The impact of global financial crisis on audit and non-audit fees

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The Impact of the Global Financial Crisis on

Audit and Non-Audit Fees:

Evidence from Sweden

Abstract

Purpose - The paper aims to investigate audit and non-audit fees during the global financial crisis (GFC) in an environment that is relatively sparsely regulated with regard to the provision of non-audit services.

Design/methodology/approach - Audit and non-audit fees were studied during pre-GFC (2006-2007), GFC (2008-2009) and post-GFC (2010-2011) periods.

Findings - During the GFC Swedish companies benefited from an increase in sales and total assets, although return on assets decreased. In this setting, the auditors charged higher audit fees compared with the pre-GFC period, despite the absence of increased audit reporting lags. A significant increase in audit fees continued during the post-crisis periods with auditors paying more attention to companies' leverage and whether they report losses. At the same time the companies spent less on non-audit services.

Research limitations/implications This study is limited to companies from Sweden which was less affected by the GFC.

Practical implications GFC auditors are able to charge higher audit fees from public companies including those that are well performing during financial crises, and they are also able to increase the audit fees in the post-crisis period. This implies that auditors put in extra audit effort to compensate for higher risk or that they are good at negotiating prices with their clients. However, non-audit fees decreased during the same period implying that the demand for these services drops under financial instability.

Originality/value – The study highlights auditors' behavior in the liberal economic environment and it studies both audit fees and non-audit fees before GFC, during GFC and after the GFC. The GFC appears to provide audit firms the opportunity to extract higher audit fees. Our findings are of interest to managers, auditors and regulators.

Keywords: Audit fees, non-audit fees, global financial crisis

Article Classification: Research paper

Introduction

The purpose of this study is to examine the impact of macroeconomic fluctuations on audit and non-audit fees in a relatively liberal regulatory environment. More specifically, we investigated whether changing economic conditions during the recent global financial crisis (GFC) affected the level of fees paid for audit and non-audit services paid to the incumbent auditor and whether this pattern persisted during a recovery period. The recent GFC has drawn more attention to auditing and fees charged by the auditors from their clients (Sikka, 2009). However, the evidence on the impact of the GFC on audit fees is contradictory (Krishnan and Zhang, 2013; Xu *et.al.*, 2013; Zhang and Huang, 2013) and the impact on non-audit fees is largely unknown. A simultaneous study of both audit and non-audit fees over a relative long time period including both pre- and post GFC provides a relatively comprehensive view on the company-auditor relationship during financial turmoil. Study findings will ultimately indicate how auditors and clients behave under fluctuating macroeconomic conditions.

Auditing and consultancy services are similar in the sense that the quality of services is typically difficult to verify at the time of purchase, implying that the supplier's reputation or the client's experience with the supplier is a crucial determinant of the purchase decision and the price that a buyer is prepared to pay (e.g., Shapiro, 1983; Dasgupta, 2000). However, services are also different as the audit is mandatory while consultancy services are purchased only if needed. Changing economic conditions may affect clients' need for audit and consultancy services, the level of perceived audit risks and the degree of market competition (Abdel-khalik, 1990; Hill *et.al.*, 1994; Srinidhu and Gul, 2007). These circumstances could potentially influence the spectrum of required services and affect their price. However, the potential impact of the GFC on audit and non-audit services has received little attention in the literature.

There are only a few studies that have investigated the impact of the GFC on audit fees and they provided mixed results. Results from Australia (Xu *et al.*, 2013) and China (Zhang and Huang, 2013) show an increase in audit fees during the GFC while data from the US (Krishnan and Zhang, 2013) report a decrease in audit fees. The academic literature does not provide any evidence concerning the impact of an economic decline on non-audit fees. In order to adapt to the changing situation, companies may take actions and restructure their operations which may generate an increased need for non-audit services (Firth, 2002). On the other hand, difficult

economic conditions may force companies to prioritize cost-savings and refrain from purchasing non-audit services (Srinidhu and Gul, 2007). At this point, it is largely unknown whether companies pay more or less in fees for non-audit services during the GFC and in the post-GFC period compared with the pre-GFC period which suggests a need for further research.

Our study contributes to the existing knowledge in three ways. Firstly, we examine the effect of changing economic conditions on both audit and non-audit services provided by the incumbent auditor. Secondly, contrary to previous studies, we study fees during a longer time period. Previous studies investigated the relationship between the GFC and audit fees during shorter periods, either during the GFC period (Krishnan and Zhang, 2013; Zhang and Huang, 2013) or during the periods before and during the crisis (Xu *et.al.*, 2013). Our study covers pre-GFC (2006-2007), GFC (2008-2009) and post-GFC (2010-2011) periods [1]. Importantly, we should notice that the impact of the GFC was relatively mild in Sweden compared with many other countries. We believe that an investigation of macroeconomic fluctuations can provide more insight into companies' behavior. More specifically, changes in demand for audit and non-audit services can be highlighted. Thirdly, we perform our investigation in a regulatory environment that does not prohibit the provision most non-audit services. In such environment, the consumption of services from the incumbent auditor is guided to a greater extend by companies needs and financial abilities rather than by regulatory constraints.

Recent findings suggest a link between regulatory environment and audit and non-audit fees. For example introducing the Sarbanes-Oxley Act of 2002 (SOX) in the US resulted in the largest increase in audit fees and decrease in non-audit fees due to the prohibiting of some non-audit services (Chan *et.al.,* 2012; Knechel and Sharma, 2012). As the result of the ban, the auditors incurred additional audit effort due to additional obligatory audit procedures and higher litigation risks (Ghosh and Pawlewicz, 2009; Knechel and Sharma, 2012). This is indicative that regulatory environment exhibits strong effects on audit and non-audit fees.

When the GFC unfolded in 2008, auditors faced increasing scrutiny in strictly regulated audit environments (Xu *et. al.*, 2013). It was, therefore, reasonable to expect changes in fees charged by auditors. Several reports have, indeed, addressed the impact of the GFC on audit fees in strictly regulated environments: US (Krishnan and Zhang, 2013), Australia (Xu *et. al.*, 2013) and China (Zhang and Huang, 2013). The studies from Australia and China indicated an increased level of audit fees while the opposite trend was seen in the US study. Importantly

these and other studies do not consider the expenditure on other services provided by incumbent auditors during GFC. In order to gain a more comprehensive insight into the relationship between fees charged by auditors, a more structured approach is needed and we select Sweden as our research setting since there are relatively few absolute restrictions on the provision of non-audit services. In this approach fees paid for both audit and non-audit services by the same companies should be prospectively followed over prolonged periods of time including favorable (pre-GFC), GFC and recovery (post-GFC) periods. To the best of our knowledge such study has not been performed. We therefore, conducted a study where expenditures for audit and non-audit services incurred by 119 Swedish companies were followed during 2006-2011.

Based on 714 firm-year observations from firms listed on NASDAQ OMX in Stockholm, we find a significant increase in audit fees from pre-GFC to GFC and from GFC to post-GFC which is consistent with the evidence from Australia and China (Zhang and Huang, 2013; Xu *et.al.*, 2013). The higher fees were accompanied by a structural change in the audit fee model and we notice increased attention to leverage and loss in the GFC and post-GFC period. On the other hand, non-audit fees decrease from the pre-GFC period to GFC and post-GFC which can imply that companies are less willing to prioritize investments in consulting services during the GFC and that they continue to cut consulting expenditures also during the years following the crisis.

The remainder of the paper is structured in the following way. Next, we present the institutional setting which is followed by a literature review and development of hypotheses. Thereafter, data and research design are described and results are presented. We close with a conclusion and discussion section.

Institutional setting

National auditing standards based on International Standards on Auditing (ISA) were introduced in 2004 in Sweden. There were initially a few adjustments to the standards to make them compatible with Swedish laws and regulations. Sweden fully adopted ISA in 2011. The disclosure of audit fees and non-audit fees informs outside interested parties about the "economic bond" between auditor and client. Listed companies in Sweden are required to publish audit fees and non-audit fees paid to the signing auditor as well as fees paid to other auditors/audit firms.

The audit market in Sweden is dominated by the Big 4 audit firms. They reported revenues of 1.311 billion Euros in 2011 (1 Euro = 8.3082 SEK) and employed around 50 % of all certified auditors (Affärsvärlden 2012; SBPA 2012). The market domination by large audit firms is further demonstrated by the fact that the Big 4 audit firms earned 81.2 % of all revenues reported by the twelve largest audit firms in 2011. PwC is by far the largest audit firm in terms of turnover and the number of employees, followed by Ernst & Young and KPMG and Deloitte as number four. The market concentration is even greater for the public listed segment. Only ten out of 268 listed companies in 2011 were audited by non-Big 4 auditors [2].

Regulators are concerned that the provision of consultancy services to audit clients will threaten auditor independence, given that it further increases the economic bonding between auditor and client. Generally, Swedish laws and practice with regard to independence are consistent with the eighth directive of the EU (2006/46/EC), the EU recommendation on auditor independence (2002/590/EC) and the IFAC's Code of Ethics for professional accountants (2006). The Swedish Accounting Act (Section 21) requires that an auditor, for each audit assignment, evaluates if there exists any circumstances that may impair auditor independence. Provision of advisory services is among circumstances that may cause the auditor to withdraw from the audit assignment (21-1.b). However, considering the use of various mitigating actions, auditors are not, in general, prohibited to provide different types of non-audit services to audit clients. Overall, Sweden uses a principle-based approach to auditor independence such as Hong Kong and UK and the regulation on provision of non-audit services seem to be less restrictive than the rules applied in some other countries, such as the U.S., Australia, China, Japan and Mexico, but also compared to Germany and France, where audit firms are not allowed to provide certain types of non-audit services to their audit clients (Tafara, 2006).

There are few court cases against auditors in Sweden implying that the risk of litigation is low. However, HQ Bank and Prosolvia are two recent examples of audit failures in Sweden causing significant media attention, large settlements and possibly litigation processes in Sweden. The Supervisory Board of Public Accountants (SBPA) is responsible for issuing disciplinary sanctions against certified auditors performing below the standards. During the period of 2006-2011, a total of 330 disciplinary sanctions were issued against certified auditors which indicate that around 8% of all auditors received disciplinary sanctions. The SBPA withdraw the license for 42 certified auditors (1%) during this period. Out of the 330 sanctions, 92 cases were to

some extent related to auditor independence and 28 were related to provision of non-audit services (according to the classification of cases made by the SBPA). To conclude, auditors face a moderate risk of being identified with substandard audit performance in the Swedish audit market.

Literature review and development of hypotheses

The recent GFC raised questions about the role and quality of external auditing in a number of countries. At the same time, the levels of audit fees were questioned (Sikka, 2009). Auditors were accused of both doing too little (clean audit reports were issued for many of the failing companies) and for charging too high audit and non-audit fees. Changing economic conditions are challenging for audit firms as well as for their clients since they can affect companies' risk, liquidity as well as degree of market competition. These circumstances can, in turn, influence the price for audit and non-audit services. Research under the past three decades have revealed the main drivers of audit fees (e.g. Simunic, 1984; Chan *et.al.*, 1993; Anderson and Zéghal, 1994; Whisenant *et.al.*, 2003; Al-Harshani, 2008). Studies from different countries provided evidence that audit fees are largely determined by the company's size, complexity, risks factors as well as the size of auditor (e.g. Simunic, 1984; Gerrard *et.al.*, 1994; DeFond *et.al.*, 2000). In case of simultaneous provision of audit and non-audit services, the levels of both services are showed to be positively affected in the vast majority of studies (e.g. Davis *et.al.*, 1993; Barkess and Simnett, 1994; Ezzamel *et.al.*, 1996; Antle *et al.*, 2006; Chan *et al.*, 2012). Despite extensive research, very little is known about the impact of macroeconomic factors, like financial crisis, on audit and non-audit fees. The academic studies have reported different impact of the GFC on audit fees and the impact of financial crisis on the level of non-audit fees is largely unknown.

Impact of financial crisis on audit fees

In general, periods of economic decline increase companies' risk level. More specifically, there is a higher risk that companies may violate conditions specified in debt contracts, such as the proportion of equity to debt, or that they may go bankrupt. The higher risk level and growing concern from creditors and investors will force auditors to apply more extensive audit procedures and to invest more audit effort in the evaluation of going concern assumptions (Choi *et al.*, 2008; Francis and Wang, 2008; Ghosh and Pawlewicz, 2009; Zhang and Huang, 2013).

The growing need for assurance during economic downturns, as well as an increased litigation risk for auditors, is likely to increase the auditor effort (i.e. audit hours). Furthermore, an economic downturn can cause "specific corporate events" described by Firth (2002). He showed that when specific events, like mergers, acquisitions and business restructuring, do take place, the need for auditing increases. This occurs because specific events often involve adjustments of the client's accounting and information systems. Auditors need to put in more effort to learn how events change the accounting system (Firth, 2002). Additional audit efforts for consolidation exercises can also be required during a few years after the event (Firth, 2002, p.682).

Another way to respond to the increased client's risk might be to employ a risk premium on audit fees. As compensation for possible losses in terms of sanctions, litigations, impaired reputation and financial costs, auditors may use risk-adjusted billings rates (Brumfield *et.al.*, 1983). Niemi (2002) found evidence on the existence of a risk premium for listed companies in Finland with a risk higher than average. However, the result did not reveal any risk premium for distressed companies. On the contrary, the finding indicted that those clients who reported losses paid lower fees than those clients who performed better.

On the other hand, economic fluctuations often cause changes in market conditions. Abdel-khalik (1990, p.300) analyzed the relationship between competition on the audit market and economic conditions in different regions in the US and he argued that the economic downturn reduces the demand for audit service and enhances competition among audit firms. In order to deal with the temporary overcapacity of experienced labor, the audit firms would likely reduce their price for services. Also, in such a situation, companies would have strong incentives and a favorable position to actively negotiate for a reduced audit price. Maher et al. (1992) documented a significant decrease in real audit fees in the US from 1977 to 1981 and attributed this to increased competition in the market for audit services following the economic downturn of the late 70s and early 80s. Many audit clients in the US were also able to negotiate lower audit fees in 2008 and 2009 (Krishnan and Zhang, 2013). Figures over revenues, numbers of employees, CPAs, partners etc. reported by the audit firms in Sweden provides however no indication of increased competition at the Swedish audits market (see Affärsvärlden 2012).

The existing literature provides mixed evidence regarding the impact of the GFC on the level of audit fees. Xu *et al.* (2013) studied audit fees in Australia and reported an increase in audit

fees during the period 2008-2009 compared with the GFC period. The authors attributed the higher fees to an increase in client business risk which caused additional audit effort. Higher audit fees during the GFC were also reported from China (Zhang and Huang, 2013). The result suggests the increased risk premium caused by increased firm risk. Nevertheless, research from US by Krishnan and Zhang (2013) revealed that financial companies were able to negotiate lower price for audit service during the GFC. Thus, the empirical findings on the effect of the recent financial crisis on audit fees are mixed.

Although there are mixed evidence in the literature, we expect auditors to react to the increased risk that follows from an economic downturn by increasing the risk premium and by putting in additional effort. We should also consider that companies do not know there inherent demand for audit services due to the nature of audit service. We therefore formulate the following directional hypotheses:

H1: Audit fees increase from pre-GFC period to GFC and post-GFC periods.

Effect of a financial crisis on non-audit fees

In general, the demand for non-audit services is driven by the need for external support, the willingness or ability to pay for services and the perceived quality of the services delivered by the audit firm (Svanström and Sundgren, 2012).

An economic downturn is generally characterized by a sharp decline in the demand for products and services. This can, in turn, lead to reduced liquidity for many companies (Cornett *et.al.*, 2011). The shortage of capital may force companies to decrease their consumption or totally refrain from using external consultants. During crisis, companies tend to focus on their core activities and investments in external services including using the auditor for consulting may not be prioritized. Srinidhu and Gul (2007) documented that non-audit fees for US companies dropped significantly from 2000 to 2001 and argued that audit clients were scaling down on consulting services from the auditor during economic downturns. Although auditors may be proactive in selling different types of non-audit services to audit clients, the opportunities are relatively limited given that the client is under pressure to minimize expenditures and knows his or her inherent demand.

However, in order to adapt to changing economic conditions such as a financial crisis, companies may be forced to take actions and restructure their operations. The restructuring, acquisitions and other changes take place rarely and companies' own experience may, therefore, be insufficient and additional consultancy is required during the process. Firth (2002) argues that when such specific events take place, the purchasing of non-audit service increases. Firth (1997) argues that poorly performing companies have additional incentives to hire consultants since it indicates that the company is ineffective. This awareness and pressures from the market are expected to make companies more willing to purchase consulting services in order to improve their profitability. According to Hay *et al.* (2006), there is also some support for the proposition that companies with problems require a greater amount of non-audit services than other firms.

While the underlying need for advisory services and external support is likely to increase under an economic downturn, we expect companies to prioritize cost saving and scale down on support services. Therefore, we formulate the following hypotheses:

H2: Non-audit fees decrease from pre-GFC period to GFC and post-GFCs periods.

Data and research design

Sample

Our sample consists of companies listed on small- and mid-cap at NASDAQ OMX Stockholm in 2012. A total number of 195 companies were identified. Financial institutions and utilities were excluded since their asset structure was different to other industries. The sample without financial companies and utilities comprised 166 companies. Since we aimed at capturing the impact of economic fluctuations on audit and non-audit fees, it was essential to include companies having the same accounting period. In order to avoid a potential statistical bias, we follow the same companies over a six-year period. The number of companies for each year was 119 yielding a total number of 238 observations for every two-year period. The final sample consisted of 119 companies for each year from 2006 to 2011, yielding 714 firm-year observations. The companies' data for 2006-2011 were obtained directly from annual reports.

The study focuses on the period 2006-2011, since this time span covers different economic conditions. The GFC hit Sweden in 2008. The deepest decline in the Swedish economy occurred during 2008-2009. After this period, a gradual economic recovery could be clearly observed according to Sweden's GDP growth rate (see also note 1). In order to find possible effects of these fluctuations on audit and non-audit fees, we arbitrarily examine three periods of equal length, conditionally designating them as pre-GFC (2006-2007), GFC (2008-2009) and post-GFC periods (2010-2011). We calculated the ratios *Audit fees/Total fees* and *Non-audit fees/Total fees* for each two-year period. In order to control auditor characteristics, we identified the name of the signing auditor/s from the companies' annual reports. We then used a file received from the SBPA to include information on experience as a certified auditor.

Research design

We tested our hypotheses in two ways. First, we examined the following two regression models, with *LNAUDIT* and *LNNAF* as dependent variables:

i) $LNAUDIT = \beta_0 + \beta_1\ LNNAF + \beta_2{*}LNTA + \beta_3{*}SQSEGS + \beta_4{*}LNSUBS + \beta_5{*}LNFSUBS + \beta_6{*}\ INVREC + \beta_7{*}ROA + \beta_8{*}LEV + \beta_9{*}LOSS + \beta_{10}{*}SALES + \beta_{11}{*}TWOAUDITORS + \beta_{12}{*}BIG4 + \beta_{13}{*}GENDER + \beta_{14}{*}EXPERIENCE + \beta_{15}{*}TENURE + \beta_{16}{*}\ AUDLAG + \beta_{17}{*}CRISIS + \beta_{18}{*}POSTCRISIS + e$

ii) $LNNAF = \beta_0 + \beta_1{*}LNAUDIT + \beta_2{*}LNTA + \beta_3{*}SQSEGS + \beta_4{*}LNSUBS + \beta_5{*}LNFSUBS + \beta_6{*}INVREC + \beta_7{*}ROA + \beta_8{*}LEV + \beta_9{*}LOSS + \beta_{10}{*}SALES + \beta_{11}{*}BIG4 + \beta_{12}{*}TENURE + \beta_{13}{*}\ CRISIS + \beta_{14}{*}\ POSTCRISIS + e$

Where,

LNAUDIT =	Natural logarithm of the company's audit fees
LNNAF =	Natural logarithm of the company's non-audit fees
TAX =	Indicator variable taking the value 1, where the company purchases tax services and zero otherwise
OTHERNAF =	Indicator variable taking the value 1, where the company purchases other non-audit services from the incumbent auditor and zero otherwise

LNTA =	Natural logarithm of total assets
SQSEGS =	Square root of the number of segments
SQEMPLS =	Square root of the number of employees
LNSUBS =	Natural logarithm of the number of Swedish subsidiaries
LNFSUBS =	Natural logarithm of the number of foreign subsidiaries
INVREC =	Inventory plus accounts receivable, divided by total assets
ROA =	Return on assets, calculated as operating income divided by total assets
LEV =	Total debt divided by total assets
LOSS =	Indicator variable that is coded 1 if the net profit is negative in the previous year, and zero otherwise.
LNSALES =	Natural logarithm of turnover
BIG 4 =	Indicator variable that is coded 1 if auditor is PwC, E&Y, KPMG or Deloitte, and zero otherwise.
TENURE =	Natural logarithm of auditor-client relationship in years
AUDLAG =	Number of days between the end of accounting period and the signing of audit report
TWOAUDITORS =	Indicator variable that is coded 1 if audit report is signed by two auditors from the same audit firm, and zero otherwise
EXPERIENCE =	Number of years as a certified auditor.
GENDER =	Indictor variable that is coded 1 if the auditor is a female, and zero otherwise.
GFC =	Indicator variable taking the value 1 during 2008-2009, and zero otherwise.
POST-GFC =	Indicator variable taking the value 1 during 2010-2011, and zero otherwise.

To capture any possible effect of changed economic conditions we included two indicator variables, *GFC* and *POST-GFC,* taking the value one for the period 2008 to 2009 and for the period 2010 to 2011 respectively. The pre-GFC period is in the reference category.

Second, we estimated the ratios *Audit fees/Total fees* and *Non-audit fees/Total fees*. The ratios were than compared for the three periods using a t-test.

In this study we use the following categories of control variables: (1) company's size, (2) complexity, (3) risks, (4) auditor's size, (5) auditor tenure, (6) audit reporting lag, (7) two auditors signing the audit report, (8) auditor-in-charge (AIC) characteristics. Variables of groups 1-5 are included in both models. Variables of groups 6-8 concern only the audit fee model.

The company's size has proved to be the most important driver of audit fees (see Hay *et.al.*, 2006). To check for size, we follow Barkess and Simnett (1994) who used the natural logarithm of the company's total assets (*LNTA)* and sales (*SALES*). Audit complexity is another essential determinant of fees. Due to nonlinearity of the relationship between complexity and fees (Palmrose, 1986), we use *LNSUBS, LNFSUBS* to ensure a better fit of these measures in the regression model. In accordance with Whisenant *et al.* (2003), we include a variable for number of segments, *SQSEGS*. In order to check for different aspects of risks, we include *INVREC, ROA*, *LOSS* and *LEV* in the model (Niemi, 2002; Whisenant *et al.*, 2003). A stream of studies has found evidence for the existence of premiums paid to the large audit firms (now defined as "Big Four") (e.g. Francis, 1984; Crasswell *et.al.*, 1995; Ferguson, 2003; Caneghem, 2010). To check for this, we include *BIG 4* in our model.

Prior studies (e.g. Gul *et.al.*, 2007; Krishnan and Yu, 2011) suggested that the length of the relationship between the audit and the client has an impact on fees. To check for this, we include *TENURE* in the model. Stanley (2011) found that the length between the end of the accounting period and the signing of the audit report is positively related to audit fees. Therefore, we include *AUDLAG* in the audit fees model. Swedish legislation allows for the appointment of two responsible auditors and, in our sample, around 10 percent of companies had audit reports signed by two auditors. In accordance with Thinggaard and Kiertzner (2008), we expect a possible effect of such circumstance on audit fees and therefore include an indicator variable, *TWOAUDITORS.*

The effect of AIC characteristics on audit quality has recently received substantial attention in the audit literature (Goodwin, 2012; Ittonen and Peni, 2012; Gul *et.al.*, 2013; Ittonen *et.al.*, 2013; Sundgren and Svanström, 2014). Ittonen and Peni (2012) found that female auditors in

Denmark, Sweden and Finland charged a higher price for audit services than male auditors. We also expect that auditors with longer experience of the audit profession could charge a higher price than less experienced auditors. In this study, we include *GENDER* and *EXPERIENCE* in audit fees model to control for potential AIC effects.

Summary statistics

Table I presents descriptive statistics for the whole sample, including 714 observations from 2006-2011 and for the three investigated periods: the pre-GFC (2006-2007), the GFC (2008-2009) and the post-GFC (2010-2011) periods. All 119 companies were followed during the whole study period. Our data indicate that 94 percent of all companies are audited by the Big Four firms. The sample is dominated by male auditors with female auditors representing only 12.5 percent of the sample. The average experience of the AIC is 19.4 years.

[Insert Table I about here]

The Table I shows that the lowest value of audit fees was during the pre-GFC period and the highest audit fees were during the post-GFC period. Average audit fees (*AUFEE*) increase about 9 percent between pre-GFC and GFC and about 19 percent between pre-GFC and post-GFC periods. The increase is significant between pre-GFC and GFC and pre-GFC and post-GFC periods. Non-audit fees (*NASFEE*) show a tendency for the opposite trend. Average non-audit service fees decline 7 and 13 percent over the respective periods. The difference between pre-GFC and post-GFC is close to significant.

Turning to control variables, the mean of return on assets (*ROA*) was highest, 0.075 during the pre-GFC economic conditions and then declined to 0.017 and 0.013 during the two other periods. The mean leverage was highest during the GFC (0.566). Interestingly, the t-test indicates a significant increase in companies' assets (*LNTA*) and *SALES* between pre-GFC and post-GFC periods.

The number of companies which reported negative profits during the previous year was highest (29%) after the GFC and the lowest (24%) during the pre-GFC period. Before the GFC, 92.4 percent of the companies were audited by the Big Four auditors. During the GFC, the Big Four share increased to 94 percent and then to 95 percent in the post-GFC period.

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However, the tests of differences between the periods have not showed any significant changes in *AUDLAG* indicating that the time spent for audit report remained the same over changed macroeconomic conditions.

Results

Main analyses

Table II reports the correlations between the dependent and independent variables included in the regression models. Correlations below 0.8 should not cause biased regression estimates due to multicollinearity (Judge *et.al.*, 1988). The highest correlation of 0.701 is between *LNTA* and *SALES.*

[Insert Table II about here]

We hypothesize that macroeconomic fluctuations affect the level of fees for audit and non-audit services due to increased level of risk as well as changing needs and priorities of companies. To prove our conjecture, we run our regression models for audit and non-audit fees for the entire study period, 2006-2011, where we include two indicator variables, *GFC* (i.e. 2008-2009) and *POST-GFC* (i.e. 2010-2011), with the pre-GFC period (i.e. 2006-2007) being in the reference category.

Table III shows the results of equations (*i*) and (*ii*). The fit of the audit fee model is relatively high (adjusted R^2=0.784) and the explanatory power of the model is in line with studies conducted in other counties (e.g. Ezzamel *et.al.*, 1996; Firth, 1997; Firh, 2002; Thinggaard and Kiertzner, 2008). Variables of interest are *GFC* and *POST-GFC*. *GFC* has a positive sign and is significant at the 0.01 level. The variable *POST-GFC* is also positively related to audit fees and is highly significant (p <0.001). Thus, the result indicates an increase in audit fees during the GFC and post-GFC periods.

[Insert Table III about here]

The fit of the non-audit fee model is about 26 percent (Adjusted R^2 =0.262). In this model both variables, *GFC* and *POST-GFC*, have instead a negative sign. The variable *GFC* is significant

at the 0.1 level. The variable *POST-GFC* is highly significant (p <0.001). The result confirms that companies cut down on consulting services when entering an economic downturn and also indicates that the non-audit fee level remains low during the period immediately thereafter.

In the model for audit fees (Table III, Panel A), *LNNAF* is positive and highly significant (p <0.001). The result is consistent with previous research, which found a significant positive relationship between audit and non-audit fees (e.g. Davis *et.al.*; 1993; Ezzamel *et.al.*, 2002; Thinggaard and Kiertzner, 2008; Chan *et.al.*, 2012). The finding indicates that increased consumption of non-audit service is associated with an increase in audit fees. In line with prior research, the variables checking for company size (*LNTA, LNSALES*) have positive signs and are statistically significant. Next, variables of complexity (*LNSUBS, LNFSUBS, SQSEGS)* also have a positive sign and are significant. *INVREC* is significant and positively related to audit fees. *ROA* has a negative sign and is significant, which is in line with most audit fee research (Hay *et.al.*, 2006).

Results reported, however, show an insignificant association between *LOSS* and audit fees. This finding is consistent with Krishnan and Yu (2011) who failed to find any strong relationship between these two variables. *Big 4* has a positive sign and is significant indicating that the BIG 4 auditors charge a fee premium. This finding is in line with prior research (Francis, 1984; Ferguson, 2003; Caneghem, 2010). The result does not provide any support for the effect of *TENURE* on audit fees. The individual auditor variables, *GENDER* and *EXPERIENCE*, are also not significantly associated with audit fees.

Table III, Panel B provides evidence that non-audit fees are strongly and positively associated with audit fees, which is consistent with previous research (e.g. Barkess and Simnett, 1994; Whisenant *et al.*, 2003; Chan *et al.*, 2012). Other essential drivers for non-audit fees are *LNTA* and *LNSUBS.* These findings are in line with the above studies which confirm the importance of the client size and complexity in determining non-audit fees. In contrast to Whisenant *et al*. (2003) and Chan *et.al*. (2012), our result revealed a significantly positive relationship between *LOSS* and non-audit fees.

Big 4 has a positive sign but the variable is not significant. This result contrasts with Whisenant *et al*. (2003) who found a significant effect of the Big 4 auditors on non-audit fees. *TENURE* has a positive sign and is close to significant suggesting that the longer the relationship between

the AIC and the client, the higher is the demand for non-audit services. This finding is consistent with Krishnan and Yu (2011).

Table IV reports the results of a t-test on differences between the study periods for the ratios *audit fees to total fees* and *non-audit fees to total fees*. The ratio *audit fees to total fees* demonstrates that the proportion of audit fees increases over the three study periods. The increase of the ratio is significant at 0.1 level between the pre-GFC and GFC periods and at a 0.05 level between the pre-GFC and post-GFC periods.

The ratio *non-audit fees to total fees* shows that that proportion of non-audit fees decreases significantly over the study periods. The change is also significant at a 0.1 level between the pre-GFC and GFC periods and at 0.05 level between the pre-GFC and post-GFC periods. Therefore, the results support the regression results that the GFC significantly changes the level of expenditures on audit and non-audit services.

[Insert Table IV about here]

In summary, the results show an increase in audit fees during, as well as after, the crisis and a decrease in non-audit fees over the same periods.

Additional analyses

To provide additional insights related to our hypotheses we performed a number of supplementary tests.

Control for connection with the US

We have controlled for the companies' relationship with the US assuming that the firms collaborating with this country might suffer from the financial distress to a higher extend, and, therefore, affecting the level of audit fees. To control for this possible effect we included a dummy variable *US* in the model for audit fees. First, we identified all companies having some activity in the US and examined a possible affect on audit fees. The result did not show any significant effect of such activity. Second, we identified the companies which have minimum 25 percent of their business in the US. Neither was there any relationship. Therefore, the results

(untabulated) show that the fact of operating in the US does not have any impact on audit fees suggesting that an increase in fee levels was caused by Swedish local conditions.

Determinants of audit and non-audit fees during pre-crisis, crisis and post-crisis periods

In our main analysis we investigated the impact of the GFC on the level of audit and non-audit fees. To examine whether changes in fee levels were accompanied by any possible structural changes in the models for audit and non-audit fees, we estimated two regression models for each investigated period: 2006-2007, 2008-2009 and 2010-2011 (Table III). The same 119 companies were examined during three periods with different economic conditions. The fit of audit fee model is relatively high (adjusted R^2 is 0.781, 0.800 and 0.762 respectively). However, the result reveals some shift in the impact on fees by some variables. All risk variables show the expected signs. Nevertheless, *INVREC* is significantly related to audit fees only during the pre-GFC period. On the contrary, *LEV* significantly affects audit fees during the GFC and the period following immediately thereafter. The result suggests that auditors have put more attention on firms leverage during the declining macroeconomic situation. The finding also indicates an increased importance of *LOSS* during the post-GFC period.

The explanatory power of non-audit fee model is lower GFC to the post-GFC period (adjusted R^2 is 0.415, 0.197 and 0.169). Variable *LOSS* is positive and highly significant ($p < 0.001$) during the pre-GFC period but not significant during two other periods. The positive significant result supports the statement that poorly performing firms have a greater need in consultancy services (Firth, 2002; Hay *et.al.*, 2006). The statement, however, is supported only for the pre-GFC period. Generally the result has not showed any major changes concerning the impact of variables on non-audit fees.

Robustness check

The results of the regressions models indicate that the GFC can have an impact on audit and non-audit fees. To check the robustness of the results we conducted several additional tests. In accordance with Krishnan and Yu (2011), we delete 1% of outliers at each tail for dependent variables as well as continuous independent variables in the regression models. The results (not tabulated) support our main finding and indicate that the result is not caused by extreme observations.

To check whether the results are affected by company, we divided our total sample into two samples of large and small companies according to total assets and examined our regression models for these two groups. The results for both samples (not tabulated) are qualitatively similar to the result for the whole sample. Both groups show an increase in audit fees during the GFC and post-GFC periods. The results for small companies are significant at 0.002 and < 0.001 for the pre-GFC and the post-GFC periods respectively. The finding for large companies is significant at 0.1 and 0.005 for the pre-GFC and the post-GFC periods respectively. The results concerning non-audit fees in the two subsamples are largely in line with result for the main sample. Both groups demonstrate a decrease in non-audit fees during the GFC and the period following immediately thereafter. However, the coefficient for *GFC* is insignificant in both samples. When it comes to the post-GFC period, the coefficient is significant at the 0.05 level for both subsamples. In general, the results for small and large companies confirm our main results.

Assuming an intricate relationship between crisis and companies risks, we examine the interaction between our indicator variables for the GFC and post-GFC periods and different risk measures. According to White and Lu (2010), the critical core variables are precisely those whose effects are of primary interest. We therefore selected four different risk variables (*INVREC*, *ROA*, *LOSS*, *LEV)* and subsequently included them, one by one, in our two models. We hypothesized that calculating four variables simultaneously can have a cumulative effect on audit fees. Therefore, choosing and testing one core risk variable at a time can eliminate a risk of a possible cumulative effect of a sum of four variables. This approach can further contribute to the robustness of our analysis.

The results of these tests indicate that despite the level of companies' risk, audit fees tended to increase while non-audit fees tended to move in an opposite direction over the GFC and post-GFC periods. The variables *GFC* and *POST-GFC* are significant in all three models. The additional analyses overall confirm the reported main results.

Conclusion and discussion

This study addresses the effect of changing macroeconomic conditions on the fees paid for audit and non-audit services. More specifically, we focus on how the recent global financial crisis affected the fees paid to the incumbent auditor during pre-GFC; GFC and post-GFC periods.

Macroeconomic conditions can affect client risks, demand and ability to pay for different types of services as well as the auditor's response to the increased client's risk and the degree of market competition. These circumstances could ultimately impact the amount of services purchased and their price. The findings indicate how companies and auditors behave in a fluctuating economic environment which is of interest to regulators and outside investors.

Using 714 firm-year observations listed on Stockholm OMX in 2012, we show that the level of audit and non-audit fees varies between pre-GFC; GFC and post-GFC periods. Our data show that increased audit fees during GFC are associated with a structural change in the audit fee model and the auditors appear to charge higher premium even from well performing companies. No direct evidence was found to suggest increasing auditors' efforts. Auditors are able to charge higher audit fees without taking longer time to finalize the audit report which suggest that audit firms may increase their risk premium on audit assignments under GFC. However, we cannot rule out that audit firms put in more effort within the same amount of time.

 A significantly higher level of audit fees was also documented during the post-GFC period compared with the pre-GFC period implying that auditors are reluctant to reduce audit fees as a response to lower risk levels. Next, our results show that non-audit fees decreases in the GFC and the post-GFC periods, implying that financial constraints or financial uncertainty make companies less willing to prioritize investments in consulting services. In general companies seem to behave more careful under the GFC and they also take their time before increasing their expenditures on consulting support again. It suggests that that firms are price sensitive with regarding to consulting services and also that auditors are unable to promote an increase in client firms spending on non-audit services. The reader should note that the generalizability of study findings are limited to institutional settings characterized with relatively few absolute restrictions regarding provision of non-audit services to audit clients as well as to jurisdictions that were relatively little affected by the financial crisis.

Notes

1. According to the US National Bureau of Economic Research, the GFC in the US began in December 2007 and ended in June 2009. The change in Gross Domestic Product (GDP) suggests that the GFC in Sweden lasted during 2008 and 2009 (Statistic Sweden, 2012). GDP in Sweden fell by 0.6 percent in 2008 and by 5.0 percent in 2009. Prior to the crisis, in 2006 and 2007, GDP in Sweden rose by 4.3 and 3.3 percent respectively. After the GFC, in 2010 and 2011, GDP in Sweden rose by 6.6 and 3.7 percent respectively (Statistic Sweden, 2012).

2. Grant Thornton and Mazars SET held four assignments each, while BDO audited two companies.

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