income is negative and zero otherwise; Regulation equals one if an observation is in a regulated industry and zero otherwise. 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). R&D is research and development expenses scaled by total assets. Based on prior research, the model includes several control variables that are found to be correlated with auditor choice. We include Size because large firms are more likely to choose large auditors due to their operational complexity and geographic diversification. We 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. We include the variable Issue to further control the effect of equity issuance on auditor choice. We control for Loss because Big N auditors are less willing to audit firms in financial distress due to litigation concerns. We include Regulation because Francis et al. (1999) posit that regulation might induce demand for Big N auditors. We 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.

A change specification is used because it can mitigate the correlated omitted variable problem. In the level analyses, the results can be biased if we 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 we 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. Our test of auditor change and change in leverage takes on the following logistic regression model:

$$\Delta\text{Big N}/\Delta\text{Specialization} = \alpha_0 + \alpha_1\Delta\text{Leverage} + \alpha_2\Delta\text{Size} + \alpha_3\Delta\text{Fixed assets} + \alpha_4\Delta\text{Cycle} + \alpha_5\Delta\text{P-E ratio} + \alpha_6\Delta\text{Issue} + \alpha_7\Delta\text{Loss} + \alpha_8\Delta\text{R\&D} + \text{Industry} + \text{Year} + \varepsilon \quad (2)$$

$\Delta\text{Big N}$  takes on values of 1, 0 or -1. If the change in auditor is from a non-Big N to a Big N auditor,  $\Delta\text{Big N}$  is coded as 1; if it is from a Big N to a non-Big N,  $\Delta\text{Auditor}$  is -1, 0 represents no change in auditor or change within brand name. 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.

#### 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, we augment model 1 with an indicator variable Pubic and expect  $\alpha_3$  to be positive.

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

Public is an indicator variable that is coded as 1 if a firm has an S&P long-term domestic issuer credit rating or a short-term domestic issuer credit rating for that year, 0 otherwise. The other variables are defined as in model 1. We 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. We select our sample from COMPUSTAT North America Fundamental Annual 1988 to 2013 that include initially 285,726 observations. Observations with missing test or control variables are deleted (143,544 observations left). We truncate observations falling into the top and bottom 1 percent of continuous independent variables. After this procedure, the full sample has 130,307 firm-years, of which 25,163 observations have both public and private debt and 105,144 observations have private debt only. 97,334 are audited by Big N and 32,973 are audited by non-Big N auditors. Table 1 presents the descriptive statistics for variables used in the auditor choice and leverage models. For the full sample, 77.6 percent use Big N auditors and the mean industry market share is 17 percent. Firms on average have a leverage 0.251, P-E ratio 10.745, and operating cycle of 5.179 months. The total assets are on average \$1.7 billion, 53.6 percent are fixed assets. Net new equity issuance is 5.6 percent and R&D expenses are 4 percent of total assets. Firm-years with losses comprise 36.3 percent of the sample. Comparison of the private sample and the public-private sample suggests that 96.5 percent of observations in the public-private sample use Big N auditors and 73.1 percent of observations in the private sample use Big N auditors. The public-private sample also uses more of industry specialist auditors (24.4 percent vs 15.2 percent). They have higher leverage. The average P/E ratio of the public-private sample is higher, suggesting more growth. The net equity issuance and R&D spending as a percentage of total assets is much higher for the private debt sample (6.9 percent vs 0.2 percent for net equity issuance and 4.7 percent vs 1.4 percent for R&D spending).

Table 1: Descriptive Statistics

Variable	Full Sample			Public Debt			Private Debt		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Big N	0.776	1.000	0.417	0.965	1.000	0.185	0.731	1.000	0.444
Specialize	0.170	0.141	0.141	0.244	0.223	0.149	0.152	0.131	0.132
Leverage	0.251	0.202	0.272	0.354	0.328	0.212	0.226	0.155	0.279
Size	1699	146	5668	6629	2512	10805	519	83	2162
Fixed assets	0.536	0.442	0.411	0.672	0.635	0.407	0.504	0.401	0.405
Cycle	5.179	3.708	6.723	4.097	3.255	4.116	5.438	3.844	7.184
P-E ratio	10.745	10.526	33.045	14.294	14.300	30.412	9.896	9.019	33.589
Issue	0.056	0.001	0.176	0.002	0.000	0.058	0.069	0.001	0.191
Loss	0.363	0.000	0.481	0.224	0.000	0.417	0.396	0.000	0.489
Regulation	0.038	0.000	0.191	0.111	0.000	0.314	0.021	0.000	0.142
R&D	0.040	0.000	0.090	0.014	0.000	0.033	0.047	0.000	0.098

The samples cover the time horizon of 1988 to 2013. There are 130307 observations in the full sample. The public debt sample has 25,163 observations and the private debt sample has 105,144 observations. Big N is an indicator variable that equals one if an auditor is one of the Big N and zero otherwise. Specialize 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 and long-term debt divided by total assets. Size is the natural logarithm of total assets. Fixed assets is the gross property, plant and equipment 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 divided by earnings per share excluding extraordinary items. Issue is the net new equity issue during the year scaled by total assets. Loss is an indicator variable that equals one if current income 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 scaled by total assets.

RESULTS

Auditor Choice and Leverage

The Pearson correlation analysis presented in table 2 indicates a high level of correlation between choice of Big N auditors and industry specialization (over 50 percent). Therefore, in this paper, we also use a subsample consisting of only Big N audited firm-years to identify the additional impact on industry specialization. The univariate analysis indicates a negative relation between auditor choice and leverage.

Table 2: Pearson Correlation Matrix

Variables	Big N	Specialize	Leverage	Size	Fixed Assets	Cycle	P-E Ratio	Issue	Loss	Regulation	R&D
Big N	1										
Specialize	0.537*	1									
Leverage	-0.054*	-0.014*	1								
Size	0.138*	0.207*	0.040*	1							
Fixed assets	0.059*	0.074*	0.193*	0.102*	1						
Cycle	-0.072*	-0.061*	0.012*	-0.036*	-0.195*	1					
P-E ratio	0.085*	0.056*	-0.066*	0.047*	0.004	-0.048*	1				
Issue	-0.079*	-0.099*	-0.078*	-0.102*	-0.135*	0.052*	-0.081*	1			
Loss	-0.170*	-0.126*	0.154*	-0.135*	-0.035*	0.100*	-0.533*	0.228*	1		
Regulation	0.043*	0.071*	0.103*	0.187*	0.189*	-0.047*	0.010*	-0.043*	-0.058*	1	
R&D	-0.021*	-0.045*	-0.111*	-0.075*	-0.159*	0.079*	-0.089*	0.219*	0.259*	-0.085*	1

*This table presents the Pearson correlation matrix for the full sample that has 130,307 observations covering the time horizon of 1988 to 2013. \* indicates significance at the 0.01 level or better.*

Table 3 presents the results of testing the impact of leverage on auditor choice for all years. The multivariate analysis confirms a significantly negative relation between choice of Big N/specialist auditors and leverage. The coefficient on leverage is -0.743 for the brand name regression and -0.020 for the industry specialization regression. Both are highly significant. Table 3 also presents the results of testing the additional impact on industry specialization by estimating the model separately for the Big-N audited firm-year sub-sample. For this sub-sample, the negative relation between the choice of industry specialist auditor and leverage still holds. The results using the two alternative measures of industry specialization (not tabulated here) are qualitatively the same as using the continuous measure. Overall, the results show that it is less likely that a firm with high leverage will have a Big N/specialist auditor, which is consistent with the managerial opportunism hypothesis.

Table 3: Auditor Choice and Leverage: Pooled Regressions

Variables	Pred. Sign	Big N		Specialization		Specialization (Big-N Audited Firm-Years)	
Intercept	?	-3.804	(0.00)	0.029	(0.00)	0.180	(0.00)
Leverage	?	-0.743	(0.00)	-0.020	(0.00)	-0.006	(0.00)
Size	+	0.861	(0.00)	0.025	(0.00)	0.008	(0.00)
Fixed assets	+	0.227	(0.00)	0.006	(0.01)	0.003	(0.02)
Cycle	+	-0.012	(0.00)	0.000	(0.00)	0.000	(0.56)
P-E ratio	+	0.001	(0.00)	0.000	(0.29)	0.000	(0.28)
Issue	+	0.101	(0.03)	0.002	(0.33)	0.001	(0.74)
Loss	-	0.160	(0.00)	0.002	(0.04)	-0.001	(0.21)
Regulation	+	-0.527	(0.00)	-0.007	(0.00)	-0.002	(0.37)
R&D	+	3.969	(0.00)	0.101	(0.00)	0.018	(0.00)
Adj. R <sup>2</sup>		0.085		0.074		0.079	

The full sample has 125,483 observations, among which 97,334 are audited by Big N and 28,149 are audited by non-Big N auditors. The samples cover the time horizon of 1988 to 2013. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.

Table 4 presents the results of using a change model. The coefficient for  $\Delta$ Leverage is significantly negative for brand name measure of auditor choice. It indicates that it is less likely for a firm that increases its leverage to change to a Big N auditor, confirming the results in table 4. We do not find significant relation between change in leverage and change to industry specialist auditor though.

Table 4: Auditor Change and Leverage Change

Variables	Big N		Specialization	
Intercept1	-4.443	(0.00)	-0.005	(0.00)
Intercept0	3.745	(0.00)		
$\Delta$ Leverage	-0.383	(0.00)	-0.004	(0.02)
$\Delta$ Size	0.519	(0.00)	0.006	(0.00)
$\Delta$ FixedAssets	0.027	(0.83)	-0.001	(0.49)
$\Delta$ Cycle	0.007	(0.06)	0.000	(0.03)
$\Delta$ PE	0.000	(0.65)	0.000	(0.79)
$\Delta$ Issue	0.159	(0.10)	-0.010	(0.00)
$\Delta$ Loss	-0.037	(0.40)	-0.001	(0.42)
$\Delta$ R&D	-0.376	(0.27)	0.005	(0.42)

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 2013. For our sample, there are 1,267 changes from a non-Big N to a Big N and 2,414 from a Big N to a non-Big N. The dependent variable is  $\Delta$ Big N.  $\Delta$ Big N takes on values of 1, 0, or -1. If the change in auditor is from a non-Big N to a Big N, then  $\Delta$ Big N is coded as 1; if it is from a Big N to a non-Big N, then  $\Delta$ Big N is coded as -1, 0 for the rest observations. Leverage is the sum of short-term debt and long-term debt divided by total assets. Size is the natural logarithm transformation of total assets. Fixed assets is the gross property, plant and equipment 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 divided by earnings per share excluding extraordinary items. Issue is the net new equity issue during the year scaled by total assets. Loss is an indicator variable that equals one if current income is negative and zero otherwise. R&D is the research and development expense scaled by total assets. We also control for year and industry fixed effects. P-values are reported in parentheses.



Segregating the Effect of Public and Private Debt on Auditor Choice

Table 5 presents the results of testing the different impact of public and private debt on the choice of auditors. The coefficient of Leverage represents the effect of leverage on auditor choice when firms have only private debt. We expect it to be negative. Firms with high leverage are less likely to have Big N/specialist auditors when they only have private debt. The coefficient of Leverage\*Public represents the incremental effect of leverage on auditor choice when the firms also have public debt. We expect it to be positive. The results are largely consistent with our predictions. The coefficients on Leverage and Leverage\*Public are -0.850 and 1.023 respectively for the brand name measure, -0.028 and 0.048 respectively for the industry specialization measure, and -0.011 and 0.009 respectively for specialization (Big-N audited firm-years), all statistically significant.

The statistical significance of the coefficient on Leverage\*Public confirms different sources of financing have different impact on firms’ auditor choice decision. The managerial opportunism hypothesis better explains auditor choice behaviors when firms have only private debt. Because there are more accounting-based covenants and covenants are set tighter in private debt, firms with high leverage avoid brand name/specialist auditors to keep their financial reporting flexibility. In addition, because private debt holders have better access to private information and are monitoring experts, there is less demand for external monitoring from auditors. The debt contracting hypothesis dominates the relation between leverage and auditor choice when firms have public debt. The incentive to engage in monitoring is weak for diffuse creditors of public debt due to the “free rider” problem, so there is more demand for monitoring from high-quality external auditors. In addition, because there are less accounting-based covenants in public debt and technical violation is rare, managers have less incentive to avoid Big N/specialist auditors. Instead, they bond themselves to high-quality audits to access the public debt market.

Table 5: Segregating the Effect of Public and Private Debt on Auditor Choice

Variables	Pred. Sign	Big N	Specialization	Specialization-Big-N Audited Firm-Years
Intercept	?	-3.720 (0.00)	0.036 (0.00)	0.189 (0.00)
Public	?	-0.108 (0.13)	-0.005 (0.01)	0.010 (0.00)
Leverage	?	-0.850 (0.00)	-0.028 (0.00)	-0.011 (0.00)
Leverage*Public	+	1.023 (0.00)	0.048 (0.00)	0.009 (0.03)
Size	+	0.845 (0.00)	0.024 (0.00)	0.006 (0.00)
Fixed assets	+	0.229 (0.00)	0.006 (0.00)	0.003 (0.01)
Cycle	+	-0.012 (0.00)	0.000 (0.00)	0.000 (0.40)
P-E ratio	+	0.001 (0.00)	0.000 (0.04)	0.000 (0.29)
Issue	+	0.086 (0.07)	0.001 (0.67)	0.001 (0.82)
Loss	-	0.155 (0.00)	0.001 (0.23)	0.001 (0.42)
Regulation	+	-0.547 (0.00)	-0.007 (0.01)	-0.002 (0.38)
R&D	+	3.954 (0.00)	0.101 (0.00)	0.015 (0.01)
Adj. R <sup>2</sup>		0.121	0.113	0.1340

*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). The public debt sample has 25,163 observations and the private debt sample has 105,144 observations. The samples cover the time horizon of 1988 to 2013. A logistic regression is used for the brand name test and an ordinary least square regression is used for the industry specialist regression.*

**CONCLUSION**

Based on the debt contracting theories, we examine the relation between a firm’s financial leverage and its auditor choice decision and whether the relation varies with its debt sources. We find that financial leverage is negatively associated with the likelihood of having a Big N/specialist auditor and that 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 debt contracting hypothesis. We 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. The results suggest that borrowers balance the cost and benefit of having Big N/specialist auditors in each type of debt structure and yield to the demand from the public debt market for Big N/specialist auditors, but avoid such auditors when they only have private debt. The results 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/specialist auditor. Furthermore, this paper differentiates the impact of different debt sources on a firm's auditor choice decision. This is important because the distinction between debt of different sources in covenant features and monitoring functions has long been recognized in the finance literature. A potential future extension of our paper is to examine auditor industry expertise on an office level and provide more accurate classification of public and private debt samples by going beyond the availability of S&P credit ratings.

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## **BIOGRAPHY**

Dr. Fang Sun is an Associate Professor of Accounting at Queens College, CUNY. She can be contacted at: Department of Accounting & Information Systems, Queens College, 65-30 Kissena Blvd, Flushing NY 11367.

Dr. Fengyun Wu is an Assistant Professor of Accounting at Manhattan College. She can be contacted at: Department of Accounting, Business Analytics, CIS, and Law, O'Malley School of Business, Manhattan College, 4513 Manhattan College Parkway, Riverdale, NY 10471.