



Do audited firms have lower cost of debt?

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ABSTRACT: The purpose of this study is to investigate if audited financial statements add value for firms in the private debt market. Using an instrumental variable method, we find that firms with audited financial statements, on average, save 1.26 percentage points on cost of debt compared to firms with unaudited financial statements. We also find that using the big, well-known auditing firms does not yield additional cost of debt benefits. Lastly, we find that the effect of audit on cost of debt varies between industries. As such, we find that firms in industries that have been identified in previous studies to have a more complex information structure, and therefore more complex auditing process, also save more on cost of debt relative to other industries when audited.

Keywords: Audit reform, Audit complexity, SMEs, Private limited firms

JEL-codes: D22, D24, M42, M48

1. Introduction

The long-run economic progress of a country is, to a large extent, determined by the level of investments creating a productive stock of capital. Investments are, however, in most cases associated with risk, and having access to high-quality information regarding the well-being of firms trying to raise external capital for investment purposes can be of vital importance for financiers. This creates an incentive for well-managed firms to provide high-quality information for financiers to have access to capital at a lower cost than less well-managed firms. A remaining question is then how to ensure that the financiers know that the information given is of high quality, creating a potential motive for the firm to use external audits. If audited information is regarded to be of higher quality by financiers, this would then lead to lower cost of debt (*CoD*) for firms with audited financial statements.

The question we would like to address is thus, “Do audited financial statements add value in the private debt market?” One way to answer that question is to look at the economic consequences, if any, of having audited financial statements, i.e. do firms with audited financial statements have lower *CoD*? We know little about such effects in general (Leuz & Wysock, 2016), and furthermore, this research question is largely understudied, especially for private firms (Vanstraelen & Schelleman, 2017). Also, the results from previous studies are mixed. For instance, Kim, et al. (2011), Minnis (2011), and Huguet & Gandía (2014) found that audit decreases *CoD*, while Koren, et al. (2014) found the opposite. Finally, Allee & Yohn (2009) did not find any significant association between audit and *CoD* for private limited firms.

Raising capital for investments can be of special importance for small and medium-sized enterprises (SMEs), and such firms are significant contributors to economic growth (Birch, 1979). According to an EU report (European Commission, 2011), SMEs account for two-thirds of the private sector employment and 99% of the firms in Europe. Of all European firms, 92% are micro firms with fewer than 10 employees. Just as in most other economies, small- and medium-sized firms make up the largest share of firms in the Swedish economy. There are about 1.2 million firms in Sweden of which about 97% are micro firms. Together with small- and medium-sized firms they make up about 99% of all firms, while the remaining 1% are large firms with more than 250 employees (Tillväxtverket, 2017). In Sweden, lending to non-financial corporations from monetary financial institutions amounted to approximately 1.7

trillion SEK¹ as of December 2014 (Statistiska centralbyrån, 2017). In recent years, smaller firms applied for lesser loans and credits compared to larger firms, and the rejection rate for loans and credits was higher among service-sector firms compared to other industries (Tillväxtverket, 2017).

SMEs are important customers for commercial banks. According to a survey of 91 banks from 45 countries by Beck, et al. (2008), on average, banks' loan exposure to SMEs was between 11-13% compared to 32% towards large firms. The exposure can be significantly higher (up to 85%) for banks that specialize in SME financing (Bruns & Fletcher, 2008). According to OECD (2017), the median value of SME's loan share as a percentage of total corporate loans worldwide was about 40% in 2013, with Slovakia and Portugal having the highest share at 80%, while Canada and the Russian Federation had the lowest at 20%. The report also noted that the new loan share for SME's showed an increasing trend for most countries in recent years. Thus, gathering more evidence on the economic consequences of accounting and auditing decisions of SMEs is important for policy makers, the SMEs themselves, and bank managers as well.²

Sweden provides an interesting setting for analyzing the value of audited financial statements as it allows the relaxation of some of the restrictions of previous studies. First, Sweden has a well-developed capital market (Bruns & Fletcher, 2008), but the primary source of external financing for small firms comes from banks (Winborg & Landström, 2000). Second, in 2010, there was a regulatory reform introduced making audits voluntary for firms fulfilling certain requirements. The reform was in line with the European Commission's (2011) directive to reduce the administrative burden of SMEs. Sweden was one of the last countries to adopt this EU-wide reform, and prior to the reform all firms were subject to mandatory audit. Sweden also has one of the lowest threshold levels to opt out of mandatory audit, second only to Finland. The threshold levels thus allow only very small firms to opt out of audit.³

Methodologically, the identification of how auditing affects the firm's *CoD* is quite difficult since firms may choose auditing to systematically reduce *CoD*, creating a selection bias. In such a situation, OLS estimation will be biased as the indicator variable for a firm being audited will be correlated with the error term. To take this problem into consideration, we use an

¹ 1.7 trillion SEK = 175 billion Euro, exchange rate 2017-10-29. Throughout the paper all exchange rates used are from 2017-10-29.

² For a more detailed discussion about the importance of empirical evidence on economic consequences of disclosure and financial reporting regulation, see Leuz & Wysock (2016).

³ See Appendix A for a description of the Swedish reform along with the threshold levels for mandatory audits in other European countries.

instrumental variable estimator to identify how auditing affects firms' *CoD*, using the above-mentioned Swedish reform to create our instrumental variable.

This is, however, only part of the difficulty in measuring how *CoD* is affected by having audited financial statements since there are several other factors suggested in the literature that affect firm level *CoD*. As the reform was focused on micro firms, we need to ensure that firm size does not drive the results, and as such we control for firm size and several other variables that could affect firm-level *CoD* in the empirical section of the paper.

Our results show that auditing reduces *CoD* with, on average, 1.26 percentage points, indicating that audits are deemed to contain significant information by financiers. There has also been a discussion that audits made by the well-known Big6 auditing firms are of special value for financiers as they have been deemed to be of higher quality than audits made by the average auditing firm.⁴ We found no evidence of that using Big6 auditing firms, in fact, on average increased the *CoD* of the firms somewhat. Lastly, we found that industries, such as professional services, training, utilities, real estate, information and communications, and hotel and restaurants save more on *CoD* from financial statement audit than firms in other industries.

Our study contributes to the literature in several ways: Firstly, we provide unbiased estimates in a European private-firm setting that a financial statement audit, mandatory or not, reduces *CoD*. We do so in a setting where private debts are the only source of external financing for these private firms since they do not have access to public debts, and approximately half of the firms move from a mandatory audit regime to a voluntary audit regime, due to an EU-wide regulatory reform to reduce the administrative burden for SMEs. Secondly, we contribute to the discussion “if lenders look at audit choice or auditor choice or both”, finding that audit choice is more important than auditor choice. Lastly, we provide the first evidence that the benefits of an audit (in terms of reduced *CoD*) vary across industries due to the variation of complexity of information structure and the audit process across the different industries.

The remainder of the paper is organized as follows. Section 2 discusses prior literature and presents our hypotheses. Section 3 presents the data, the empirical model and our estimation results. Section 4 summarizes our results and discussion.

⁴ The Big4 auditing firms consist of PricewaterhouseCoopers, Ernst and Young, Deloitte and KPMG. In Sweden, BDO and Grant Thornton are usually also included as big auditing firms that in addition to the Big4 make up the Big6 (Vourc'h & Morand, 2011).

2. Prior literature and the hypothesis

One of the best ways to describe the role of audit and how it developed is perhaps through the lens of agency theory.⁵ Even though the premise is largely applied to bigger firms, agency problems may still persist in smaller firms since they are also complex and diverse (Eisenhardt, 1989; Ang, 1992). Though certain stakeholders are placed closer to smaller firms (Dedman, et al., 2014), some SMEs often have high information asymmetries (Fenn, 2000; Santos, 2006), especially those that look to raise funds through external debt financing. Since there exists a principal-agent relationship between the firm and the lender (Eisenhardt, 1989; Pentland, 1993; Power, 1999), firms that look to raise funds through external debt will actively seek ways to improve the quality of their accounting information (Burgstahler, et al., 2006), and thereby reduce the information asymmetry between the firm and the lender (Jensen & Meckling, 1976). Auditing may not guarantee better quality of accounting information, but when combined with the social construct of the accounting standards and the accounting profession together they suggest that auditing can provide higher assurance of better quality accounting information (Pentland, 1993; DeFond & Zhang, 2014). Thus, external audit is expected to add value (Power, 1996), and Clatworthy & Peel (2013) found that unaudited financial statements of small private firms were twice as likely to contain accounting errors compared to audited financial statements of similar firms. Thus, from an agency theory point of view, audited financial statements should reduce firms' *CoD* as they reduce the information asymmetry between the firm and the lender (Jensen & Meckling, 1976). This leads to our first hypothesis:

H1: Firms that are audited will have lower cost of debt compared to firms that are not audited, all else being equal.

Prior literature suggests that using well-known Big auditing firms improves accounting quality (DeFond & Jiambalvo, 1991; Teoh & Wong, 1993; Becker, et al., 1998), and that better accounting quality results in lower *CoD* (Mansi, et al., 2004; Pittman & Fortin, 2004). On the other hand, Fortin & Pittman (2007) conclude that private firms do not benefit from better yield spreads or credit rating of public debt from the retention of a well-known Big auditor. However, there is not much evidence of private firms that solely depend on private debts for external funding benefiting from an audit by well-known Big auditing firms, except for some recent studies. Kim, et al. (2011), using a sample of Korean firms, found that the appointment of a well-known Big auditing firm does not significantly reduce the firm's *CoD*, and Huguet &

⁵ See Agency theory and the role of audit, Institute of Chartered Accountants in England & Wales (2005).

Gandía (2014) found similar results for a sample of Spanish firms. On the other hand, Karjalainen (2011), studying how auditing quality affected private firms' *CoD* in Finland, found that audits by well-known Big audit firms tended to decrease *CoD*. Since the Swedish private firm-setting is more similar to the Finnish private firm-setting, as are the financial systems (Hyytinen & Pajarinen, 2001), we hypothesize:

H2: Firms that chose to be audited by Big6 auditing firms have lower cost of debt compared to firms that audit with non-Big6 auditing firms, all else being equal.

Previous studies have also found that auditing cost varies across industries and, among other reasons, attributed these differences in costs to differences in the complexity of the auditing process for different industries (Firth, 1985; Anderson & Zéghal, 1994; Hay, Knechel, & Wong, 2006; Gonthier-Besacier & Schatt, 2007; Cahan, Jeter, & Naiker, 2011; Hassan & Naser, 2013; Kikhia, 2015). Past studies have shown that the information & communications industry (Gonthier-Besacier & Schatt, 2007) pays significantly higher audit costs, while firms in transportation communication and utilities industries (Simunic, 1980; Anderson & Zéghal, 1994; Carcello, Hermanson, Neal, & Riley, Jr., 2002) pay significantly lower audit costs. The findings for the manufacturing industry are mixed. For instance, Kikhia (2015) found manufacturing pays significantly higher audit costs, while Hassan & Naser (2013) found manufacturing firms pay significantly lower audit fees compared to service and retail firms. On the other hand, Anderson & Zéghal (1994) did not find any significant difference between the mining and manufacturing industries when compared separately to other industries. If auditing provides information for financiers, we expect firms in industries with more complex information structures and more complex auditing processes to have larger reductions in *CoD* from financial statement audits. Thus, for example, we expect the effect of audited financial statements on *CoD* to be larger in the information and communication industry and lower in the transportation industry, compared to the average effect for all other types of firms. We also expect the effect to be relatively higher for the wholesale and retail industry and services industries, compared to the manufacturing industry, since wholesale and retail, and services may have more extensive inventory and knowledge-based assets, respectively, and firms with such attributes are argued to be more difficult to audit (Hay, Knechel, & Wong, 2006). This leads to our third hypothesis:

H3: The magnitude of the effect of audits on CoD will vary across industries due to differences in the complexity of the auditing process.

3. Empirical Analysis

3.1. Data

The data for this study is collected from the Retriever database, containing corporate information of all registered limited liability (both listed and non-listed) firms in Sweden. It should be noted that we only have information about which firms that were audited for one year, 2013, and that this is a cross-sectional study. Our estimations are run on a sample of 123 774 surviving firms in 2014 which were registered prior to 31st December 2006. Our study is thus based on surviving firms over that period, and inference cannot be drawn for firms that made an entry or exit during the study period. We arrived at the dataset used in the regression analysis in the following manner (Table 1):

[Table 1 about here]

The Swedish audit reform was introduced in November of 2010, and we will use the threshold levels for voluntary audits available for the firm to create our instrumental variable. If using the threshold level of the reform on data for the firm in 2013, we would still have the problem of firms self-selecting into auditing, so in order to create an exogenous instrumental variable we use firm level data for 2009, one year before the reform was introduced or even presented to parliament or the public, to create our instrument. We use the actual threshold level for voluntary audits based on number of employees, total assets and total sales introduced by the Swedish Government in the November 2010 reform, but on firm data for 2009, and thus have an instrumental variable that cannot be affected by self-selection into treatment.

The database contains historical financial information on about 574 873 firms, but it includes many inactive firms. We first eliminated firms registered after 31 December 2006, since our calculation of the exogenous instrument in 2009 requires data for number of employees, total assets and total sales for the financial years 2007 and 2008, as the threshold levels in year t is determined based on the values of the parameters in years $t-1$ and $t-2$. Next, we eliminated firms that were not active after 31 December 2014, by only including firms that had submitted a financial report for the year 2014. Then we excluded firms in the finance and insurance industry and public administration, since they are subject to stricter or different rules and regulations regarding auditing compared to firms in other industries. Furthermore, we eliminated listed firms, since they are still subject to mandatory audit and thus not affected by the 2010 audit reform. Finally, we removed firm observations where calculated CoD was less than zero and/or

when the total reported value of plant, property and equipment was more than total assets, resulting in a dataset containing 123 774 firm observations.

3.2. Empirical model and descriptive statistics

In this section we discuss the regression model, the variables used in the analysis, and their descriptive statistics. The regression model to be estimated is written as follows:

$$\begin{aligned}
 CoD_i = & \beta_0 + \beta_1 Audited_i + \beta_2 AudBig6_i + \beta_3 ICR_i + \beta_4 LR_i + \beta_5 PPE\ share_i \\
 & + \beta_6 Leverage_i + \beta_7 Ln_TA_i + \beta_8 Growth_i + \beta_9 ROA_i \\
 & + \beta_{10} Neg.Equity_i + \beta_{Industry} + u_i
 \end{aligned} \tag{1}$$

Cost of Debt (CoD): The dependent variable *CoD* is calculated following Minnis (2011), and Huguet & Gandía (2014), and was calculated as reported external interest expenses divided by the average of bonds, long-term loans from credit institutions, other long-term liabilities, short-term liabilities from credit institutions and other short-term liabilities at the beginning and end of 2013. In line with previous studies (Pittman & Fortin, 2004; Minnis, 2011), we excluded firms with negative or extremely high values of *CoD* to make sure these extreme observations did not affect our regression results. Without any restriction on upper and lower limits on *CoD*, in 2013, the mean *CoD* for the total sample was 8.8%, the median was 1.0%, while 95% of firms reported *CoD* less than 8.0%, and 99% of the firms reported *CoD* less than 26.1%. According to OECD (2016), in 2013, the average interest rate for SMEs in Sweden was 3%.

The descriptive statistics in Table 2, where the mean *CoD* is 3.11% with a standard deviation of 3.29%, is based on the restriction that reported *CoD* is greater than 0% and less than, or equal to, 30%.⁶ The lower limit is chosen since it seems unreasonable that lenders would pay to finance the firms. Although previous studies have also used an upper limit on the *CoD* (Minnis, 2011; Kim, et al., 2011), there is no clear-cut rule that has been used consistently to determine the limit. As such, we chose the upper limit to be 30% after having considered the distribution of *CoD* among the firms in our sample, and as robustness checks of how this choice will affect our results, we also run additional regressions increasing the upper limit of *CoD* in steps up to using a 150% cut-off. Lastly, additional robustness check estimations were run after logarithmic

⁶ Untabulated two-way median band plots show that the differences in *CoD* are small for the two groups of firms (audited versus unaudited) when the total debt is below 200 000 SEK (20 600 Euros), but more substantial around 100 000 SEK (10 300 Euros) and 300 000 SEK (30 900 Euros) in total debts, and that unaudited firms rarely borrow at median values higher than 350 000 SEK (36 050 Euros). It must also be noted that an average audited firm has total long-term debt of 23 million SEK (236 915 Euros), and an average unaudited firm has total long-term debt of 627 000 SEK (64 585 Euros).

transformation⁷ of the *CoD* variables, the results of which are presented in Table A4 in the Appendix.

Audited: The identification of how auditing affects the firm's *CoD* is quite difficult for several reasons. One of the reasons is that there exists a simultaneous relationship between the firm's *CoD* and the firm's decision to audit their financial statements (Minnis, 2011; Koren, et al., 2014; Huguet & Gandía, 2014), a phenomenon that numerous past studies drawing inference on how auditing affects *CoD* have failed to capture (Kim, et al., 2011; Huguet & Gandía, 2014). Since the choice of being audited is endogenous, OLS estimation will be biased as the variable audited is correlated with the error term. To take this problem into consideration, we use a two-stage least square (2SLS) instrumental variable (IV) estimator to identify how being audited affects firms' *CoD*.

An indicator variable equal to one, if the firm was audited in 2013 (*Audited*), and zero otherwise is our endogenous variable to be instrumented. In our sample, approximately 77.6% of the firms audited their financial statements in 2013, while 22.4% did not. Our endogenous variable *Audited* will be instrumented using the variable *Reform 2010*, which is an indicator variable equal to one, for firms that fulfilled the requirements for voluntary audit, based on information from the year 2009, and equal to zero otherwise.⁸ Fulfilling the requirements of the audit reform clearly influences whether or not the firm will be audited, while being below or above the mandatory audit threshold level should not in itself influence the firm's cost of debt after controlling for firm size and other relevant exogenous variables. Furthermore, since the firms were unaware of the reform and its requirements at the time we measured the instrumental variable, there is no reason to believe that it is correlated with the error term of the regression.⁹ In our sample, 46.9% of the firms would have been below the mandatory audit threshold level had the reform been introduced in 2009, while 45.9% of the firms were actually below the mandatory audit threshold levels in 2013.

AudBig6: To measure the effect of being audited by a Big6 audit firm, an indicator variable equal to one, if being audited by a Big6 firm, is included in the model. About 14% of the audited

⁷ Since the distribution of *CoD* is skewed to the right and principally should be strictly positive.

⁸ As explained in Section 3.1, in line with the Swedish audit reform of November 2010, the parameter values in 2007 and 2008 are used to determine if firms would have been below or above the mandatory audit threshold in 2009.

⁹ Note that the Swedish Reform Bill was passed in the parliament on 21 June 2010 and the specifics were not made public until after that. The reform was effective from November 2010. Thus, we believe that firms could not have predicted and adopted their behavior to the threshold levels of the reform in 2009.

firms chose a Big6 auditor. A robustness check with Big4 audit firms instead of Big6 is presented in Table A5 in the appendix, and the results are similar to those presented below.

Following Minnis (2011), Kim, et al., (2011), and Koren, et al., (2014), we also include control variables, such as liquidity ratio (*LR*), interest coverage ratio (*ICR*), plant, property and equipment share (*PPE_share*), debt by equity (*Leverage*), log of total assets (*Ln_TA*), sales growth (*Growth*), return on assets (*ROA*), and an indicator variable equal to one for firms with negative equity (*Neg. Equity*). To reduce the risk of these variables being also endogenous, in the sense that they are correlated with the error term of the regression equation, we use one year lagged values to measure these control variables. Lastly, to control for possible industry differences in the average CoD, we also include industry indicator variables.

Interest coverage ratio (ICR): The variable was reported in the database and is calculated as earnings before interest, taxes, depreciation and amortization divided by interest expense. In 2012, the average ICR for audited firms was 91.69 times, while for unaudited firms it was 19.66 times.

Liquidity ratio (LR): The variable is reported in the dataset as the ratio of current assets over current liabilities. In 2012, the average LR for audited firms was 3.63, and for unaudited firms it was 5.93.

Plant, property and equipment share (PPE_share): This variable is calculated by adding firms' holdings of land and buildings, machinery and equipment and dividing with total assets. Observations for which the reported plant, property and equipment value were higher than the reported value of total assets were excluded from the analysis.¹⁰ In 2012, audited firms, on average, had 26% of their total assets as PPE, while unaudited firms had a PPE share of 22% of the total assets.¹¹

Leverage: This variable is calculated as total debt divided by total asset. The average leverage in 2012 of an audited firm was 0.87 times, while for an unaudited firm it was 1.37 times.

Total Assets (Ln_TA): This variable is reported in the dataset, and following previous studies (Karjalainen, 2011; Minnis, 2011), we take natural log of (1 + total assets) to be included in the

¹⁰ By restricting plant, property and equipment to be less than reported total assets, we lost 1081 observations.

¹¹ As an alternative measure, we in some regressions use the natural log of collateral since this variable was readily available in our dataset. The untabulated results from these estimations are similar to those reported below.

model. On average, audited firms had total assets of 60 million SEK (6.2 million Euros), while unaudited firms had total assets of 2 million SEK (0.2 million Euros) in 2012.

Growth: This variable is calculated as yearly relative sales growth from year t-1 to year t. Audited firms had on average negative growth rates of -0.01%, while unaudited firms had a negative growth rate of -0.11% during the period from 2011 to 2012.

Return on Assets (ROA): Return on assets was calculated as reported net income over reported total assets. In 2012, audited firms, on average, had a negative ROA of -1.32%, while it was -6.50% for unaudited firms.

Negative Equity (Neg. Equity): This is an indicator variable equal to one, for firms that have negative equity, and zero otherwise. In 2012, 9.7% of the unaudited firms had negative equity, while 3% of the audited firms had negative equity.

Table 2 presents descriptive statistics and variable descriptions for all variables in the analysis, while Table 3 reports descriptive statistics of the two sub-groups: audited and unaudited firms.¹² The descriptive statistics are quite similar to those reported in Yazdanfar & Öhman (2015) and Öhman & Yazdanfar (2017), who also use Swedish data, but over the period 2009-2012.

[Tables 2 and 3 about here]

Industry classification: To capture industry level heterogeneity, indicator variables for different types of industry have been created according to the first two digits of the firms NACE classification code. Some summary statistics by industry are presented in Table 4:

[Table 4 about here]

Firms from industries, such as manufacturing, construction, retail and wholesale, real estate, and professional services account for about 72% of the total sample. Other major industries include transportation (5.9%), information communication (4.6%), hotel and restaurants (3.3%), agriculture (3.5%), and renting real estate (3.3%). In our sample, firms from industries

¹² To investigate if multicollinearity might be a problem in our estimations, we also present statistics over how high the correlations between the variables are, see Table A2 in Appendix B. The correlations are, in most cases, low enough to make it unlikely that our results are affected by multicollinearity. One high correlation stands out, and that is between ROA and Leverage. However, removing these potentially collinear variables one by one does not alter the results regarding how being audited affects *CoD*, and thus we choose to include both these variables in the estimations presented in the paper.

such as professional services (56.9%), real estate (53.9%), culture and recreation, and information communication (42.1%) had the highest share of audited firms.

3.3. Estimation Results

Results from the estimation of equation (1), using *Reform2010* as an instrument for *Audited*, are presented in Table 5. Due to missing observations in one or more variables the number of firms is reduced from 123 774 to 113 020 in the main regression. The first stage estimation results of our 2SLS procedure are presented in Table A3 in Appendix C. Since heteroscedasticity-consistent standard errors are used in the estimations, Wooldridge's (1995) robust score test is used to test if *Audited* can be considered exogenous, and the results show that exogeneity can be rejected at the 1 percent significance level. The first stage F-statistics of the endogenous regressor are also reported; for one endogenous regressor, if the F statistic exceeds 10 then the inference is reliable and the instrument is not weak (Stock & Yogo, 2005), which is clearly the case in our estimations. The R-squared of the first step regression is 26.9%, and the partial R-squared related to our instrument *Reform2010* equals 6.4%. Based on these statistics and how the instrument was created, we consider our instrument to be both strong and exogenous, resulting in valid inference regarding how auditing affects *CoD*.

[Table 5 about here]

Turning to the results from the second-stage regression, our findings indicate firms with audited financial statements, on average, have lower *CoD* compared to firms with unaudited financial statements. On average, *CoD* for firms with audited financial statements are 1.26 percentage points lower than for firms with unaudited statements, and the difference is statistically significant at the 5% level. As such, we find that our first hypothesis is supported.

Turning to the control variables, the signs for *ICR*, *Growth*, *ROA*, *Ln_TA*, and *Neg. Equity* are as expected from prior literature, while the signs for *LR*, *PPE_share*, and *Leverage* are not. *ICR* is negative and statistically significant, but too small to be economically significant.¹³ Inconsistent with past studies, *LR* was positive and significant, as was *PPE_share*. The size of the parameter estimates indicates that *LR* only has a minor economic impact on *CoD*, while the impact of *PPE_share* is more pronounced. Consistent with theory, and inconsistent with some

¹³ Since *ICR* and *Leverage* are both proxies of financial risk, there could be issues of multicollinearity, even though the correlations between these variables (reported in Table A2 in Appendix B) are not that severe. As such, we have re-run our estimations removing these potentially collinear variables one by one, as we did with *ROA* and *Leverage* above. However, doing this does not alter the results regarding how being audited affects *CoD* in any significant manner, and we choose to include both these variables in the estimations presented in the paper.

past studies, *Leverage* has a negative statistically significant impact on *CoD*. On the other hand, both *Growth* and *ROA* have a negative impact on *CoD*, but only the estimate for *Growth* has any economically significant impact on *CoD*. Also, we find that having negative equity increases the *CoD* by, on average, 0.95 percentage points. Finally, to test hypothesis 2, we look at the magnitude and significance level of the *AudBig6* variable which is positive and statistically significant at the 5% level. The size of the parameter estimate indicates that having a Big6 auditing firm increases the *CoD* by 0.16 percentage points, holding the impact of the other variables in the regression model constant. Note that since auditing reduces *CoD* by 1.26 percentage points, on average, auditing will still reduce the *CoD*, but somewhat less if firms chose a Big6 auditing firm. Our findings here are inconsistent with Karjalainen (2011), who found that using Big6 auditing firms reduced the *CoD*.

To test hypothesis 3, we estimate equation (1) for each of the 19 industries defined by their 2-digit NACE-codes. The effect of having audited financial statements on *CoD* is negative and significant for 13 out of 17 industries, and, as expected, the magnitude of the effect is more pronounced for some industries than for others. The results from these estimations are presented in Table 6.

[Table 6 about here]

As presented in Table 6, the average effects in percentage points for the different industries were, Manufacturing (-0.98), Electricity & gas (-4.89), Retail & wholesale (-0.80), Transportation & storage (-0.61), Hotel & restaurants (-1.87), Information & communication (-1.11), Real estate (-3.68), Professional services (-2.70), Rental real estate (-1.88), and Training (-2.24). All these effects were statistically significant at 5% level. For example, as expected, based on the result of previous studies on audit complexity and cost, the negative impact of having audited financial statements on *CoD* is higher for the information and communication industry compared to the transportation and storage industry. Also, as expected from previous studies, the effect was more pronounced in (most of) the service sectors compared to the manufacturing sector. However, contrary to expectation, retail and wholesale had a similar effect of auditing on *CoD*, compared to the manufacturing sector.¹⁴

¹⁴ Several robustness checks have been performed to verify the results presented in this section. Firstly, we increased the upper cut-off point of *CoD* in steps up to 150%, and also used logarithmic transformation of the dependent variable *CoD*, since it attributed a heavily skewed distribution. See Appendix D for results.

4. Summary and discussion

Financial statement verification indeed adds value to a firm, at least in terms of reducing the firm's *CoD*. Our findings suggest firms with audited financial statements, on average, save 1.26 percentage points (or 126 basis points) on interest for debts. Thus, an average firm in our sample would save about 16 900 EUR on annual interest charges.¹⁵ In contrast, in the US private-firm setting, Minnis, (2011) found that audits reduce *CoD*, on average, by 69 basis points, equivalent to 25 000 USD (21 535 EUR) in annual interest charge savings by an average firm; Kim, et al., (2011) in the Korean private firm-setting found voluntary audits reduce *CoD* by 56 to 124 basis points, depending on model specifications; and Huguet & Gandía, (2014) in the Spanish SME-setting found that audits reduce *CoD* by, on average, 18 basis points; and Koren, et al., (2014) for a sample of Slovenian firms found voluntary audits increase *CoD* by 21 basis points. As such, our results are in line with most previous studies in that we find a reduction in the *CoD* of being audited, but also in the size of the effects, at least when compared to Minnis (2011), in terms of USD saved, and Kim et al., (2011) in terms of basis points.

However, as mentioned above, unaudited firms rarely borrow more than median values of 360 000 SEK (37 000 EUR), and the debt size of an average unaudited firm is 627 000 SEK (64 585 EUR). As such, these average unaudited firms could save about 7 900 SEK (814 EUR) on annual interest charges, if they chose to be audited. The minimum audit cost for small and micro firms in Sweden averages between 15 000 SEK (1 500 EUR) to 20 000 SEK (2 000 EUR), excluding any additional internal staff time and cost for the preparation and carrying out of the audit, and this cost is even higher for larger and more complex SMEs. Thus, a typical unaudited firm in our sample does not have any additional benefit in terms of reduced *CoD* from switching to having audited financial statements, at least not in the short-run.

We also find that there is no additional benefit to firms in terms of reduced cost of debt for employing Big6 audit firms. Our results are similar to the findings of Huguet & Gandía, (2014), and Kim, et al., (2011), but contradict the findings of Koren, et al., (2014) and Karjalainen, (2011). The share of Big4 audit in the sample of Koren, et al., (2014), and Karjalainen, (2011), was 27.8% and 24.2%, respectively, while in our sample it is 14 %, and for Huguet & Gandía, (2014) and Kim, et al., (2011) the shares were 4.3% and 33.8%, respectively. As such, the different results could be driven by differences in the Big4s' share of audit in the sample, as suspected by Karjalainen, (2011), and this question warrants more research. However, from our

¹⁵ An average firm in our sample had total long-term debt of 13 million SEK (1.3 million EUR) in 2012.

results it seems that lenders look more at audit choice than auditor choice as a way of reducing *CoD* for borrowing firms. This was also reported by Kim, et al., (2011), and then especially in the case of private limited firms.

Lastly, we found firms belonging to the industries that have been shown in previous studies to have more complex information structure and more expensive auditing to also save more on interest charges by auditing their financial statements. Our results here are not directly comparable to any previous studies, since, to the best of our knowledge, previous studies did not look at the differences in the effect of audit across various industries. However, literature on audit fees suggests audit charges vary, among others things, due to the complexity of the audit process in a specific industry. Thus, we expected that firms in industries with more complex information structures and more complex auditing processes to have larger reductions in *CoD* from financial statement audits, and this is also what we find.

Even though our results from the Swedish setting are very similar to those from US, Korean and Spanish settings, findings from other settings within the EU, or outside the EU, may vary, since risk varies greatly between developed and developing countries, and there is disparity within different EU countries too (Sbarcea, 2015). Thus, future studies with cross-country samples would help us to better understand if the institutional differences influence the relationship between audits and *CoD*. Future studies can also address some of the caveats of this present study, and some of the past studies, in this line of work. For example, a more comprehensive measure of *CoD* can definitely improve future studies. Most studies, including ours, only have access to interest rate data, however, total cost of debts also includes other contract terms, such as maturity, collateral, and additional conditions, if any, stipulated by the lender. Furthermore, factors, such as the firm-lender relationship, and the individual lender's risk appetite also influence debt pricing, and lenders tend to optimize their risk-return relationship with a balance between these factors (Bharath, Sunder, & Sunder, 2008), and future studies should, if possible, also incorporate these variables in the analysis. The literature also lacks comprehensive knowledge about the net benefit of audits, i.e. the benefits after deducting the direct and indirect costs of auditing, as well as how banks view and value audits. As such, researchers could interview loan officers and credit analysts to better understand how they value and/or evaluate a firm's audit and auditor choices. These are, however, suggestions for future studies and outside the scope of the present paper.

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Table 1: Sample selection process

Total no of firm year information retrieved from the database	489 131
Total no of firms registered before 2006-12-31 and active until 2013-12-31	202 883
Excluding firms with no Industry classification	(15 121)
Excluding Finance and Insurance firms & Government organizations	(8 811)
Excluding listed firms	(438)
No of unique firms in the final sample	178 514
Excluding firms who have reported zero or negative CoD	(53 659)
Excluding firms whose PPE exceeds total assets	(1 081)
Final sample	123 774

Table 2: Descriptive statistics for the total sample

Variable	Mean	Std. Dev.	Description
CoD	3.1111	3.2871	Cost of Debt is the dependent variable reported in percentage for the year 2013, and calculated as explained in Section 3.2.
Audited	0.7761	0.4168	This is an indicator variable equal to 1, if the firm was audited in the financial year 2013, and zero otherwise.
Reform2010	0.4696	0.4991	This is an indicator variable used to instrument the variable of interest “Audited”. The value equals to zero if a firm was below the statutory audit threshold, and equal to one if a firm is above the statutory audit threshold in 2009. Thus, a value of zero means a firm was not subject to statutory audit in 2009, and a value of one means the firm was subject to statutory audit in 2009.
AudBig6	0.1088	0.3114	This is an indicator variable equal to one, if the firm was audited by a Big6 auditing firm in 2013, and zero otherwise.
ICR	75.554	932.14	Interest coverage ratio calculated on EBIDTA for the year 2012. Control variable for the firm’s ability to pay future interest expenses.
LR	4.1465	72.078	Liquidity ratio for the year 2012. Control variable for the liquidity of a firm.
PPE share	0.2479	0.3067	Share of total plant, property & equipment of the total assets for the year 2012. Control variable for tangibility of the firm.
Leverage	0.9821	42.749	Leverage calculated as total debt divided by total assets for the year 2012. Control variable for the financial risk of the firm.
Ln_TA	15.128	1.8670	Natural log of (1+total assets) for the year 2012. Control variable for firm size.
Growth	-0.0303	0.5909	Growth is measured as year-over-year sales growth between 2011 and 2012. Control variable for the business risk of a firm.
ROA	-2.0136	660.38	Return on assets calculated as net income divided by total assets for the year 2012. Control variable for the profitability of a firm.
Neg. Equity	0.0447	0.2066	An indicator variable equal to 1, if a firm has negative equity and, zero otherwise in the year 2012. Control variable for financial distress.

Note: Accounting and financial control variables: ICR, LR, PPE share, Leverage, Ln_TA, Growth, ROA, Neg. Equity are lagged by one year to avoid a potential endogeneity problem.

Table 3: Descriptive statistics by the two sub-groups

Variable	Unaudited firms in 2013 (26,792 firms)		Audited firms in 2013 (92,895 firms)	
	Mean	Std. Dev.	Mean	Std. Dev.
Audited	0	0	1	0
CoD	3.6532	3.7923	2.9551	3.1092
Reform2010	0.8657	0.3409	0.3600	0.4800
AudBig6	0	0	0.1402	0.3472
ICR	19.661	208.11	91.691	1051.8
LR	5.9257	107.18	3.6336	58.149
PPE share	0.2196	0.3047	0.2559	0.3068
Leverage	1.3685	15.903	0.8709	47.759
Ln_TA	13.603	1.5060	15.568	1.7240
Growth	-0.1072	0.7673	-0.0091	0.5300
ROA	-5.1662	327.69	-1.1077	728.57
Neg. Equity	0.0967	0.2955	0.0297	0.1697

Note: Accounting and financial control variables: ICR, LR, PPE share, Leverage, Ln_TA, Growth, ROA, Neg. Equity are lagged by one year to avoid a potential endogeneity problem.

Table 4: Sample distribution according to industry

Industry	No of firms	Percentage of total sample	Audited firms in 2013 (%)
Agriculture	4174	3.4	74.8
Mining	231	0.2	90.0
Manufacturing	13057	10.6	84.3
Electricity & gas	680	0.6	85.0
Water and waste management	374	0.3	89.8
Construction	14896	12.0	76.7
Retail and wholesale	25537	20.4	81.2
Transportation	7189	5.8	79.3
Hotel & restaurants	4073	3.2	82.0
Information and communication	5964	4.7	70.8
Real estate	14589	12.2	83.4
Professional services	20596	16.7	67.3
Renting real estate	4320	3.4	77.5
Training	1581	1.2	72.0
Health care and social services	3083	2.6	70.2
Culture and recreation	2019	1.6	67.3
Other service activities	1411	1.1	63.1
Total	123774	100	77.2

Table 5: 2SLS estimation results, dependent variable CoD, all industries.

Independent Variables	Coefficients
Audited	-1.2603* (0.1024)
AudBig6	0.1559* (0.0318)
ICR	-0.0001* (0.0000)
LR	0.0021* (0.0006)
PPE_share	1.3944* (0.0351)
Leverage	-0.0088* (0.0028)
Ln_TA	-0.1356* (0.0138)
Growth	-0.1190* (0.0193)
ROA	-0.0001 (0.0000)
Neg. Equity	0.9510* (0.0618)
Constant	5.6011* (0.1564)
Industry level fixed effects	YES
Observations	113,020
R-sq. second stage reg.	0.0412
R-sq. first stage reg.	0.2686
Partial R-sq. first stage reg. <i>Reform 2010</i>	0.0634
F-statistic	6706.95

Note: Robust standard errors in parenthesis.

* significant at the 5% level.

Table 6: Estimations by industry, estimated coefficient of the variable Audited is presented along with the first stage Adjusted R-sq, and second stage R-sq. and Partial R-sq. first stage reg. of *Reform2010*.

Dependent variable:	Audited	R-sq. second stage reg.	R-sq. first stage reg.	Partial R-sq. <i>Reform2010</i>	F-statistics
CoD					
Agriculture	0.3932 (0.3450)	0.0284	0.3367	0.1102	363.00
Mining	-1.5035 (4.3522)	0.1454	0.2090	0.0266	2.8268
Manufacturing	-0.9758* (0.2665)	0.0402	0.3149	0.1201	965.04
Electricity & gas	-4.8900* (1.8665)	.	0.2363	0.0436	24.479
Water and waste management	-1.727 (1.4114)	0.0260	0.3612	0.1715	27.189
Construction	0.1453 (0.2463)	0.1232	0.2955	0.0663	781.37
Retail and wholesale	-0.7974* (0.2229)	0.0350	0.3039	0.0947	1675.7
Transportation	-0.6132* (0.2813)	0.0984	0.3103	0.0861	437.78
Hotel & restaurants	-1.8724* (0.5746)	0.0401	0.2534	0.0698	213.96
Information and communication	-1.1106* (0.4964)	0.0532	0.2577	0.0582	337.00
Real estate	-3.6805* (0.9231)	.	0.1569	0.0066	108.74
Professional services	-2.700* (0.3779)	.	0.2093	0.0278	634.65
Renting real estate	-1.8789* (0.5719)	0.0437	0.2823	0.0698	245.83
Training	-2.2445* (0.6378)	0.0515	0.2772	0.0831	143.53
Health care and social services	-0.8150 (0.5024)	0.0878	0.2612	0.0692	225.63
Culture and recreation	1.3156 (0.7570)	0.0303	0.2782	0.0616	159.22
Other service activities	-0.7728 (0.8114)	0.1160	0.2993	0.0544	81.68

Note: Robust standard errors in parenthesis. * significant at 5% level.

Appendix A: The Swedish Audit Reform

The EU Fourth Company Law Directive (78/660/EEC) provides the EU member states with the option to exempt SMEs from mandatory audits (European Economic Community, 1978), and most countries within the EU use this option to exclude SMEs, while Sweden choose not to exercise this right when joining the European Union in 1995. Sweden was for a long time an exception, with statutory audit for all Swedish limited firms, even the smallest ones. This legislation can be dated back to 1895 when the Companies Act was re-written, making it mandatory for Swedish limited firms to appoint independent auditors (Öhman & Wallerstedt, 2012). Voluntary audits can be dated back to the 1650s in Sweden, and official, but still voluntary, audits were also mentioned in the Companies Act of 1848.

In 2006, a center-right government was elected in Sweden, and one of their campaign promises was to reduce the administrative burden of firms. This was also in line with the European Commission's plan to reduce SME's administrative burden by 25%, as per the EU Fourth Company Law Directive (78/660/EEC). Reports from the European Commission highlighted the importance of SMEs for the European economy and called for a more business-friendly environment for SMEs, including micro firms so that they would become more competitive in the global economy. The Swedish government submitted the bill "A Voluntary Audit" (Prop. 2009/10:204) to the Swedish parliament on 14 April 2010, proposing that small firms should be allowed to choose whether they should have an auditor or not. The bill was passed by the Swedish Parliament on 21 June 2010 (SFS 2010:834), and the new legislation allowed firms not exceeding certain thresholds to be exempted from statutory audits. The change applied to fiscal years beginning on, or after, 1 November 2010 (SFS 2010:834), and the reform was expected to exempt approximately 72% of all Swedish limited firms from mandatory audit (Svanström & Sundgren, 2012).

Formally, the Swedish Companies Act (*Aktiebolagslagen*, 2005:551) Chapter 9 §1 still stipulates that - as a starting point - all Swedish limited firms are required to have an auditor who audits the financial statements. The articles of association of a privately-owned limited firm may, however, from 1 November 2010 specify that the firm should not have an auditor, given that at least two of the following conditions are met. However, the general meeting may according to the Swedish Companies Act chapter 9 § 1a decide to appoint an auditor:

- The average number of employees for the last two consecutive fiscal years amounts to no more than 3.

- Reported total assets for the last two consecutive fiscal years amounts to no more than 1.5 million SEK.
- Reported net sales for the last two consecutive fiscal years amounts to no more than 3 million SEK.

The above also applies to the parent company of a group (even though the threshold levels in the parent company are not exceeded), if the group meets more than one of the specified conditions. All intercompany claims and transactions should, however, first be eliminated.

It shall be further noted that only authorized public accountants, or approved public accountants, are according to the Swedish Companies Act (Aktiebolagslagen 2005:551) Chapter 9 § 12, allowed to conduct statutory audits. In larger and/or listed firms, at least one auditor must be an approved public accountant. Provisions on authorized public accountants and approved public accountants can be found in the Swedish Public Accountants Act (Revisorslag 2001:883).

Table A1. Threshold values (in Euros) for mandatory audit in European countries as of May 2016 with corresponding increase from last ceiling.

<u>Country</u>	<u>Total assets</u>	<u>Increase</u>	<u>Net turnover</u>	<u>Increase</u>	<u>Employees</u>	<u>Increase</u>
Austria	5,000,000	3%	10,000,000	3%	50	-
Belgium	4,500,000	23%	9,000,000	23%	50	-
Bulgaria	1,000,000	33%	2,000,000	60%	50	-
Croatia	2,000,000	-	4,000,000	-	25	-
Cyprus	3,400,000	-	7,000,00	-	50	-
Czech Republic	1,500,000	-	3,000,000	-	50	-
Denmark	4,837,000	-	9,674,000	-	50	-
Estonia	2,000,000	100%	4,000,00	100%	60	100%
Finland	100,000	-	200,000	-	3	-
France	1,550,000	-	3,100,000	-	50	-
Germany	6,000,000	24%	12,000,000	24%	50	-
Greece	4,000,000	60%	8,000,000	60%	50	-
Hungary	-	-	965,000	44%	50	-
Iceland	1,400,000	-	2,800,000	-	50	-
Ireland	4,400,000	-	8,800,000	-	50	-
Italy16	4,400,000	-	8,800,000	-	50	-
Latvia	800,000	100%	1,600,000	100%	50	100%
Lithuania	1,800,000	-	3,500,000	-	50	-
Luxembourg	4,400,000	-	8,800,000	-	50	-
Malta	46,600	-	93,000	-	2	-
Netherlands	6,000,000	36%	12,000,000	36%	50	-
Norway	2,500,000	-	625,000	-	10	-
Poland	2,500,000	-	5,000,000	-	50	-
Portugal	1,500,000	-	3,000,000	-	50	-
Romania	3,650,000	-	7,300,000	-	50	-
Slovakia	1,000,000	-	2,000,000	-	30	-
Slovenia	4,000,000	-9%	8,000,000	-9%	50	-
Spain	2,850,000	-	5,700,000	-	50	-
Sweden	150,000	-	300,000	-	3	-
Switzerland	18,203,000	-	36,405,000	-	250	-
United Kingdom	6,541,000	56%	13,082,000	57%	50	-

Source: Federation of European Accountants, 2016.

Appendix B.

Table A2: Pearson correlations

	CoD	Audited	Reform2010	AudBig6	ICR	LR	PPE_share	Leverage	Ln_TA	Growth	ROA	Neg. Equity
CoD	1.0000											
Audited	-0.0873	1.0000										
Reform2010	0.1026	-0.4215	1.0000									
AudBig6	-0.0376	0.1950	-0.1817	1.0000								
ICR	-0.0589	0.0313	-0.0522	-0.0457	1.0000							
LR	0.0220	-0.0085	0.0212	0.0007	-0.0177	1.0000						
PPE_share	0.0760	0.0487	-0.0048	0.0110	-0.0238	-0.0239	1.0000					
Leverage	0.0031	-0.0048	0.0091	-0.0008	-0.0011	-0.0009	-0.0063	1.0000				
Ln_TA	-0.1166	0.4373	-0.4752	0.3451	0.0689	0.0208	0.2218	-0.0429	1.0000			
Growth	-0.0409	0.0682	0.0241	0.0184	0.0215	-0.0244	0.0369	-0.0126	0.0681	1.0000		
ROA	-0.0090	0.0033	-0.0066	0.0029	0.0023	0.0012	0.0035	-0.5583	0.0284	0.0335	1.0000	
Neg. Equity	0.0829	-0.1357	0.0970	-0.0537	-0.0183	-0.0081	-0.0245	0.0551	-0.3074	-0.0438	-0.0418	1.0000

Note: Items in bold are significant at the 5% level and ICR, LR, PPE share, Leverage, Ln_TA, Growth, ROA, Neg. Equity are lagged by one year.

Appendix C.

Table A3. First-stage estimation results.

Independent variables	Coefficients
Reform2010	-0.2313* (0.0028)
AudBig6	0.0391* (0.0021)
ICR	2.69e-06* (5.55e-07)
LR	-0.0001* (0.0000)
PPE_share	-0.0220* (0.0044)
Leverage	0.0004 (0.0003)
Ln_TA	0.0682* (0.0008)
Growth	0.0370* (0.0023)
ROA	-3.65e-06* (9.91e-06)
Neg. Equity	-0.0539* (0.0069)
Constant	-0.1866* (0.0143)
Industry level fixed effects	YES
Observations	113,020
Adjusted R-sq.	0.2684

Note: * significant at 5% level.

Appendix D. Robustness checks.

Several robustness checks have been carried out in this study. As mentioned above, the estimates presented in Table 5 in the main text are based on CoD greater than zero, and an upper limit of CoD equaling 30%. First, the upper limits of CoD were increased to 50%, 100% and then 150%, and the results from these estimations are not qualitatively different from those presented in the main text, although the estimated effect of auditing on CoD increases as the upper limit is increased. Secondly, a log transformation of CoD was used as the dependent variable in the estimations, since CoD was found to have a skewed distribution, and again the results were qualitatively similar to those reported in the main text. Lastly, estimations where an indicator variable equal to one for Big4 rather than Big6 auditing firms were performed, and the results are again similar to those presented in the main text..

Table A4: Robustness checks: Dependent variable calculated CoD and upper limit of 50%, 100%, 150% & logarithmically transformed CoD.

Independent variables	CoD <= 50 Coefficients	CoD <= 100 Coefficients	CoD <= 150 Coefficients	Logarithmic transformed calculated CoD
Audited	-1.6729* (0.1306)	-2.2394* (0.1841)	-2.6690* (0.2312)	-0.7702* (0.0440)
ICR	-0.0002* (0.0000)	-0.0002* (0.0000)	-0.0002* (0.0000)	-0.0002* (0.0000)
LR	0.0026* (0.0010)	0.0038 (0.0020)	0.0044 (0.0025)	0.0007* (0.0002)
PPE_share	1.2551* (0.0450)	1.0124* (0.0655)	0.8729* (0.0834)	1.1893* (0.0158)
Leverage	-0.0093* (0.0029)	-0.0099* (0.0032)	-0.0094* (0.0031)	-0.0046* (0.0015)
Ln_TA	-0.0964* (0.0181)	-0.0414 (0.0260)	0.0245 (0.0336)	-0.0833* (0.0062)
Growth	-0.1085* (0.0252)	-0.1302 (0.0376)	-0.1737 (0.0479)	-0.0569* (0.0078)
ROA	-0.0001 (0.0001)	-0.0001 (0.0000)	-0.0001 (0.0000)	-0.0000 (0.0000)
AudBig6	0.2530* (0.0393)	0.4729* (0.0622)	0.6214* (0.0773)	-0.0933* (0.0161)
Neg. Equity	0.9227* (0.0708)	0.8196* (0.0877)	0.7530* (0.0910)	0.1713* (0.0212)
Constant	5.4526* (0.2037)	5.1806* (0.2943)	4.5746* (0.3743)	2.1410* (0.0688)
Industry level fixed effects	YES	YES	YES	YES
Observations	113442	113804	113903	114,154
R-sq.	0.0219	0.0064	0.0008	0.1056
R-sq. first stage reg.	0.2688	0.2692	0.2692	0.2691
Partial R-sq. first stage reg. of <i>Reform 2010</i>	0.0635	0.0634	0.0624	0.0636
F-statistics	6738.4	6760.4	6766.2	6837.3

Note: Robust standard errors in parenthesis. * significant at 5% level.

Table A5: Robustness check: Audit by Big4 instead of Big6, originally reported in the paper

Independent variables	Coefficients
Audited	-1.2594* (0.1024)
AudBig4	0.1618* (0.0324)
ICR	-0.0002* (0.0000)
LR	0.0021* (0.0006)
PPE_share	1.3935* (0.0351)
Leverage	-0.0088* (0.0028)
Ln_TA	-0.1356* (0.0138)
Growth	-0.1889* (0.0193)
ROA	-0.0001 (0.0001)
Neg. Equity	0.9512* (0.0618)
Constant	5.9662* (0.1565)
Industry level fixed effects	YES
Observations	113,020
R-sq.	0.0413
R-sq. first stage reg.	0.2685
Partial R-sq. first stage reg. of <i>Reform 2010</i>	0.0634
F-statistics	6706.3

Note: Robust standard errors in parenthesis. * significant at 5% level.