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External audit quality and firms' credit score

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Abstract: Using a sample of UK firms, we investigate whether external audit quality has an informational role for firms credit score. In our general research setting, we could not find any evidence on the association between firms' credit score and external audit quality. However, when firms are suspected to be engaged in managerial misstatements, firms' credit score seems to be associated with external audit quality. In particular, suspected firms get high credit score when they are audited by one of industry-specialised auditors. In addition, credit rating agencies penalise suspect firms when they pay high audit and non-audit fees.

Subjects: Accounting; Auditing; Financial Accounting

Keywords: Audit quality; industry-specialised auditors; audit fee; non-audit fee; credit rating

1. Introduction

The objective of this paper is to investigate whether the choice of auditor impacts the credit score assigned to an entity. In contrast to the majority of accounting studies focusing on the equity market and investors perception about audit quality, we focus on debt market for many reasons as summarised by Wu and Zhang (2014). Firstly, debt is considered as one of the important external sources of finance available to public companies. For example, La Porta, Lopez-de-Silanes, Shleifer,

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PUBLIC INTEREST STATEMENT

Firms' credit score plays a critical role in getting loans at favourable terms, which represent one of the most significant issues affecting not only firms' current but also future prospects. A number of accounting scholars have investigated different factors affecting firms' credit score including published information. Since external auditors play a significant role in ensuring that reported information are free from significant misstatements, firms credit score would, arguably, be affected by external auditor quality. In our study, we provide empirical evidence on whether firms' credit score is really affected by external auditor quality. In particular, we found that credit rating agencies assign high credit score to firms audited by industry-specialized auditors especially when these firms are suspected to be engaged in earnings management. In addition, we found that firms paid high audit and non-audit fees are assigned low credit score. These results might be influential for different participants in the debt market.

and Vishny (1998) show that public and private debts represent 59% of gross national product while equity finance represents, on average, 40%. Therefore, lenders might represent one of the key users of firms' reported information and therefore might be concerned about financial information quality and accuracy. It worth investigating the debt market perception about the perceived quality of external auditors. In particular, in our paper, we focus on credit rating for many reasons. As noted by Frost (2007), Zalata and Roberts (2017), credit rating agencies are considered as one of the key players in the debt market and their ratings play an important role in reviewing the probability of firms default risk and determining the cost of debt.

One might argue that lenders are more likely to behave as similar as equity investors and consequently they would require and react similarly to the same information. However, equity markets and debt markets users often have different information needs (Wu & Zhang, 2014) and Holthausen and Watts (2001) pointed out that what is considered relevant for one user group, may not be relevant for others users and advise against focusing exclusively on stock market data as this does not fully encompass the needs of many other users of financial information. Arguably, credit ratings agencies are less likely to base their decision on published information to evaluate firms' creditworthiness. This can be associated with having an information advantage regarding firms' prospects, and thereby they are considered more sophisticated users and less likely to rely on reported information to assign a credit score. For example, credit rating agencies have access to unpublished information such as data on board meeting minutes, internal capital allocation, and breakdown of profit by product (Ederington & Yawitz, 1987; Jiang, 2008). Therefore, it is an ongoing empirical question whether credit rating agencies are concerned about perceived audit quality where determining a suitable credit score. The research on stakeholders' perception about audit quality cannot be inclusive without extending this research to other key providers of finance; the debt market. Consequently, we engage with the debate on the use of credit rating agencies of firms' reported information and investigate whether credit rating agencies assign high score for firms audited by high quality auditors. In addition, we investigate whether credit ratings agencies are rational in this decision by investigating our research question in a setting where firms are more likely to have managed their earnings in order to affect stakeholders' perception about their underlying performance.

Despite the theoretical expectations that lenders and credit rating agencies would use other sources of information instead of the publicity available information, the majority of empirical accounting research suggests that a firm's credit rating is sensitive to its reported information. For example, Jiang (2008) shows that credit rating agencies upgrade their ratings for firms reporting better earnings performance (i.e. meeting/beating their predetermined earnings benchmarks). Similarly, Wu and Zhang (2014) show that firms credit rating are associated with accounting default factors for firms that either voluntarily or mandatorily adopt the international financial reporting standards. In addition, Zalata and Roberts (2017) show that credit rating agencies reduce their rating for firms engaging in earnings management to avoid reporting core losses. Therefore, It seems that credit rating agencies consider firms' published information and assign higher score for high quality information. In addition, other studies found that lenders are sensitive to accounting information and performance (e.g. Abrar, 2019; Eliwa, Aboud, & Saleh, 2019; Eliwa, Gregoriou, & Paterson, 2019).

External auditors play a significant role in ensuring that reported information free from significant misstatements (DeAngelo, 1981; Watts & Zimmerman, 1981), and therefore the presence of a high quality auditor should contribute to the credibility of the reported information, which in turn should affect different contracts' terms between the firm and different stakeholders including credit rating agencies. There is less consensus on whether firms' choice of auditor plays a crucial role in setting debts contracts. For example, Dedman and Kausar (2012) show that private firms who are voluntarily audited obtain a significantly higher credit rating than other firms who are not. Some other studies went further and focus on the auditor quality. For instance, Mansi, Maxwell, and Miller (2004) find entities that were audited by "the big four" audit firms received a better

credit rating and that there is a positive relationship between auditor tenure and credit rating. However, Fortin and Pittman (2007) did not find evidence that hiring one “the big four” auditors affected private firms’ credit ratings. However, the majority of these studies have focused on firms in the USA, which is characterized by high litigation environments in which the auditor would be more concerned about their reputation and litigation consequences from material misstatements in the firms’ annual report and therefore credit rating agencies are more likely to value the auditors’ monitoring role. This might partially explain the contradiction between Mansi et al. (2004) focusing on public firms and Fortin and Pittman (2007) focusing on private firms. Arguably, auditors’ reputation and litigation risk is lower when they audit smaller private firms and it seems that credit rating agencies do not react differentially to such.

Therefore, in order to provide direct answer to this dilemma, we use a sample of public firms listed in the UK characterized by less litigation concerns from external auditors. For example, in the UK, there is no regulatory body similar to the Securities and Exchange Commission (SEC) as in the USA, suggesting that auditor’s litigation may be smaller and therefore credit rating agencies might respond differentially to audit quality in such environment. Previous research noted that while the litigation in the UK has become more frequent, the litigation and penalties against external auditors are still tougher in the USA than in the UK (Basioudis, Papakonstantinou, & Geiger, 2008; Seetharaman, Gul, & Lynn, 2002). Previous UK audit studies (i.e. Basioudis & Francis, 2007; Basioudis et al., 2008; Ezzamel, Gwilliam, & Holland, 1996) suggest that the UK audit market is sharp contrast to the US counterpart. Therefore, without direct examination, it is not clear whether credit rating agencies appreciate the participation of a high quality auditor in the UK. In addition, given the relative dominance of “the big 4” audit firms in the audit market, using the size of audit firm might lead to less variation between firms, which might affect the statistical power of the analysis. Therefore, we use other sophisticated proxies for audit quality. In particular, instead of using the size of the audit firm, we focus on auditors’ industry expertise. In addition, we focus on the joint provision of non-audit service and finally, we focus on audit effort as measured using audit fees (AF).

Using a sample of UK firms from 2008 to 2010, we investigate the informational role of external audit quality to debt mark in the UK. We specially focus on the credit score of UK firms given the fact this score will affect the terms of their potential debt contracts (Zalata & Roberts, 2017). Our robustness analysis does not show any significant relationship between big audit firms and credit score. However, our main findings suggest that external audit quality does not impact the credit rating unless the firm has been suspected to be engaged in managerial misstatements. In particular, in our general research setting, we did not find evidence on the informational role of audit quality to credit rating agencies. On the other hand, our additional analysis suggests that suspect firms reporting small positive core earnings per share enjoy a high credit score if they are audited by one of industry-specialised auditors. Finally, we find that suspect firms paying high audit and non-audit fees (NAF) are penalised by credit ratings agencies, probably because credit rating agencies believe that high fees compromise auditors’ independence and therefore these firms might have reported small core earnings using earnings management.

Our paper contributes to the audit literature by providing the first evidence on informational role of external audit quality for credit rating agencies by focusing on the UK setting. Extant research, to large extent, has focused on the USA (i.e. Fortin & Pittman, 2007; Mansi et al., 2004) with less consideration to the UK, which might raise a concern over their generalizability to other countries. The UK has been characterised by more flexible legal environment than its USA counterpart, which enable us to examine how credit rating agencies react to audit quality in such flexible environment. In addition, unlike Fortin and Pittman (2007), Mansi et al. (2004) focusing on auditors’ size, we extend extant literature by using more sophisticated proxies for audit quality such as auditors’ industry specialization and audit and Non-Audit Fees. Linking our finding to Fortin and Pittman (2007) and Mansi et al. (2004), we conclude that the external auditor size does not convey new information for credit rating agencies and rather it is their characteristics that play a critical role in

assigning firms credit ratings. Second, our study sheds light on the implication of hiring high quality auditors for the debt markets. Consequently, our study contributes to the current debate on the use of published information by lenders and suggests that, at least in the UK, credit rating appreciation and reaction to external audit quality is more nuanced in firms suspected to have managed their earnings.

The remainder of our paper is structured as follows; in Section 2, we review existent related studies and develop our main hypothesis. In Section 3, we discuss our empirical equation, variables' measurement and describe our sample. In Section 4, we report and discuss our main findings and further analysis. In Section 5, we conclude.

2. Literature review and hypothesis development

The efficient market hypothesis (EMH) presumes that the capital market responds in an efficient and unbiased way to all available information, not just accounting information (Deegan & Unerman, 2006). The underlying assumption of EMH is that the stock prices quickly reflect any newly released information (Watts & Zimmerman, 1986), and consequently, there is a close relationship between earnings announcement and share prices. There are many accounting studies that document this relationship such as Ball and Brown (1968) and Beaver (1968). Managers are therefore interested in presenting high earnings performance in order to encourage investment in their company and to protect their wealth, where they have an interest in the share price. Failed firms may increase their earnings through earnings management. Several accounting studies suggest that investors naively fixate on reported earnings and cannot see through earnings management (Beneish & Vargus, 2002; McVay, 2006; Sloan, 1996; Xie, 2001).

Given that investors cannot see through managerial opportunism, other studies assume that investors might apply simple heuristic rules in order to ascertain the integrity of firms' reported information. For example, some studies have assumed that investors might fixate on the choice of external auditors. Annual report's users observe only reported earnings and not pre-managed earnings (Francis, Maydew, & Sparks, 1999). Agency theory suggests that managerial opportunism can be mitigated by external auditor's scrutinizing; however, audit efficiency and its ability to deter against aggressive accounting choices depends on the external auditor quality or the joint probability of detecting and reporting financial reporting breaches which in turn partially depends on external auditor independence (DeAngelo, 1981). Independent external auditors are less likely to accept questionable accounting choices, and are more likely to detect and report errors. Since audit procedures and auditors' independence are unobservable to external users, accounting studies tend to define independence relying on the appearance dimension (Ghosh & Moon, 2005). The most common proxy for external audit quality is audit firm size.

Arguably, large audit firms are more likely to detect material errors and misstatements because of their observable quality characteristics such as providing specialised training to their staff, accreditation by some reputable agency and peer reviews (Dopuch & Simunic, 1980 cited in Teoh & Wong, 1993). Furthermore, impairing auditor independence is a reducing function of the number of current clients. In particular, DeAngelo (1981) demonstrated analytically that when auditors discovered breaches, they would compare the present value of quasi-rent lost if they reported trustfully and were removed, with the present value of quasi-rent from other clients lost if they did not report and were removed from some or all other clients. That is, an auditor with large number of auditees will lose much by not reporting discovered breaches. Prior research has demonstrated that high quality information is associated with big auditors (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Francis et al., 1999)

Given the value that big auditors create, other studies have extensively investigated whether investors can see this value and therefore reward firms audited by high quality auditor. For example, Balvers, McDonald, and Miller (1988) and Beatty (1989) suggest that the underpricing of IPOs is lower in firms audited by big auditors. Similarly, Teoh and Wong (1993) show that firms

audited by a big auditor, experience high earnings response coefficients. Research also suggests that firms switching from non-big auditors to big auditors experience a stock market reward (Eichenseher, Hagigi, & Shields, 1989; Johnson & Lys, 1990; Kluger & Shields, 1991; Nichols & Smith, 1983). Therefore, it appears that the informational role of the size of external auditors matters to equity investors. Other studies, albeit limited, have focused on the informational role of external auditor to the credit rating agencies and in general, as previously explained their findings are mixed (i.e. Fortin & Pittman, 2007; Mansi et al., 2004). However, one problem in these studies is that, in general, they have focused on the US firms that, arguably, are operating in strong legal environment with less evidence in other countries that are arguably less tough. In addition, they have focused, to large extent on auditor size. However, current research suggests that there are others factors that might affect the quality of audit; for instance the characteristics of external auditors such as industry specialist, or the importance of audit and NAF (Fakhfakh Sakka, & Jarbou, 2016).

Some studies use the industry specialisation as a proxy for audit quality as these types of auditors would be able to exercise better judgement due to their knowledge and expertise in such specific industry. In addition, these auditors are more likely to be concerned about their reputation as expert in such industries, which might motivate them to address technical accounting issues in more detail and challenge managers' financial reporting decisions. Previous research suggested that industry specialist auditors are associated with better information quality (Balsam, Krishnan, & Yang, 2003; Gul, Fung, & Jaggi, 2009; Krishnan, 2003). Finally, other studies focus on other proxies for audit quality such as the provision of non-audit service (Hoang Tien, Thuong, Minh Duc, & Hoang Yen, 2019). Extant accounting studies suggest that the provision of non-audit services might impair external auditors' independence, as they become, to a large extent, financially dependant of their auditee (Simunic, 1984; Beck, Frecka, & Solomon, 1988; Ferguson, Seow, & Young, 2004; Frankel, Johnson, & Nelson, 2002; Larcker & Richardson, 2004; Lim and Tan, 2007; Zhang, Hay, & Holm, 2016).

Based on these empirical studies, external auditor quality would play an import role in mitigating any potential managerial opportunism and will consequently contribute to the increased credibility of the financial statements. Therefore, we expect that firms retaining a high quality auditor will be assigned high credit score, which in turn might reduce their future cost of debt. In particular, we use three proxies for audit quality; namely industry-specialisation, NAF, and AF.

H1: There is positive association between credit score and high quality auditor.

3. Research design

3.1. Empirical model

In order to investigate whether credit rating agencies give high score to firms retaining high quality auditor, we employ the following equations;

$$CR_{i,t} = \beta_0 + \beta_1 AUDIT_Q_{i,t} + \beta_2 LEV_{i,t} + \beta_3 SALE_G_{i,t} + \beta_4 CURRENT_{i,t} + \beta_5 INST_COV_{i,t} + \beta_6 DACC_{i,t} + \beta_7 CS_{i,t} \quad (1)$$

Where *CR* is firms credit score for firm *i* in year *t* as reported in *FAME* database. Following Dedman and Kausar (2012) and Zalata and Roberts (2017), we use Qui Score reported in *FAME* database as a proxy for firms' credit rating. Using publicly available data, Qui Credit Assessment Ltd calculate the Qui score for each firm and this score takes a value between 0 and 100 where a higher score demonstrates stronger performance, and a reduced chance of failure during the next 12 months. *AUDIT_Q* refers to audit quality and in this paper we use three different proxies for audit quality; namely industry-specialised auditor (*AUD_SPEC*), fees paid for non-audit audit service (NAF), and

fees paid for audit service (AF). *AUD_SPEC* is an indicator variable set to one if an industry-specialised auditor audits the firm and zero otherwise. We follow Chung and Kallapur (2003) and Lim and Tan (2008) and identify the industry-specialised auditor as an auditor who have the highest number of clients within the industry in year t . If credit rating agencies appreciate hiring industry-specialised auditor, we expect to find θ_1 to be positive.

NAF can be measured either as a proportion of NAF to the total AF or as the natural logarithm of NAF. However, two problems are highlighted by Srinidhi and Gul (2007) regarding the proportion of NAF. Firstly, both the numerator and denominator can affect our dependent variable and therefore the change of credit score level can be attributed to either numerator or denominator. Secondly, as demonstrated by Simunic (1984), the increase in NAF can increase the AF, which in turn increases the denominator. Accordingly and since the Canadian Institute of Chartered Accountants and the USA Public Oversight Board identified the log of NAF as an important measure for assessing the appropriateness of external auditor performance of NAF (Ferguson et al., 2004), the natural log of NAF is used to capture the economic bond arising from non-audit services. If credit rating agencies consider the joint provision of non-audit service to compromise auditor independence, we should find a negative relationship between credit rating and NAF. Similar to NAF, we measure AF as the natural logarithm of AF paid to external auditor. We use AF as a proxy for external auditor effort, where higher fees represents higher effort exerted by external auditor to improve the integrity of firms financial reports and therefore we should find a positive relationship between credit rating and AF.

In addition to our main external audit quality variables, we control for firm characteristics that have been previously shown to affect firm's credit rating level. In particular, we control firm's leverage level. Since firms with lower levels of debt are considered less risky, it is believed that they will not face difficulties repaying their debt or associated interest. We therefore control for firms' leverage level (LEV) and LEV is measured as the proportion of long-term debts to the total capital employed. We measure total capital employed as the sum of equity and long term debt. Highly liquid firms are less likely to suffer a shortage in paying its short-term obligations and therefore we control for the current ratio (*CURRENT*) measured as the proportion of total current assets to total current liabilities. Firms achieving sufficient profit to cover their interest expense are less likely to suffer from financial distress and thus credit rating agencies might reward these firms, with a higher credit rating. Therefore, we control for interest cover ratio, measured as the proportion of profit before interest and taxes to total interest expense. Following Kim, Simunic, Stein, and Yi (2011), we control for firms' sales growth (*SALE_G*) measured as the difference between current and last year sales divided by last year sales. Finally, prior research suggests that credit rating agencies can see through earnings management (Jiang, 2008; Zalata & Roberts, 2017), and therefore we control for earnings management practices. In particular, we control for accruals-based earnings management (DACC) and earnings management using classification shifting (CS). Where DACC is the residual from Jones (1991) model after adjusting it for earnings and cash flows performance (More details of this model can be found in, example, Abernathy, Beyer, & Rapley, 2014). CS is an indicator variable set to one if the firm has both abnormal core earnings and non-recurring expenses; otherwise, we set to zero. Abnormal core earnings are the residual from an expectation model adopted from McVay (2006). However, we follow Zalata and Roberts (2017) and eliminate current year accruals from McVay's (2006) expectation model. We run these expectation models for each industry-year with at least six observations.

3.2. Sample

A sample of UK firms with available data on DataStream, FAME, and IBES databases over the period from 2008 and 2010 were analysed. Similar to prior accounting research, we exclude firms belong to financial services and utilities sectors from our sample. In addition, in order to avoid the impact of outliers, following Zalata and Roberts (2016), we exclude firms with sales less than £0.5 million. Furthermore, we exclude firms with missing credit rating data or financial data required to run equation 1. These procedures lead to a final sample of 1369 firm-year observations

with complete data over the sample period from 2008 to 2010. We collected different audit quality data and firms' credit score from FAME database.

4. Findings

4.1. Descriptive statistics

We report descriptive statistics for different variables used in our analysis in Table 1. The average credit score for our sample is 87 (natural logarithm 4.46) suggesting on average that our sample are characterised by good financial health. It shows that 36% of our samples are audited by one of the industry-specialised auditors. We report the Pearson correlation in Table 2 and in general, there are no potential multicollinearity issues in our analysis.

4.2. Multivariate analysis

Under this analysis, we report our findings of our main research question of whether hiring high quality auditors would have an impact on firms' credit score. In particular, we use three proxies for audit quality; namely, *first*, industry-specialised auditor (*AUD_SPEC*) and we expect that hiring an auditor with relevant sector experience will add to the integrity of firms' financial statements and consequently would improve firms' credit score. *Second*, NAF and we expect that the joint provision of NAF might impair auditor independence, which in turn might lead to a reduction in firms credit score. Finally, AF and we expect that higher AF imply high effort exerted and proportionately lower levels of materiality being set by external auditors to improve the integrity of firms' financial statements which in turn might lead to improving firms' credit score. However, other studies argue that high AF might impair auditor independence, and therefore this might negatively affect firms' credit score. We report the finding of this analysis in Table 3.

Table 1. Descriptive statistics

Variables	Mean	Median	STD DEV	Q1	Q3
CR	4.46	4.51	0.15	4.43	4.53
AUD_SPEC	0.36	0.00	0.48	0.00	1.00
NAF	4.45	4.62	1.97	3.26	5.72
AF	5.26	5.09	1.40	4.2	6.18
LEV	0.23	0.14	0.59	0.00	0.34
SALE_G	0.20	0.08	0.94	-0.05	0.21
CURRENT	1.78	1.39	1.56	0.93	1.97
INST_COV	10.22	4.26	36.12	0.00	13.95
DACC	0.00	0.00	0.06	-0.02	0.02
CS	0.35	0.00	0.48	0.00	1.00

Where

CR: Natural logarithm of firms' credit score as reported in FAME database.

AUD_SPEC: Industry-specialised auditor, which is an indicator variable set to one if the firm is audited by an industry-specialised auditor and zero otherwise.

NAF: The natural logarithm of non-audit fees.

AF: The natural logarithm of audit fees.

LEV: Firms' leverage measured as the proportion of long-term debts to the total capital employed.

SALE_G: Sales Growth measured as the difference between current and last year sales divided by last year sales.

CURRENT: Current ratio measured as the proportion of total current assets to total current liabilities.

INST_COV: Interest coverage ratio measured as the proportion of profit before interest and taxes to total interest expense. To avoid outlier, we cap INST_COV between 100 and -100.

DACC: Discretionary accruals adopted from adjusted expectation model adopted from modified Jones (1991) as discussed in Abernathy et al. (2014). We require at least 6 industry-year observations to run this model.

CS: Classification shifting measured as indicator variable set to one if the firm has abnormal core earnings and has non-current expenses. Where abnormal core earning is measured using expectation model adopted from McVay (2006) and Zalata and Roberts (2017). Similar to DACC, we require at least 6 industry-year observations to run this model.

Table 2. Correlation matrix

Variables	CR	AUD_SPEC	NAF	AF	LEV	SALE_G	CURRENT	INST_COV	DACC	CS
CR	1									
AUD_SPEC	-0.02	1								
NAF	0.02	0.10***	1							
AF	-0.01	0.09***	0.71***	1						
LEV	-0.07***	0.03	0.09***	0.14***	1					
SALE_G	0.00	-0.04	-0.02	-0.06**	-0.04	1				
CURRENT	-0.02	0.02	-0.13***	-0.22***	-0.09***	0.13***	1			
INST_COV	0.28***	0.03	0.06**	0.09***	-0.07**	-0.03	-0.05*	1		
DACC	0.03	-0.01	-0.03	-0.05*	0.00	0.06**	0.07***	0.04	1	
CS	0.00	0.02	0.02	0.04	0.05*	-0.03	-0.01	0.05*	-0.02	1

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively. All variables are as in Table 1.

Table 3. Association between credit rating and audit quality

Variables	Model 1		Model 2		Model 3	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
AUD_SPEC	-0.009	-1.11				
NAF			0.000	0.18		
AF					-0.004	-1.24
LEV	-0.013	-1.89*	-0.013	-1.94*	-0.012	-1.76*
SALE_G	0.000	0.10	0.001	0.14	0.000	0.12
CURRENT	-0.001	-0.43	-0.001	-0.43	-0.002	-0.70
INST_COV	0.001	10.53***	0.001	10.47***	0.001	10.57***
DACC	0.045	0.67	0.046	0.69	0.043	0.64
CS	-0.005	-0.59	-0.005	-0.60	-0.005	-0.56
_CONS	4.451	472.16***	4.446	342.43***	4.467	245.85***
Years fixed effect	YES		YES		YES	
Adj_R ²	7.92%		7.92%		7.94%	
F	14.08		13.93		14.12	

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

All variables are as in Table 1.

In contrast to our expectation, Table 3 shows an insignificant coefficient on *AUD_SPEC* and firms credit score providing no support to our expectation that credit rating agencies perceive the presence industry-specialised auditor to add the integrity of financial statements and therefore they do not assign high score to firms audited by industry-specialised auditors. This might suggest that credit agencies are sophisticated users and have access to other private information and therefore they seem not to react to the retention of industry-specialised auditor and do not assign high credit score to firms with these types of auditors.

Similarly, Table 3 shows an insignificant coefficient on *NAF* and again suggesting that *NAF* does not represent relevant information to credit ratings. However, it worth noting that it shows a positive relationship between *NAF* and credit rating score, which does not support to our expectation that *NAF* impairs external auditor independence, with credit rating agencies penalising firms paying high *NAF* fees to their external auditors.

Finally, Table 3 shows insignificant coefficient on *AF*. However, again, Table 3 shows a negative relationship between firms' credit rating score and *AF* score. This finding does not support our expectation that auditors who receive higher *AF* are more likely to be deemed by credit rating agencies as auditors who have spent more time and effort reviewing the financial statements detecting material misstatements and instances of earnings management, and thereby constrain any managerial opportunism. In other words, credit rating agencies might believe that high *AF* impair auditor independence and it seems that they moderately penalize firms paying high *AF*.

4.3. Further analysis

In our main analysis, we did not find evidence that credit ratings agencies seem to appreciate firms with high quality auditors and assign them high credit score. However, credit rating agencies may react to audit quality differently in certain settings where the debt providers' investment in the firm might be directly affected by the firms' financial reporting information and choices. One of these setting is meet/beat earnings benchmarks. Previous research suggests that firms are motivated to avoid reporting an earnings decrease, negative earnings or miss analysts' forecasts (i.e. Graham, Harvey, & Rajgopal, 2005). Given that market's participants interpret missing these targets as a firm might suffer serious problem in their operations which might affect both current

and future performance. Thus, market participants might react negatively to such news and therefore some firms are motivated to avoid these potential negative reactions by manipulating their earnings in order to meet these predetermined earnings targets.

From the three earnings targets, Jiang (2008) noted that avoiding reporting losses is the most salient target for debt market for many reasons. First, unlike shareholders who might be affected by both earnings growth and deterioration, lenders only bear earnings deterioration risk and do not share earnings growth with shareholders (Fischer & Verrecchia, 1997; Plummer & Tse, 1999). Second, lenders seem to treat firms' earnings and loss asymmetrically. Begley and Freedman (2004) indicated that if a debt contract includes a dividend covenant and the firm has achieved loss, the payment of a dividend will be reduced by 100% of net losses while, in the case of achieving profit, 50% of profit should be available for dividends payments. In addition, Beatty, Weber, and Yu (2008) provides anecdotal evidence that, in the case of lenders using a net worth covenant, covenant slack would be tightened to 100% of reported loss and, in contrast, it is more likely to be increased if the firms have reported profit. Finally, Jiang (2008) shows that by avoiding reporting losses, there is a larger impact on a firm's credit rating, compared with avoid reporting an earnings decrease or missing analysts' forecasts. Therefore, it seems that the debt market is more sensitive to losses than to profit. As such, we expect that credit rating agencies to be more concerned about firms reported information when a firms report a small positive core earnings, as these firms might have achieved this through earnings management (i.e. Gore, Pope, & Singh, 2007; Makarem, Hussainey, & Zalata, 2018). Since previous literature has demonstrated that audit quality plays a critical role in mitigating earnings management practices, we expect that credit rating agencies to be more concerned and react to external auditors' quality in firms reporting small positive core earnings than in other firms. In other words, when a firm report small profit, the presence of high quality auditor will provide assurance that this small profit is genuine number and is not inflated.

In order to investigate our conjecture, we split our sample into two groups; namely suspect firms and other firms. In particular, suspect firms are those firms that have reported small IBES earnings per share between zero and three pence. Consequently, we run equation 1 separately for these two subsamples and report the finding of this analysis in Tables 4–6. It appears that credit ratings agencies are more sensitive to audit quality when firms report small positive IBES earnings per share. In particular, as shown in Table 4, since the participation of an industry-specialised auditor is associated with high earnings quality, it seems that credit rating agencies only appreciate the participation industry-specialised auditor when firms are suspected to avoid reporting losses through the use of earnings management. That is, credit rating agencies seem to perceive firms reporting small core earnings and have been audited by one of the industry-specialised auditors as a genuine achiever of their earnings targets (reporting positive core earnings).

In addition, since NAF have been proven to compromise external auditors' independence and therefore these auditors are more likely to allow firms' to mask financial reporting practices, Table 5 shows that credit rating agencies are rational and penalize firms reporting small positive earnings and pay high NAF to their external auditors. That is, credit rating agencies seem to perceive firms reporting small core earnings and have paid high NAF as opportunistic achievers of their earnings target. We report AF findings in Table 6 that shows a significant negative relationship between firms' credit score, and AF when they report small IBES earnings per share demonstrating that credit rating agencies consider high AF to compromise auditor independence. Our analysis using other firms, on average, is qualitatively similar to our findings reported under the main analysis.

4.4. Robustness analysis

In the previous section, the analysis focused on industry-specialised auditor, NAF and AF received by external auditors. However, as suggested by prior research, the auditor's size is another factor that might affect debt market perception. For example, big four auditors are deemed to have a better reputation compared with small auditors (i.e. Becker et al., 1998; Francis et al., 1999), and therefore they have a lot to lose if they allow their clients to use opportunistic accounting policies and these opportunism has been caught be by the regulator. That is, big four auditors are more likely to follow more sophisticated audit

Table 4. Association between credit rating and audit quality using suspect firms versus other firms (the case of industry-specialist auditor model)

Variables	Suspect firms		Other firms	
	Coefficient	t-statistic	Coefficient	t-statistic
AUD_SPEC	0.029	2.04**	-0.014	-1.51
LEV	-0.068	-4.04***	-0.009	-1.18
SALE_G	0.010	1.02	0.000	0.05
CURRENT	0.002	0.27	-0.001	-0.43
INST_COV	0.001	3.06***	0.001	9.98***
DACC	0.000	0.00	0.070	0.89
CS	-0.013	-0.97	-0.002	-0.22
_CONS	4.457	236.50***	4.450	427.86***
Years fixed effect	YES		YES	
Adj_R ²	15.51%		8.04%	
F	4.81		12.47	

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

All variables are as defined in Table 1.

Table 5. Association between credit rating and audit quality using suspect firms versus other firms (the case of non-audit fee model)

Variables	Suspect firms		Other firms	
	Coefficient	t-statistic	Coefficient	t-statistic
NAF	-0.007	-1.98**	0.002	0.97
LEV	-0.066	-3.89***	-0.010	-1.31
SALE_G	0.011	1.06	0.001	0.12
CURRENT	0.001	0.09	-0.001	-0.34
INST_COV	0.001	2.81***	0.001	9.83***
DACC	-0.027	-0.28	0.069	0.88
CS	-0.016	-1.15	-0.003	-0.28
_CONS	4.493	188.20***	4.434	302.49***
Years fixed effect	YES		YES	
Adj_R ²	15.40%		7.94%	
F	4.87		12.31	

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

All variables are as defined in Table 1.

procedures challenging firms' financial reporting decisions in order to avoid the negative consequences of managerial opportunism if discovered. However, our analysis, so far, has not considered, the size of external auditors and the reasons for this is that the majority of public companies in the UK are more likely to be audited by one of the big four auditors and therefore using the size of external auditor as a proxy for audit quality might lack statistical power. For example, almost 70% of our sample have been audited by one of the big four auditors. Nevertheless, we acknowledge that auditor size might be still perceived by lenders as an important signal for audit quality. In addition, US regulators' contend that external audit quality might be impaired because of the close relationship between auditee and external auditor (Gul, Jaggi, & Krishnan, 2007) and therefore it is advisable to rotate the external auditor periodically in order to exercise a better objective judgement (Brody & Moscovice, 1998; Widyansih, Harymawan, Mardijuwono, Ayuningtyas, & Larasati, 2019; Wolf, Tackett, & Claypool, 1999). Therefore, as a robustness analysis, we use different audit quality proxies, namely big four auditors (BIG4) and long

Table 6. Association between credit rating and audit quality using suspect firms versus other firms (the case of audit fee model)

Variables	Suspect firms		Other firms	
	Coefficient	t-statistic	Coefficient	t-statistic
AF	-0.019	-2.98***	-0.001	-0.30
LEV	-0.060	-3.56***	-0.009	-1.20
SALE_G	0.006	0.64	0.000	0.11
CURRENT	-0.001	-0.16	-0.001	-0.52
INST_COV	0.001	2.88***	0.001	9.91***
DACC	-0.031	-0.32	0.069	0.88
CS	-0.021	-1.52	-0.002	-0.23
_CONS	4.556	126.55***	4.450	216.04***
Years fixed effect	YES		YES	
Adj_R ²	17.65%		7.87%	
F	5.45		12.2	

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

All variables are as defined in Table 1

auditor tenure. Using the full sample, as reported in Table 7, we find insignificant relationship between credit score and both big four auditors and auditors with long tenure.

Finally, arguably credit score is sticky and may not reflect the changes in firms audit quality. Therefore, one might argue that the change in credit score is more suitable measure. As a robustness analysis, we use the change in firms' credit score measured as current year minus last year credit score scaled by last year credit score. Using this measure, our unreported results show insignificant relationship between firms' credit score change and industry-specialised

Table 7. Association between credit rating and audit quality (Big 4 auditors and long tenure auditors)

Variables	Model 1		Model 2	
	Coefficient	t-statistic	Coefficient	t-statistic
BIG4	-0.004	-0.51		
AUD_TENURE			0.014	1.38
LEV	-0.013	-1.86*	-0.013	-1.96*
SALE_G	0.001	0.14	0.001	0.20
CURRENT	-0.001	-0.49	-0.001	-0.38
INST_COV	0.001	10.50***	0.001	10.41***
DACC	0.043	0.64	0.046	0.69
CS	-0.005	-0.61	-0.005	-0.57
_CONS	4.451	413.78***	4.447	495.08***
Years fixed effect	YES		YES	
Adj_R ²	0.0786		0.0797	
F	13.96		14.16	

***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

BIG4: Indicator variable set to one if the firm is audited by one of big 4 auditor and zero otherwise.

AUD_TENURE: Indicator variable set to one if the auditor tenure is more than 8 year and zero otherwise.

All other variables are as defined in Table 1.

auditors and NAF. However, this might be because of using short sample period and future studies might use a longer period to reinvestigate our research question.

5. Conclusion

The informational role of external audit quality in the debt market is characterised by less consensus in prior accounting literature. In addition, the current studies on credit rating and audit quality have focused on the US firms operating in an ever growing legal environment and additional financial reporting requirements imposed by regulators. Therefore, in such environment, it is reasonable to expect that external auditors will exercise superior professional judgement and consequently the debt market might appreciate and react to the participation of high quality auditor in such environment. It is not clear whether such findings can be extended to other countries characterised by moderate litigation environment such as the UK. Prior research noted that while the litigation environment in the UK is stringent, the litigation punishments against external auditors are still tougher in the USA than in the UK (Basioudis et al., 2008; Seetharaman et al., 2002). Already, prior UK audit studies (i.e. Basioudis & Francis, 2007; Basioudis et al., 2008; Ezzamel et al., 1996) suggest that audit market in the UK significantly different to the US market. Therefore, without direct examination, it is not clear whether credit rating agencies appreciate the participation of high quality auditor in the U.K.

In addition, the majority of US studies have focused on the external auditor's size and disregarded the individual differences between audit firms such as their specific industry experience, and their time and effort spent in auditing client financial statements. Therefore, in our study, we have used other proxies for audit quality; namely industry-specialised auditor, joint provision of non-audit services and the level of AF.

Using a sample of public UK firms over the period between 2008 and 2010, we investigate whether the debt market really appreciate the participation of high quality auditor. Despite the fact that credit agencies are sophisticated users and have access to private information, we found evidence that credit rating agencies reward firms audited by high quality auditors especially in a setting characterised by high probability of firms have committed opportunistic financial reporting decisions. In particular, we found credit rating agencies assign high credit score to firms where the auditor is considered to be an industry specialist especially when these firms are suspected to be engaged in earnings management. In addition, we found that firms who paid higher audit and NAF were assigned lower credit score especially when they report small positive core earnings, which demonstrates that credit rating firms may be concerned that these firms have manipulated their earnings in order to avoid reporting losses and therefore report positive earnings.

Nevertheless, our findings might be subject to the impact of the global financial crisis. In particular, our sample covers the 2008–2010 period and it is not clear whether these findings can be extended to other periods. Future studies might use long period and investigate whether credit rating agencies response to audit quality is different in other period.

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